Draft Environmental Impact Report
Silverado Power West Los Angeles County
Volume I I

SCH # 2012061068 / ENV # 201100109

COUNTY OF LOS ANGELES
Department of Regional Planning
320 West Temple Street, Room 1362
Los Angeles, California 90012

January 2014

APPENDIX A-1

NOTICE OF PREPARATION

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Los Angeles County
Department of Regional Planning

Planning for the Challenges Ahead

Richard J. Bruckner
Director

NOTICE OF PREPARATION
AND
NOTICE OF SCOPING MEETING

DATE: June 13, 2012

OVERALL DEVELOPMENT TITLE:

Silverado Power West Los Angeles County
Project 1: R2011-00833 (CUP201100079, RZC201100005), North Lancaster Ranch
Project 2: R2011-00798 (CUP201100070), Western Antelope Blue Sky Ranch
Project 3: R2011-00799 (CUP201100071), American Solar Greenworks
Project 4: R2011-00807 (CUP201100076), Antelope Solar Greenworks
Project 5: R2011-00801 (CUP201100072), Silver Sun Greenworks
Project 6: R2011-00805 (CUP201100074), Lancaster WAD
Environmental Review No. ENV201100109

PROJECT ADDRESSES:

Project 1: 105th Street West & West Avenue B, Lancaster, CA
Project 2: 110th Street West & West Avenue K, Lancaster, CA
Project 3: 70th Street West & West Avenue G, Lancaster, CA
Project 4: 97th Street West & West Avenue I, Lancaster, CA
Project 5: 120th Street West & West Avenue I, Lancaster, CA
Project 6: 35th Street West & West Avenue D, Lancaster, CA

OVERALL DEVELOPMENT APPLICANT:

Silverado Power, LLC
44 Montgomery Street, Ste. 3065
San Francisco, California 94104

CEQA LEAD AGENCY:

County of Los Angeles
Department of Regional Planning
320 W. Temple Street, Room 1348
Los Angeles, California 90012

The County of Los Angeles is the lead agency and will prepare the Environmental Impact Report (EIR) for six proposed solar generating facilities (SGFs) referred to as the "Overall Development". In compliance with Section 15082 of the California Environmental Quality Act (CEQA) Guidelines, the County of Los Angeles is sending this Notice of Preparation (NOP) to each responsible agency,

interested parties, and federal agencies involved in approving the proposed Overall Development and to trustee agencies responsible for natural resources affected by the proposed Overall Development. Within 30 days after receiving the Notice of Preparation, each agency shall provide the County of Los Angeles with specific written details about the scope and content of the environmental information related to the agency's area of statutory responsibility.

The purpose of this NOP is to solicit the views of your agency as to the scope and content of the environmental information germane to your agency's statutory authority with respect to the proposed Overall Development. Your agency may need to use the EIR prepared by our agency when considering your permit or other approval for the proposed Overall Development.

Overall Development Location

The Overall Development is located in the northern portion of unincorporated Los Angeles County, in the western portion of the Antelope Valley. The applicant, Silverado Power, proposes to develop six solar generating facilities at six site locations throughout western Antelope Valley. These six sites together would include development of approximately 747.1 acres and would produce 172 megawatts (MW) of solar power in total. The Overall Development is primarily located on fallow unproductive farmland. The area where these sites are located is rural land west of the State Highway 14.

Overall Development Description

Silverado Power, LLC (Silverado Power) is a utility scale solar photovoltaic (PV) developer proposing the development of six solar PV sites (referred to as the Overall Development) addressed in this EIR. The Overall Development is located in an area of the western Antelope Valley that was historically used for agricultural activities. Production and economic constraints led to the cessation of agricultural activities in the area, resulting in disturbed and vacant land. Silverado Power has located six SGFs on disturbed and vacant land throughout the western Antelope Valley.

The Overall Development proposes to increase electricity generated from renewable technology by generating 172 MW of electrical energy from the sun. Recent legislation enacted in California encourages the development of renewable energy resources to reduce reliance on fossil fuels, diversify energy portfolios, reduce greenhouse gas emissions, and assist creation of "green" jobs within the state of California.

The Overall Development proposes to assist California in meeting the newly established Renewable Energy Portfolio Standards (RPS). Senate Bill 14 established RPS targets for California, stating, "all retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020." State government agencies have been directed to take all appropriate actions to implement this target in all regulatory proceedings, including siting, permitting, and procurement for renewable energy power plants and transmission lines. The six sites qualify as an eligible renewable energy resource as defined by the California Public Resources Code.

The Overall Development proposes siting to limit impacts to the environment and the local community by:

- Using disturbed land or land that has been previously degraded from prior use
- Using existing electrical distribution facilities, rights-of-way, roads, and other existing infrastructure where possible to reduce the need for new electrical support facilities
- Limiting impacts to threatened or endangered species or their habitats, wetlands and waters of the United States, cultural resources, and sensitive land uses
- Limiting water use

Silverado Power has acquired rights to the real properties and filed zoning applications with the County of Los Angeles for the six solar sites. Environmental studies, Overall Development siting and planning, and interconnection agreements have been ongoing since 2010. The lead agency for this document is the County of Los Angeles. Silverado Power has held several meetings in the Antelope Valley area to inform the public about all aspects of the Overall Development. The Overall Development proposes delivering power to the Southern California Edison (SCE) electrical grid beginning in late 2013. The SGFs would be constructed in phases, followed by commercial operation for an estimated 35 years.

Each of the six SGFs would be designed and built using the same or similar method. The Overall Development would employ a series of photovoltaic (PV) module arrays to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities would deliver the electrical output to the existing regional transmission system.

The PV modules would convert sunlight into low-voltage direct current (DC) power, which is subsequently transformed by an inverter into alternating current (AC) power. The PV modules are made of a semiconductor material through which electrons flow to convert light (photons) to electricity (voltage).

Each SGF would consist of the following elements:

- PV modules
- PV Module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing

A regional Operations and Maintenance (O&M) facility to serve all six SGFs would be located in an existing permitted space within Los Angeles County. Each SGF requires a CUP from Los Angeles County for the construction and operation of the SGF.

Entitlement Requirements and Discretionary Approvals

Discretionary approvals required for implementation of the proposed Overall Development may include, but are not limited to, the following:

- Certification of an Environmental Impact Report
- Zone Change for Project 1 from A-1 (Light Agricultural) to A-2 (Heavy Agricultural)
- Approval of six Conditional Use Permits, one for each of the SGFs, to authorize the development of Projects 1-6 to operate a SGF
- Additional County and other governmental actions as determined necessary

General Plan Designation

The Antelope Valley Areawide General Plan designation for the Project sites is N1 (Non-Urban 1).

Board of Supervisors District

District 5, Michael Antonovich.

Environmental Issues to be evaluated in the EIR

- Aesthetics*
- Agricultural Resources
- Air Quality*
- Biological*
- Cultural*
- Energy
- Geology and Soils*
- Hazards and Hazardous Materials
- Hydrology and Water Quality*
- Land Use and Planning
- Noise*
- Public Services
- Transportation and Traffic*
- Utilities and Service Systems
- Climate Change and Green House Gases, GHG*

*Technical Studies being prepared

Notice of Preparation Review and Comments

The review period for the NOP will be from **June 20, 2012** to **July 20, 2012**.

Due to the time limits mandated by state law, your response must be sent at the earliest possible date, but not later than July 23, 2012. Please direct all written comments to the following address. In you written response, please include the name of a contact person in your agency.

Carolina Blengini
County of Los Angeles Regional Planning Department
Special Projects Section
320 West Temple Street, Room 1362
Los Angeles, California 90012

Tel: (213) 974-1522
Fax: (213) 626-0434
Email: cblengini@planning.lacounty.gov

Public Scoping Meeting

To assist in local participation, a Scoping Meeting will be held to describe the proposed Overall Development and to solicit suggestions from the public and responsible agencies regarding the content of the Draft EIR.

Date: Saturday, July 14, 2012 from 9:00 a.m. to 1:00 p.m.

Location: Lancaster Library, 601 West Lancaster Boulevard. Lancaster, CA 93534

Location of Review Materials

The County of Los Angeles Department of Regional Planning is soliciting input based on your views and opinions concerning the scope of the EIR for the proposed Overall Development.

Additional copies of the Notice of Preparation are available for the public review on the Department of Regional Planning website http://planning.lacounty.gov/case/view/silverado/ , as well as at the follow libraries:

Lancaster Library
601 West Lancaster Blvd.
Lancaster, CA 93534

Canyon Country Jo Anne Darcy Library
18601 Soledad Canyon Rd.
Santa Clarita, CA 91351

Lake Los Angeles Library
16921 East Avenue O, #A
Palmdale, CA 93591

Quartz Hill Library
42018 North 50th St. West
Quartz Hill, CA 93536

Antelope Valley Bookmobile
601 West Lancaster Blvd.
Lancaster, CA 93534

OVERALL DEVELOPMENT DESCRIPTION

1.0 OVERALL DEVELOPMENT LOCATION AND SETTING

Silverado Power, LLC (Silverado Power) is a utility scale solar photovoltaic (PV) developer proposing the development of six solar PV Projects (referred to as the Overall Development) in the western portion of Antelope Valley, located in the northern portion of unincorporated Los Angeles County. These six solar generating facilities (SGFs) together would cover 747.1 acres and would produce 172 megawatts (MW) of solar power in total. The Overall Development is located on unproductive farmland that is no longer used for farming. The area where these Projects are located is rural land west of State Route 14.

Each of the six solar Projects are intended to be developed separately, but will be analyzed by one Environmental Impact Report (EIR). The requirements of the California Environmental Quality Act (CEQA) in Section 17175 (3) provide that an EIR be prepared for an overall development where smaller individual Projects would be carried out in phases. For the purpose of this EIR, the term "Overall Development" will refer to all six of the SGFs.

The six SGFs to be developed are given below by project number, name, acres and mega-watts (MW):

Project Number	Project Name	Acres	MW
1	North Lancaster Ranch	80	20
2	Western Antelope Blue Sky Ranch	157	40
3	American Solar	135.61	35
4	Antelope Solar Greenworks	256	52
5	Silver Sun Greenworks	80	20
6	Lancaster WAD	38.49	5

1.1 DESCRIPTION OF THE OVERALL DEVELOPMENT SETTING

1.1.1 Overview of the Region

The Overall Development is located in the Antelope Valley in unincorporated Los Angeles County and is all west of the Antelope Valley Freeway (State Route 14). All six SGFs are between 30th Street West and 120th Street West. On the north-south axis, the SGFs are between Avenue K to the south and Avenue A to the north. The SGFs range from approximately 39 to 256 acres in size and from 5 to 52 MW in solar generation capacity (See Figure 1 for a map of the SGFs).

1.1.2 Land Description and Uses

The Antelope Valley consists of high desert terrain bounded by the San Gabriel Mountains to the south, portions of Kern County to the north, Ventura County to the west, and San Bernardino County to the east. The Antelope Valley is characterized by relatively flat land,

punctuated by occasional buttes. In general, the Antelope Valley floor is bowl-like, with the low point located near the center of the playas or dry lakes to the northeast, and consists primarily of alluvium soils. Generally, the area alluvium is composed of unconsolidated to moderately consolidated, poorly sorted cobble, gravel, sand, silt, and clay. Elevation within the Antelope Valley ranges from 2,300 to 3,500 feet above mean sea level (amsl).

The Antelope Valley is located in a very arid part of California and as such usually receives less than 10 inches of precipitation per year, mostly in the form of rainfall; infrequent snowfall events are also known to occur within the Antelope Valley. Temperatures within the Antelope Valley range from below freezing in the winter to over 100 degrees Fahrenheit in the summer. Winter temperatures are typically above freezing.

The Overall Development vicinity, as shown in the aerial photograph provided in Figure 1, includes a variety of land uses, although a majority of the surrounding lands are unoccupied agricultural and grazing lands. The nearest unincorporated residential communities are Antelope Acres, Quartz Hill and Fairmont. The incorporated City of Lancaster is to the east of the Project sites.

Land uses surrounding the six solar Projects consist of mainly open space, light agricultural, low density single family, and undeveloped grazing lands. Historically, agriculture has been a primary land use in the Antelope Valley. Some properties in the area are still utilized for agriculture; however, the majority of properties do not have enough water to irrigate crops. Many of these properties have ceased farming activity over the last two decades and remain as unproductive fallow land. South of the Antelope Valley in the San Gabriel Mountains is the Angeles National Forest.

1.1.2.1 Zoning

Projects 2, 3, 4, and 5 are located within the County of Los Angeles Heavy Agricultural Zone (Zone A-2). Project 6 is located within the County's Desert Mountain Zone (D-2), which allows any uses permitted in Zone A-2. Zone A-2 allows electric distribution substations, electric transmission substations, and generating plants with a Conditional Use Permit (CUP). Project 1 is currently located within Zone A-1, or Light Agricultural Zone, which does not permit electric generating plants or generating plants that burn fuel within its zoning district. Therefore, a Zone Change is being processed for Project 1.

1.1.2.2 General Plan

The proposed Overall Development is expected to be consistent with the County of Los Angeles General Plan and the Antelope Valley Areawide General Plan N1 (Non-Urban 1) land use designation. The individual Projects meet the definition of a "utility installation" referenced in the listing of non-urban non-residential land uses allowed in remote areas designated Non-Urban 1. Projects 1 through 6 are all located within the County's General Plan Non-Urban designation and would not require a General Plan Amendment.

The Overall Development would first consist of construction and then operation of the six solar Projects. The SGFs would be constructed in phases and each of them operated for an estimated 35 years.

Each SGF would consist of the following elements:

- PV modules
- PV Module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing

A regional operations and maintenance (O&M) facility to serve all six SGFs would be located in an existing permitted space within Los Angeles County. Each SGF requires a CUP from Los Angeles County for the construction and operation of the SGF.

1.2 OVERALL DEVELOPMENT BACKGROUND

Silverado Power has acquired rights to the real properties and filed CUP applications with the County of Los Angeles for the six solar Projects. Environmental studies, the Overall Development siting and planning, and interconnection agreements with Southern California Edison (SCE) have been ongoing since 2010. The lead agency for this document is the County of Los Angeles. Silverado Power has held several meetings in the Antelope Valley area to inform the public about all aspects of this Overall Development. The Overall Development would begin delivering power to the SCE electrical grid in late 2013.

Each of the six solar power Projects would be designed and built in a very similar manner. Each of the six Projects would employ a series of photovoltaic (PV) module arrays to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities would deliver the electrical output to the existing regional transmission system.

The PV modules would convert sunlight into low-voltage direct current (DC) power, which is subsequently transformed into alternating current (AC) power through an inverter. The PV modules are made of a semiconductor material through which electrons flow to convert light (photons) to electricity (voltage). This process is known as the PV effect.

1.3 OVERALL DEVELOPMENT CHARACTERISTICS

The six SGFs will be designed and built in the same or similar method and will have similar Overall Development characteristics. The SGFs would utilize PV technology on fixed-tilt or tracker mounting supports. The major components of the proposed Overall Development are described as follows.

1.3.1 Solar PV Generating Facilities

The SGFs are designed for optimum performance and ease of maintenance. The Overall Development would construct series of PV module arrays mounted on racking systems, which are typically supported by a pile-driven foundation design. The foundation design would be determined based on the full geotechnical survey. The module mounting system, or racking system, would have a fixed-tilt or tracker PV array configuration and would be

oriented south to maximize the amount of incident solar radiation absorbed over the course of the year.

A series of PV arrays would be funneled and combined at combiner boxes located throughout the solar field; the electrical current would then be collected and combined prior to feeding the inverters. The solar field would be laid out in a PV block design to allow adequate area for maintenance in the way of clearances or access roads.

Inverters would be consolidated in areas to minimize cable routing and trenching and ensure minimal electrical losses. The AC out from the inverters would be routed through an AC collection system and consolidated within system switchgear. The final output from the SGF would be processed through a transformer to match the interconnection voltage. Electrical safety and protection systems would be provided to meet regulatory codes and standards. The energy would be delivered to the regional electrical distribution network.

A security perimeter fence with appropriate signage for public protection would be installed. Points of ingress/egress would be accessed by locked gates for facility services and maintenance.

Additional information for the specific elements of the SGF is provided in the following sections.

1.3.2 Photovoltaic Modules

The SGFs would require installation of PV modules. The total number of PV modules required would depend on the technology selected, optimization evaluation, and detailed design. The market conditions, economic considerations, and the environmental factors would be taken into account during the detail design process. The following PV module technologies or equivalent are being considered for incorporation into the Overall Development:

- PV thin-film technology
- PV crystalline silicon technology
- Fixed-tilt configuration
- Tracking design configuration

The modules configured with a fixed tilt would be oriented toward the south and angled at a degree that would optimize solar resource efficiency. For the tracking configuration, the modules would rotate from east to west over the course of the day. Modules would be non-reflective and highly absorptive.

1.3.3 Standard Installation, Array Assembly, and Racking

There are a variety of module mounting systems and manufactures that are available in the solar industry, the majority of which can be mounted on a variety of foundations. Fixed-tilt, single-axis trackers, and dual-axis trackers, all of which provide various levels of energy efficiency, are under consideration for the Overall Development. The final racking system would be determined by optimization evaluations and economic assessments and incorporated into the detailed design.

The module mounting system provides the structure that supports the PV module arrays. The foundations are typically cylindrical steel pipes/piles, which would be driven into the soil using pneumatic techniques, similar to hydraulic pile driving. The final foundation design would be determined based on the geotechnical survey for the Overall Development location. Once the foundation has been installed, the module mounting system would be installed to support the PV modules. For a tracking configuration, motors would be installed to drive the tracking mechanism. The PV modules would be delivered to the Overall Development location during construction to support the installation schedule.

The module mounting system would be oriented in rows within a PV design block, presenting a standard and uniform appearance across the facility. The panel configuration would be uniform in height and width.

1.3.4 Collection, Inverters, AC Collection, and Transformers

Modules would be electrically connected into strings. Each string would be funneled by electrical conduit (typically underground) wiring to combiner boxes located throughout the solar field power blocks. The output power cables from the combiner boxes would be again consolidated and feed the DC electricity to inverters, which convert the DC to AC.

Underground electrical cables would be installed using ordinary trenching techniques, which includes excavation of trenches to accommodate conduits. Wire depth, and trench backfill would be in accordance with local, state, and federal codes.

The AC energy would be stepped up to the appropriate interconnection voltage by system transformers to match the voltage at the grid interconnection. As required, switchgear cabinetry would be provided where necessary for circuit control.

All electrical inverters, transformers, and gear would be placed on concrete foundation structures. The SGFs would be designed and laid out in MW increments/blocks including inverter equipment.

Commissioning of equipment would include testing, calibration of equipment, and troubleshooting. All electrical equipment, inverters, collector system, and PV array systems would be tested prior to commencement of commercial operations.

1.3.5 SGF Substations

For SGF projects that require a new substation, the area would be appropriately graded and excavated to accommodate transformer equipment, the control building foundation, and oil containment area. Foundations for the substation would be constructed with reinforced concrete.

Structural components in the substation area would include:

- Transformers, switchgear, and safety systems
- Footings and oil containment system for transformers

1.3.6 SGF Interconnection Descriptions

Each inverter would be fully enclosed and pad mounted and will be approximately 90 inches in height. The AC output of two inverters would be fed via underground cable into the low-voltage side of the inverter step-up transformer, generally within 20 feet of the inverters. Each transformer would be mounted on a concrete pad and enclosed together with switchgear and a junction box. Transformers are typically 87 inches in height. The high-voltage output of the transformer would be combined in series via underground collector cables to the junction box of the nearest transformer, ranging from as little as 60 feet to as much as 700 feet. The collector system cables would be tied throughout the SGFs at underground junction boxes to the main underground collector cables, which would be composed of a larger wire gauge, to the location of the generator step-up transformer (GSU). The main collector cables would rise into the low-voltage busbar and protection equipment that would be enclosed together with the GSU. The primary switchgear includes the main circuit breaker and utility metering equipment, and it would be enclosed separately but pad-mounted together with the GSU. Both the GSU and the primary switchgear would stand approximately 87 inches in height. The output of the switchgear would be the start of the generation tie-line (gen-tie). The gen-tie would consist of three phases of overhead conductor and a disconnect switch on 55-foot wood poles.

1.3.7 Data Collection Systems

Each SGF facility would be designed with a comprehensive Supervisory Control and Data Acquisition (SCADA) system for remote monitoring of facility operation and/or remote control of critical components. Within the SGFs, the fiber optic, or other cabling required for the monitoring system, would be installed throughout the solar field leading to a centrally located (or series of appropriately located) SCADA system cabinets. The external telecommunications connections to the SCADA system cabinets may be through either wireless or hard-wired telecommunications to a centralized data collection center.

The system would also include a meteorological data collection system. The station would have several weather sensors: a pyranometer for measuring solar irradiance, a thermometer to measure air temperature, a barometric pressure sensor, and two wind sensors to measure speed and direction. These sensors would be connected to a data logger, which would compile the data for transmission to the data collection center.

1.3.8 Overall Development Construction

The construction for each facility would consist of three major phases: (1) site preparation, (2) PV system installation testing and startup, and (3) site cleanup/restoration. “Best Practices” would be required during all construction phases of the Overall Development. A Storm Water Pollution Prevention Plan incorporating BMPs for erosion control would be prepared and approved before the start of construction. The Overall Development would also comply with applicable post-construction water quality standards adopted by the Regional Water Quality Control Board.

1.3.9 Site Preparation

Construction of each PV facility would begin with initial clearing and grading of the staging areas. Access to the Projects from public roads would be improved to appropriate standards for the construction period. The staging areas typically include construction offices, a first aid

station and other temporary buildings, worker parking, truck loading and unloading facilities, and an area for system assembly. Road corridors would then be surveyed, cleared, and graded to bring equipment, materials, and workers to the areas under construction. Buried electrical lines, PV array locations, and the locations of other facilities may be flagged and staked in order to guide construction activities. Each SGF would be enclosed by a security fence. The fenced area would include at least two gates. A secured controlled main access gate would be located at the entrance.

BMPs for erosion control during SGF preparation, initial erosion, and sedimentation controls would be employed. In addition, water truck reloading stations (as required) would be established for dust control.

1.3.10 PV System Installation

PV system installation would include earthwork, grading, and erosion control, as well as construction of the plant substation and erection of the PV modules, supports, and associated electrical equipment. System installation would begin with teams installing the mounting and steel/concrete piers support structures. The exact design would be finalized pending evaluation of soil conditions. The methods may include (but are not limited to) vibration-driven screw piles or aboveground ballast foundations. This step would be followed by panel installation and electrical work.

Concrete would be required for the footings, foundations, pads for the transformers, and substation equipment. Concrete would be produced at an off-site location by a local provider and transported to the Overall Development Projects by truck. The enclosures housing the inverters would have a pre-cast concrete base. Final concrete specifications would be determined during detailed design engineering consistent with applicable building codes.

The PV modules require a moderately flat surface for installation. Some earthwork, including grading, fill, compaction, and erosion control cultivation, may be required to accommodate the placement of PV arrays, foundations or footings, access roads, and drainage features. Erosion control techniques used during construction may include the use of silt fencing, straw bales, temporary catch basins, inlet filters, and truck tire muck shakers. Construction of the PV arrays includes the installation of support beams, module rail assemblies, PV modules, inverters, transformers, and buried electrical cables.

Wastes generated during construction will include the following: cardboard, wood pallets, copper wire, scrap steel, common trash, and wood wire spools. Silverado Power does not expect to generate hazardous waste during construction. However, field equipment used during construction would contain various hazardous materials such as hydraulic oil, diesel fuel, grease, lubricants, solvents, adhesives, paints, and other petroleum-based products contained in construction vehicles.

1.3.11 Overall Development Operation and Maintenance

Upon commissioning, the Overall Development would enter the operational phase. For the duration of the operational phase, the Overall Development would be operated and monitored remotely, with regular on-site personnel visitations for security, maintenance, and system monitoring. There would be no full-time SGF personnel on-site during operation. The Overall

Development's PV arrays produce electricity passively with minimal moving parts; therefore, maintenance requirements would be limited. Any required planned maintenance would be scheduled to avoid peak-load periods, and unplanned maintenance would typically be responded to as needed depending on the event. An inventory of spare components would be readily available from a remote warehouse facility.

Other operational details are summarized in the following sections.

1.3.12 Operations

Silverado Power would ensure consistent and effective facility operations by:

- Responding to automated alarms based on monitored data, including actual versus expected tolerances for system output and other key performance metrics
- Communicating with customers, transmission system operators, and other entities involved in facility operations

1.3.13 Maintenance

The maintenance performed on the Projects would consist of equipment inspection and replacement. Maintenance would occur during daylight hours when possible. However, maintenance activities on the PV modules and DC systems would be performed at night. Maintenance program elements include:

- Managing a group of prequalified maintenance and repair firms who can meet O&M needs of the facility throughout its life
- Creating a responsive, optimized cleaning schedule
- Responding to plant emergencies and failures in a timely manner
- Maintaining an inventory of spare parts to ensure timely repairs and consistent plant output
- Systematically maintaining a log to effectively record and track all maintenance problems
- Performing maintenance of the SGF as required to clear obstructive ground cover

1.3.14 Security

To ensure the safety of the public and the facilities, the Projects would be fenced and signs would be posted. Security measures would be installed as necessary to prevent and/or deter unauthorized access. Access to the Projects would be controlled, and gates would be installed at the roads entering the property.

1.3.15 Land Reclamation Plan

A Reclamation (Decommissioning) Plan for each solar Project will be prepared and submitted for approval to Los Angeles County prior to the beginning of grading for each of the six Projects. The plan will assure the land is protected during operation and returned to a beneficial use upon termination of the use of the land as a solar site.

1.3.15.1 Timeline for Reclamation Plan

The life of each facility is presently proposed to be 35 years. The reclamation plan will be implemented in the early summer of the year the facility closes. Removal of the equipment will

take three months and after that, the completion of the reclamation will take two months. For example, if the facility closes by May 1, then the equipment would be removed by August 1 and the final reclamation would be completed by October 1, thus allowing the reclamation to be completed outside of the rainy season and before winter begins.

1.3.15.2 Removal of All Chemicals

Once the power facility is shut off, a first step will be to remove all chemicals, fuels, oils, transformer oils, and other potential hazards chemicals and wastes from the SGFs. These will be disposed of in accordance with Los Angeles County, California, and federal laws.

1.3.16 Removal of Equipment

All equipment and H-beam foundations will be removed from the SGFs so that it may be used as productive wildlife habitat or farmland without further work.

Solar modules will be unbolted from the support structures and consolidated in the laydown area. The modules have value and will be sold to an off-site recycler. They will be loaded onto trucks in batches and moved off-site. Bids will be taken from vendors whose costs will include purchasing the equipment and removing it from a site consolidation area.

The H-beams supporting the panels will have been driven up to 12 feet deep. These H-beams will be pulled out of the ground and the entire length of beam moved to the lay down area where they will be cleaned, stockpiled, and consolidated. The H-beams have value and will be sold to an off-site recycler. They will be loaded onto trucks in batches and moved off-site by the selected recycler.

The top layer of soil will be removed from all buried electrical conduit trenches with a backhoe and the electrical conduit will be pulled out of the ground by the backhoe. All electrical conduits will be moved to the lay down area and stockpiled. The conduit has value and will be sold to an off-site recycler. They will be loaded onto trucks in batches and moved off-site by the selected recycler.

The inverters will be removed from the SGFs and moved onto an impermeable base in the lay down area. Care will be taken that no leaks or spills occur from this temporary storage area. The inverters have value and will be sold to an off-site recycler. They will be loaded onto trucks in batches and moved off-site..

The electrical substation will be removed and the components moved to the lay down area. Care will be taken that no leaks or spills occur from this temporary storage area. The substation equipment has value and will be sold to an off-site recycler. This will be loaded onto trucks in batches and moved offsite. A bid to purchase the electrical substation “as is” and “where is” will be solicited. The concrete foundation for the substation will also be removed.

The H-beam pile foundations for the inverter boxes and the substation will be pulled up with a back hoe. None of the H-beams will be left in the ground. These will be sold to a recycler as specified above.

The chain link fence will be taken down and sold with the other scrap material. Any other miscellaneous equipment will be removed from the SGFs.

All road and pathways will be removed and restored to the previous or better condition than prior to construction.

1.3.17 Contouring, Erosion, and Sediment Control

Contouring of the SGFs will be conducted using standard grading and farming equipment to return the land to approximately match the pre-construction surface conditions. The SGFs drainage features will be restored to their original condition. Temporary erosion and sediment control measures such as use of sediment fences, hay bales, mulch, and soil stabilizers will be used as needed. As noted above the original site conditions will be recorded prior to beginning construction on the SGFs.

1.3.18 Land Reclamation

This section of the plan will provide information on the post-closure uses of the site which may be wildlife habitat, crops, or some other use. Details of ground treatments, erosion control, fertilization, seed sources, vegetation planting methods, and irrigation systems will be added to the plan before it is implemented. It is unknown at this time if solar will continue to be utilized on this land in excess of 35 years, and thus the future long-term use of the site will be updated periodically with the reclamation plan as it becomes better known.

1.4 DESCRIPTION OF SIX INDIVIDUAL SGF PROJECTS

1.4.1 Project 1 – North Lancaster Ranch

Silverado Power plans to develop the proposed North Lancaster Ranch SGF as described herein. The proposed Project would have a generating capacity of 20 megawatts alternating current (MW-AC) and be located on approximately 80 acres of primarily unproductive agricultural land in Los Angeles County. The facility would operate year-round, producing electric power during daytime hours.

1.4.1.1 Project and Interconnect Location

The North Lancaster Ranch SGF is located in an unincorporated northern section of Los Angeles County. The Project is approximately 12 miles northwest of downtown Lancaster. The power generated by the SGF would be connected to SCE's existing transmission network with the voltage transformation equipment and system safety equipment constructed on the Project. The SGF would ultimately interconnect at 34.805275°, -118.324064°. Electricity would be delivered to the existing SCE 66 kilovolt (kV) transmission line via an undergrounded 0.5-mile gen-tie originating at the DC collection system within the SGF. The 66 kV transmission line is 0.5 miles due west of the facility.

The interconnection process has been initiated and a queue position with the California Independent System Operator has been secured for 20 MW. The facility is expected to be producing power by the second quarter of 2014.

1.4.1.2 Construction

The proposed schedule is to begin Project preparation and construction in the fourth quarter of 2013, complete construction within approximately six months, and be commercially operational by the second quarter of 2014.

Construction of the Project begins with site preparation and grading through equipment setup and commencement of commercial operation. The on-site workforce would consist of laborers, electricians, supervisory personnel, support personnel, and construction management personnel. Construction would generally occur during daylight hours, Monday through Friday. Weekend and non-daylight work hours may be necessary to make up schedule deficiencies or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures. Construction activities would be conducted consistent with Los Angeles County regulations regarding hours of construction. The SGF is expected to create 100 new jobs at peak crew size during the construction phase and would provide full- and part-time positions over the life of the facility for O&M activities.

1.4.2 Project 2 – Western Antelope Blue Sky Ranch

Silverado Power plans to develop the proposed Western Antelope Blue Sky Ranch SGF as described herein. The proposed Project would have a generating capacity of 40 MW-AC and be located on 157 acres of disturbed land in Los Angeles County. Of the 157 acres, approximately 118 acres will be developed for the purpose of solar power generation. The facility would operate year-round, producing electric power during daytime hours.

1.4.2.1 Project and Interconnect Location

The Western Antelope Blue Sky Ranch SGF is located in an unincorporated northern section of Los Angeles County. The Project is approximately 11 miles west of downtown Lancaster. The power generated by the SGF would be connected to SCE's existing transmission network with the voltage transformation equipment and system safety equipment constructed on the Project. The SGF would ultimately interconnect at 34.687562°, -118.300466°. Electricity would be delivered to the existing SCE Antelope Substation via an undergrounded 2-mile gen-tie originating at the DC collection system within the SGF. The Antelope Substation is located 1.5 miles northeast of the facility.

The interconnection process has been initiated and a queue position with the California Independent System Operator has been secured for 40 MW. The facility is expected to be producing power by the fourth quarter of 2013.

1.4.2.2 Construction

The proposed schedule is to begin site preparation and construction in the first quarter of 2013, complete construction within approximately eight months, and be commercially operational by the fourth quarter of 2013.

Construction of the Project begins with site preparation and grading through equipment setup and commencement of commercial operation. The on-site workforce would consist of laborers, electricians, supervisory personnel, support personnel, and construction management personnel. Construction would generally occur during daylight hours, Monday through Friday. Weekend and non-daylight work hours may be necessary to make up schedule deficiencies or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures. Construction activities would be conducted consistent with Los Angeles County regulations regarding hours

of construction. The SGF is expected to create 140 new jobs at peak crew size during the construction phase and would provide full- and part-time positions over the life of the facility for O&M activities.

1.4.3 Project 3 – American Solar Greenworks

Silverado Power plans to develop the proposed American Solar Greenworks SGF as described herein. The proposed Project would have a generating capacity of 35 MW-AC and be located on 135.61 acres of primarily unproductive agricultural land in Los Angeles County. The facility would operate year-round, producing electric power during daytime hours.

1.4.3.1 Project and Interconnect Location

The American Solar Greenworks SGF is located in an unincorporated northern section of Los Angeles County. The Project is approximately seven miles northwest of downtown Lancaster. The power generated by the SGF would be connected to SCE's existing transmission network with the voltage transformation equipment and system safety equipment constructed on the Project. The SGF would ultimately interconnect at 34.732654°, -118.255107°. Electricity would be delivered to the existing SCE 66 kV transmission line adjacent to the northern border of the property.

The interconnection process has been initiated and a queue position with the California Independent System Operator has been secured for 35 MW. The facility is expected to be producing power by the second quarter of 2014.

1.4.3.2 Construction

The proposed schedule is to begin site preparation and construction in the fourth quarter of 2013, complete construction within approximately eight months, and be commercially operational by the second quarter of 2014.

Construction of the Project begins with site preparation and grading through equipment setup and commencement of commercial operation. The on-site workforce would consist of laborers, electricians, supervisory personnel, support personnel, and construction management personnel. Construction would generally occur during daylight hours, Monday through Friday. Weekend and non-daylight work hours may be necessary to make up schedule deficiencies or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures. Construction activities would be conducted consistent with Los Angeles County regulations regarding hours of construction. The SGF is expected to create 130 new jobs at peak crew size during the construction phase and would provide full- and part-time positions over the life of the facility for O&M activities.

1.4.4 Project 4 – Antelope Solar Greenworks

Silverado Power plans to develop the proposed Antelope Solar Greenworks SGF as described herein. The proposed Project would have a generating capacity of 52 MW-AC and be located on 256 acres of primarily unproductive agricultural land in Los Angeles County. The facility would operate year-round, producing electric power during daytime hours.

1.4.4.1 Project and Interconnect Location

The Antelope Solar Greenworks SGF is located in an unincorporated northern section of Los Angeles County. The Project is approximately 8.0 miles northwest of downtown Lancaster. The power generated by the Project would be connected to SCE's existing transmission network with the voltage transformation equipment and system safety equipment constructed on the Project. The SGF would ultimately interconnect at 34.689088°, -118.288985°. Electricity would be delivered to the existing SCE 66 kV transmission line adjacent to the southern border of the property. Additionally, this Project will have interconnection points at 34.695766°, -118.289538° and 34.704051°, -118.301546° to the existing distribution lines.

The interconnection process has been initiated and a queue position with the California Independent System Operator has been secured for 52 MW. The facility is expected to be producing power by the fourth quarter of 2013.

1.4.4.2 Construction

The proposed schedule is to begin site preparation and construction in the first quarter of 2013, complete construction within approximately nine months, and be commercially operational by the end of the fourth quarter of 2013.

Construction of the Project begins with site preparation and grading through equipment setup and commencement of commercial operation. The on-site workforce would consist of laborers, electricians, supervisory personnel, support personnel, and construction management personnel. Construction would generally occur during daylight hours, Monday through Friday. Weekend and non-daylight work hours may be necessary to make up schedule deficiencies or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures. Construction activities would be conducted consistent with Los Angeles County regulations regarding hours of construction. The SGF is expected to create 160 new jobs at peak crew size during the construction phase and would provide full- and part-time positions over the life of the facility for O&M activities.

1.4.5 Project 5 – Silver Sun Greenworks

Silverado Power plans to develop the proposed Silver Sun Greenworks SGF as described herein. The proposed Project would have a generating capacity of 20 MW-AC and be located on 80 acres of primarily unproductive agricultural land in Los Angeles County. The facility would operate year-round, producing electric power during daytime hours.

1.4.5.1 Project and Interconnect Location

The Silver Sun Greenworks SGF is located in an unincorporated northern section of Los Angeles County. The Project is approximately 11 miles west of downtown Lancaster. The power generated by the SGF would be connected to SCE's existing transmission network with the voltage transformation equipment and system safety equipment constructed on the Project. The SGF would ultimately interconnect at 34.687562°, -118.300466°. Electricity would be delivered to the existing SCE Antelope Substation via an undergrounded 3-mile gen-tie originating at the DC collection system within the SGF. The Antelope Substation is 2.5 miles southeast of the facility.

The interconnection process has been initiated and a queue position with the California Independent System Operator has been secured for 20 MW. The facility is expected to be producing power by the second quarter of 2014.

1.4.5.2 Construction

The proposed schedule is to begin site preparation and construction in the fourth quarter of 2013, complete construction within approximately eight months, and be commercially operational by the second quarter of 2014.

Construction of the Project begins with site preparation and grading through equipment setup and commencement of commercial operation. The on-site workforce would consist of laborers, electricians, supervisory personnel, support personnel, and construction management personnel. Construction would generally occur during daylight hours, Monday through Friday. Weekend and non-daylight work hours may be necessary to make up schedule deficiencies or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures. Construction activities would be conducted consistent with Los Angeles County regulations regarding hours of construction. The SGF is expected to create 100 new jobs at peak crew size during the construction phase and would provide full- and part-time positions over the life of the facility for O&M activities.

1.4.6 Project 6 – Lancaster WAD

Silverado Power plans to develop the proposed Lancaster WAD SGF as described herein. The proposed Project would have a generating capacity of 5 MW-AC and be located on 38.49 acres of primarily unproductive agricultural land in Los Angeles County. The facility would operate year-round, producing electric power during daytime hours.

1.4.6.1 Project and Interconnect Location

The Lancaster WAD SGF is located in an unincorporated northern section of Los Angeles County. The Project is approximately six miles north of downtown Lancaster. The power generated by the SGF would be connected to SCE's existing transmission network with the voltage transformation equipment and system safety equipment constructed on the Project. The SGF would ultimately interconnect at 34.776892°, -118.191271°. Electricity would be delivered to the existing SCE 12.47 kV distribution line adjacent to the southern border of the Project.

The interconnection process has been initiated and a queue position with the California Independent System Operator has been secured for 5 MW. The facility is expected to be producing power by the fourth quarter of 2013.

1.4.6.2 Construction

The proposed schedule is to begin site preparation and construction in the third quarter of 2013, complete construction within approximately five months, and be commercially operational by the fourth quarter of 2013.

Construction of the Project begins with site preparation and grading through equipment setup and commencement of commercial operation. The on-site workforce would consist of laborers, electricians, supervisory personnel, support personnel, and construction management

personnel. Construction would generally occur during daylight hours, Monday through Friday. Weekend and non-daylight work hours may be necessary to make up schedule deficiencies or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures. Construction activities would be conducted consistent with Los Angeles County regulations regarding hours of construction. The SGF is expected to create 40 new jobs at peak crew size during the construction phase and would provide full- and part-time positions over the life of the facility for O&M activities.

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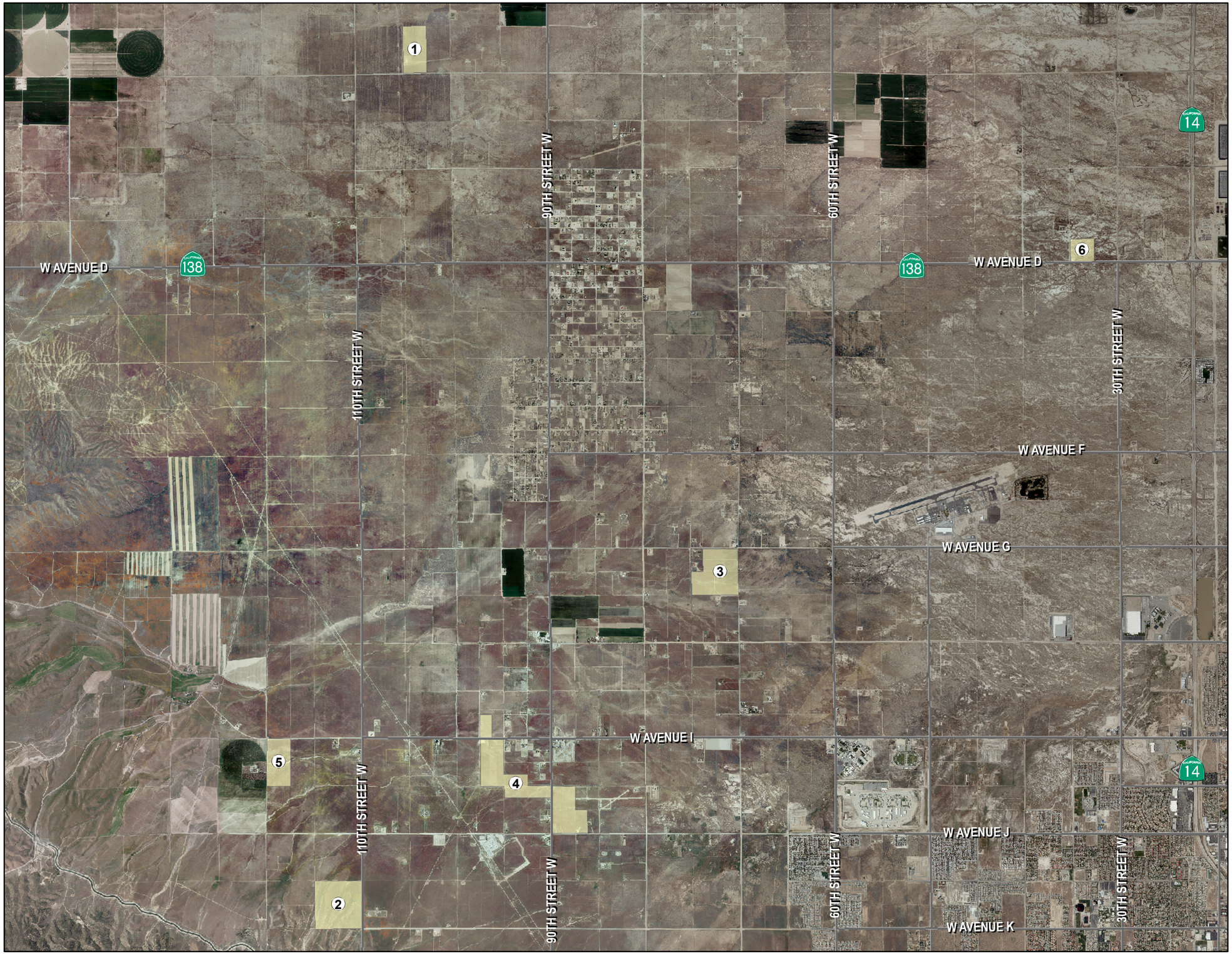
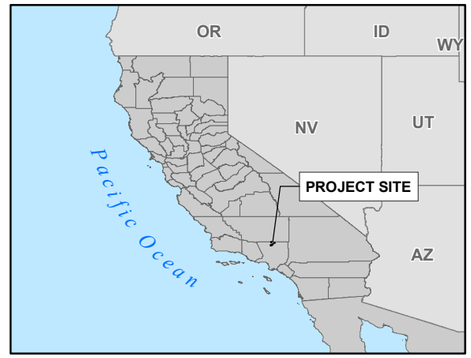


SILVERADO power

SILVERADO POWER WEST
LOS ANGELES COUNTY



LEGEND

PROJECT 1 - NORTH LANCASTER RANCH

PROJECT 2 - WESTERN ANTELOPE BLUE SKY RANCH

PROJECT 3 - AMERICAN SOLAR GREENWORKS

PROJECT 4 - ANTELOPE SOLAR GREENWORKS

PROJECT 5 - SILVER SUN GREENWORKS

PROJECT 6 - LANCASTER WAD

NOTE:
(a) State Plane, Zone V (NAD83), US Survey Feet.
(b) Source Data: ESRI, TTEC.

FIGURE 1
SILVERADO POWER WEST
LOS ANGELES COUNTY
PROJECTS

0 0.5 1 2
Miles

TETRA TECH EC, INC.

NOTICE OF PREPARATION AND NOTICE OF SCOPING MEETING

DATE: June 13, 2012

OVERALL DEVELOPMENT TITLE: Silverado Power West Los Angeles County Project 1: R2011-00833 (CUP201100079, RZC201100005), North Lancaster Ranch / Project 2: R2011-00798 (CUP201100070), Western Antelope Blue Sky Ranch / Project 3: R2011-00799 (CUP201100071), American Solar Greenworks / Project 4: R2011-00807 (CUP201100076), Antelope Solar Greenworks / Project 5: R2011-00801 (CUP201100072), Silver Sun Greenworks / Project 6: R2011-00805 (CUP201100074), Lancaster WAD / Environmental Review No. ENV201100109

PROJECT ADDRESSES: Project 1: 105th Street West & West Avenue B, Lancaster, CA Project 2: 110th Street West & West Avenue K, Lancaster, CA Project 3: 70th Street West & West Avenue G, Lancaster, CA Project 4: 97th Street West & West Avenue I, Lancaster, CA Project 5: 120th Street West & West Avenue I, Lancaster, CA Project 6: 35th Street West & West Avenue D, Lancaster, CA

OVERALL DEVELOPMENT APPLICANT: Silverado Power, LLC 44 Montgomery Street, Ste. 3065 San Francisco, California 94104

CEQA LEAD AGENCY: County of Los Angeles Department of Regional Planning 320 W. Temple Street, Room 1348 Los Angeles, California 90012 The County of Los Angeles is the lead agency and will prepare the Environmental Impact Report (EIR) for six proposed solar generating facilities (SGFs) referred to as the "Overall Development". In compliance with Section 15082 of the California Environmental Quality Act (CEQA) Guidelines, the County of Los Angeles is sending this Notice of Preparation (NOP) to each responsible agency, interested parties, and federal agencies involved in approving the proposed Overall Development and to trustee agencies responsible for natural resources affected by the proposed Overall Development. Within 30 days after receiving the Notice of Preparation, each agency shall provide the County of Los Angeles with specific written details about the scope and content of the environmental information related to the agency's area of statutory responsibility. The purpose of this NOP is to solicit the views of your agency as to the scope and content of the environmental information germane to your agency's statutory authority with respect to the proposed Overall Development. Your agency may need to use the EIR prepared by our agency when considering your permit or other approval for the proposed Overall Development.

Overall Development Location

The Overall Development is located in the northern portion of unincorporated Los Angeles County, in the western portion of the Antelope Valley. The applicant, Silverado Power, proposes to develop six solar generating facilities at six site locations throughout western Antelope Valley. These six sites together would include development of approximately 747.1 acres and would produce 172 megawatts (MW) of solar power in total. The Overall Development is primarily located on fallow unproductive farmland. The area where these sites are located is rural land west of the State Highway 14.

Overall Development Description

Silverado Power, LLC (Silverado Power) is a utility scale solar photovoltaic (PV) developer proposing the development of six solar PV sites (referred to as the Overall Development) addressed in this EIR. The Overall Development is located in an area of the western Antelope Valley that was historically used for agricultural activities. Production and economic constraints led to the cessation of agricultural activities in the area, resulting in disturbed and vacant land. Silverado Power has located six SGFs on disturbed and vacant land throughout the western Antelope Valley. The Overall Development proposes to increase electricity generated from renewable technology by generating 172 MW of electrical energy from the sun. Recent legislation enacted in California encourages the development of renewable energy resources to reduce reliance on fossil fuels, diversify energy portfolios, reduce greenhouse gas emissions, and assist creation of "green" jobs within the state of California. The Overall Development proposes to assist California in meeting the newly established Renewable Energy Portfolio Standards (RPS). Senate Bill 14 established RPS targets for California, stating, "all retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020." State government agencies have been directed to take all appropriate actions to implement this target in all regulatory proceedings, including siting, permitting, and procurement for renewable energy power plants and transmission lines. The six sites qualify as an eligible renewable energy resource as defined by the California Public Resources Code. The Overall Development proposes siting to limit impacts to the environment and the local community by: · Using disturbed land or land that has been previously degraded from prior use · Using existing electrical distribution facilities, rights-of-way, roads, and other existing infrastructure where possible to reduce the need for new electrical support facilities · Limiting impacts to threatened or endangered species or their habitats, wetlands and waters of the United States, cultural resources, and sensitive land uses · Limiting water use Silverado Power has acquired rights to the real properties and filed zoning applications with the County of Los Angeles for the six solar sites. Environmental studies, Overall Development siting and planning, and interconnection agreements have been ongoing since 2010. The lead agency for this document is the County of Los Angeles. Silverado Power has held several meetings in the Antelope Valley area to inform the public about all aspects of the Overall Development. The Overall Development proposes delivering power to the Southern California Edison (SCE) electrical grid beginning in late 2013. The SGFs would be constructed in phases, followed by commercial operation for an estimated 35 years. Each of the six SGFs would be designed and built using the same or similar method. The Overall Development would employ a series of photovoltaic (PV) module arrays to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities would deliver the electrical output to the existing regional transmission system. The PV modules would convert sunlight into low-voltage direct current (DC) power, which is subsequently transformed by an inverter into alternating current (AC) power. The PV modules are made of a semiconductor material through which electrons flow to convert light (photons) to electricity (voltage). Each SGF would consist of the following elements: · PV modules · PV Module mounting system · Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects) · Electrical inverters and transformers · Electrical AC collection system, including switchgear · Data monitoring equipment · Access roads and chain link perimeter security fencing A regional Operations and Maintenance (O&M) facility to serve all six SGFs would be located in an existing permitted space within Los Angeles County. Each SGF requires a CUP from Los Angeles County for the construction and operation of the SGF.

Entitlement Requirements and Discretionary Approvals

Discretionary approvals required for implementation of the proposed Overall Development may include, but are not limited to, the following: · Certification of an Environmental Impact Report · Zone Change for Project 1 from A-1 (Light Agricultural) to A-2 (Heavy Agricultural) · Approval of six Conditional Use Permits, one for each of the SGFs, to authorize the development of Projects 1-6 to operate a SGF · Additional County and other governmental actions as determined necessary

General Plan Designation

The Antelope Valley Areawide General Plan designation for the Project sites is N1 (Non-Urban 1).

Board of Supervisors District

District 5, Michael Antonovich.

Environmental Issues to be Evaluated in the EIR ·

Aesthetics* · Agricultural Resources · Air Quality* · Biological* · Cultural* · Energy · Geology and Soils* · Hazards and Hazardous Materials · Hydrology and Water Quality* · Land Use and Planning · Noise* · Public Services · Transportation and Traffic* · Utilities and Service Systems · Climate Change and Green House Gases, GHG*

*Technical Studies being prepared

Notice of Preparation Review and Comments

The review period for the NOP will be from **June 20, 2012** to **July 20, 2012**. Due to the time limits mandated by state law, your response must be sent at the earliest possible date, but not later than July 23, 2012. Please direct all written comments to the following address. In you written response, please include the name of a contact person in your agency. Carolina Blengini County of Los Angeles Regional Planning Department Special Projects Section 320 West Temple Street, Room 1362 Los Angeles, California 90012 Tel: (213) 974-1522 Fax: (213) 626-0434 Email: cblengini@planning.lacounty.gov

Public Scoping Meeting

To assist in local participation, a Scoping Meeting will be held to describe the proposed Overall Development and to solicit suggestions from the public and responsible agencies regarding the content of the Draft EIR.

Date: Saturday, July 14, 2012 from 9:00 a.m. to 1:00 p.m.

Location**:** Lancaster Library, 601 West Lancaster Boulevard. Lancaster, CA 93534

Location of Review Materials

The County of Los Angeles Department of Regional Planning is soliciting input based on your views and opinions concerning the scope of the EIR for the proposed Overall Development. Additional copies of the Notice of Preparation are available for the public review on the Department of Regional Planning website http://planning.lacounty.gov/case/view/silverado/ , as well as at the follow libraries:

Lancaster Library
601 West Lancaster Blvd.
Lancaster, CA 93534

Quartz Hill Library
42018 North 50th St.
West Quartz Hill, CA 93536

Canyon Country Jo Anne Darcy Library
18601 Soledad Canyon Rd.
Santa Clarita, CA 91351

Antelope Valley Bookmobile
601 West Lancaster Blvd.
Lancaster, CA 93534

Lake Los Angeles Library
16921 East Avenue O, #A
Palmdale, CA 93591
6/20/12

CNS-2332223#

APPENDIX A-2

INITIAL STUDY

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Environmental Checklist Form (Initial Study)

County of Los Angeles, Department of Regional Planning

Overall Development title: Silverado Power West Los Angeles County ENV No 201100109: Project 1: North Lancaster Ranch, Project No. R2011-00833, CUP No. 201100079; Project 2: Western Antelope Blue Sky Ranch, Project No. R2011-00798, CUP No. 201100070; Project 3: American Solar, Project No. R2011-00799, CUP No. 201100071; Project 4: Antelope Solar Greenworks, Project No. R2011-00807, CUP No. 201100076; Project 5: Silver Sun Greenworks, Project No. R2011-00801, CUP No. 201100072; Project 6: Lancaster WAD, Project No. R2011-00805, CUP No. 201100074.

Lead agency name and address: Los Angeles County Department of Regional Planning
320 W Temple St., Los Angeles, CA 90012

Contact Person and phone number: Carolina Blengini, 213-974-1522

Overall Development's sponsor's name and address: Silverado Power, LLC – 44 Montgomery Street, Ste. 3065, San Francisco, CA 94104

Overall Development locations: Project 1: 105th Street West & West Avenue B, Lancaster, CA, APN 3262-001-006; Project 2: 110th Street West & West Avenue K, Lancaster, CA, APN 3267-015-001; Project 3: 70th Street West & West Avenue G, Lancaster, CA, APN 3268-018-035, 3268-018-002, 3268-018-036; Project 4: 97th Street West & West Avenue I, Lancaster, CA, APNs 3218-002-018, 3218-002-023, 3203-002-015, 3203-002-017, 3218-001-002, 3218-001-003, 3218-001-004, 3203-002-011, 3203-002-012, 3203-002-013, 3203-002-014, 3219-019-011; Project 5: 120th Street West & West Avenue I, Lancaster, CA, APN 3267-003-001; Project 6: 35th Street West & West Avenue D, Lancaster, CA, APN 3115-010-004.
USGS Quads: Little Buttes, Del Sur and Rosamond

Gross Acreage: Project 1: 80 acres, Project 2: 157 acres, Project 3: 135.61 acres, Project 4: 256 acres, Project 5: 80 acres, Project 6: 38.49 acres.

General plan designation: The Antelope Valley Areawide General Plan designates the locations of Projects 1 – 6 as "N1 – Non-Urban 1" uses.

Community/Area Wide Plan Designation: The Antelope Valley Areawide General Plan designates the locations of Projects 1 – 6 N1 (Non-Urban 1 – 0.5 du/acre)

Zoning: Project 1: A-1-2 (Light Agriculture – two acres minimum lot size); Project 2: A-2-5 (Heavy Agriculture – five acres minimum lot size); Project 3: A-2-2 (Heavy Agriculture – two acres minimum lot size); Project 4: A-2-2 (Heavy Agriculture – two acres minimum lot size); Project 5: A-2-5 (Heavy Agricultural – 5 acre minimum lot size); Project 6: D-2-2 (Desert-Mountain – two acres minimum lot size)

Description of Overall Development: Silverado Power, LLC (the "Applicant") proposes to develop six solar photovoltaic generating facilities (SGFs) in the northern portion of unincorporated Los Angeles County. These six facilities will collectively cover 747.1 acres of fallowed and mostly disturbed agricultural land, and will generate 172 megawatts (MW) of electricity. For the purpose of this Initial Study, the terms "Projects 1 – 6" and "Overall Development" will refer to Projects 1, 2, 3, 4, 5 and 6 and their associated

generation tie lines. A list of corresponding project names and project numbers are located in the Project Description.

The Overall Development will consist of construction and operation of the six SGFs. The SGFs will be constructed in phases and each project will be operated for an estimated 35 years. The six SGFs will be designed and built in the same or similar method and will have similar project characteristics. The SGFs will utilize PV technology on fixed-tilt or tracker mounting supports. The SGF design includes a dedicated 10,000-gallon fire water storage tank to be installed and maintained at Projects 1 – 6 in compliance with LA County Fire Department Regulation 19 and other applicable Fire Department water tank specifications. A regional Operations and Maintenance (O&M) facility will serve all six SGFs and will be located in an existing permitted space within Los Angeles County.

The purpose of the Overall Development is to generate 172 MW of clean, renewable, electric energy, using solar PV technology, and to deliver the electric output, on a wholesale basis, to utility providers. The SGFs will meet the increasing demand for electricity generated from renewable technology in support of recent legislation enacted in California recognizing the multiple benefits associated with the development of renewable energy resources. These SGFs will lead to reduced reliance on fossil fuel sources, diversification of energy portfolios, reduction in greenhouse gas emissions, and the creation of "green" jobs within the state of California.

The Applicant is requesting a Conditional Use Permit (CUP) for each of the six projects to allow for the construction and operation of the SGFs. Additionally, the Applicant is requesting a zone change from Zone A-1 to A-2 on Project 1 to allow for the construction and operation of the SGF, pursuant to the issuance of a CUP.

Surrounding land uses and setting: Projects 1 – 6 are located in an area of the Antelope Valley that had primarily been used for farming in previous years. However, diminished water supplies from extended ground water pumping have caused many farms to cease operation. The majority of the land for the six projects was utilized for farming although all of the lands are now considered disturbed or unproductive agricultural land.

Other public agencies whose approval may be required (e.g., permits, financing approval, or participation agreement):

Public Agency	*Approval Required*
_____	_____
_____	_____

Major projects in the area:

Project/Case No.	*Description and Status*
R2010-00808	Antelope Valley Solar/Renewable Resources Group – 650 MW/5175 acres – Approved October 19, 2011
R2008-00878	Antelope Solar 2/Recurrent Energy – 10 MW/80 acres – early environmental review
R2010-00256	Wildflower Green Energy Farm/Element Power – 300 MW/3708 acres – Notice of Preparation
R2010-00911	Antelope Solar 1/Recurrent Energy – 10 MW/111 acres – early environmental review
R2011-00408	Blue Sky Wind Energy Project/Next Era – 225 MW/7500 acres – Notice of Preparation
R2011-00377	Antelope Solar Farm/Sun Edison – 20 MW/320 acres – early

R2005-02587	environmental review All Nations International – Retreat center/single-family residence/residential facilities – 12.6 acres - Approved

Reviewing Agencies:

Responsible Agencies

- ☐ None
- Regional Water Quality Control Board:
  - ☐ Los Angeles Region
  - ☒ Lahontan Region
- ☐ Coastal Commission
- ☒ Army Corps of Engineers
- ☒ CA Public Utilities Commission
- ☒ California Energy Commission
- ☒ Caltrans Aeronautics
- ☒ Caltrans

Special Reviewing Agencies

- ☐ None
- ☒ Santa Monica Mountains Conservancy
- ☐ National Parks
- ☒ National Forest
- ☒ Edwards Air Force Base
- ☐ Resource Conservation District of Santa Monica Mountains Area
- ☒ Southern California Edison
- ☒ City of Lancaster and Palmdale
- ☒ Antelope Valley AQMD
- ☒ Antelope Valley Conservancy
- ☒ Antelope Acres Town Council
- ☒ Quartz Hill Town Council
- ☒ Fairmont Town Council
- ☒ Nature Conservancy
- ☒ SCAG; CHP
- ☒ Federal Aviation Administration
- ☒ General William J. Fox Airfield

Regional Significance

- ☐ None
- ☐ SCAG Criteria
- ☒ Air Quality
- ☐ Water Resources
- ☐ Santa Monica Mtns. Area

Trustee Agencies

- ☐ None
- ☒ State Dept. of Fish and Game
- ☐ State Dept. of Parks and Recreation
- ☐ State Lands Commission
- ☐ University of California (Natural Land and Water Reserves System)
- ☒ U.S. Fish & Wildlife

County Reviewing Agencies

- ☒ DPW:
  - Land Development Division (Grading & Drainage)
  - Geotechnical & Materials Engineering Division
  - Watershed Management Division (NPDES)
  - Traffic and Lighting Division
  - Environmental Programs Division
  - Waterworks Division
- ☒ Fire Department
  - Forestry, Environmental Division
  - Planning Division
  - Land Development Unit
  - Health Hazmat
- ☐ Sanitation District
- ☒ Public Health/Environmental Health Division: Land Use Program (OWTS), Toxics Epidemiology Program (Noise)
- ☒ Sheriff Department
- ☐ Parks and Recreation
- ☐ Subdivision Committee

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project.

☒ Aesthetics	☒ Greenhouse Gas Emissions	☐ Population/Housing
☒ Agriculture/Forest	☒ Hazards/Hazardous Materials	☒ Public Services
☒ Air Quality	☒ Hydrology/Water Quality	☐ Recreation
☒ Biological Resources	☒ Land Use/Planning	☒ Transportation/Traffic
☒ Cultural Resources	☐ Mineral Resources	☒ Utilities/Services
☒ Energy	☒ Noise	☒ Mandatory Findings of Significance
☒ Geology/Soils		

DETERMINATION: (To be completed by the Lead Department.)
On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature (Prepared by) — Date: 6/13/12

Signature (Approved by) — Date: 10/13/12

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources the Lead Department cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the Lead Department has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level. (Mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced.)

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA processes, an effect has been adequately analyzed in an earlier EIR or negative declaration. (State CEQA Guidelines § 15063(c)(3)(D).) In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of, and adequately analyzed in, an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

7) The explanation of each issue should identify: the significance threshold, if any, used to evaluate each question, and; mitigation measures identified, if any, to reduce the impact to less than significance. Sources of thresholds include the County General Plan, other County planning documents, and County ordinances. Some thresholds are unique to geographical locations.

8) Climate Change Impacts: When determining whether a project's impacts are significant, the analysis should consider, when relevant, the effects of future climate change on : 1) worsening hazardous conditions that pose risks to the project's inhabitants and structures (e.g., floods and wildfires), and 2) worsening the project's impacts on the environment (e.g., impacts on special status species and public health).

1. AESTHETICS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☒	☐	☐	☐

The areas of development will be located in the Antelope Valley which is an area characterized by an expansive arid landscape and long-distance views. Projects 1 – 6 and surrounding lands have relatively flat terrain with varying degrees of disturbances due to previous land use activities, including agricultural use. The most prominent visual feature of Projects 1 – 6 will be the solar module arrays. The module heights are expected to be six and a half feet with a maximum of twelve feet above grade. Projects 1 – 6 will also include security fencing, onsite substations, generation tie lines, utility poles, and other telecommunications equipment.

Projects 1 – 6 are not located within scenic hillside or ridgeline areas or located in the direct vicinity of any designated scenic highways or designated scenic corridors; however, the proposed solar module arrays may be visible from second priority scenic routes. Development of the solar generating facilities may also affect viewsheds from and of public recreation areas in the vicinity of the SGFs. Further analysis of this issue will be included in the EIR.

b) Be visible from or obstruct views from a regional riding or hiking trail?	☒	☐	☐	☐

Projects 1 – 6 and surrounding lands have been disrupted by past agricultural activities and do not have natural terrain or other features with high scenic quality. Projects 1 – 6 do not infringe on any riding or hiking trails; however, several trails are located in the vicinity of the SGFs. Further analysis of potential impacts to recreational trails will be included in the EIR.

c) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☒	☐	☐	☐

The solar generating facilities and underground transmission line corridors consist of primarily disturbed lands. Projects 1 – 6 will not impact any important historically significant building. Projects 1 – 6 do not contain any rock outcrops, trees or other prominent visual features; however, some proposed SGFs are potentially located within the viewshed of scenic resources and are located in the vicinity of primarily undisturbed areas. Further analysis of potential impacts to scenic resources will be included in the EIR.

d) Substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?	☒	☐	☐	☐

The SGFs' height, bulk, pattern, and scale will not substantially conflict with the visual character of existing agricultural use. The height of the most prominent structures within Projects 1 – 6, the solar module arrays, will be no more than twelve feet above grade, and will be similar in height to existing features such as rural houses and farm support structures. Other prominent features of the SGFs include substations, utility poles

approximately 30 to 60 feet in height, and other telecommunications equipment. Further analysis of potential degradation of the existing visual character of the development areas and surrounding areas will be included in the EIR.

e) Create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area?	☒	☐	☐	☐

Significant shadow impacts are not anticipated to occur due to Projects 1 – 6. The photovoltaic technology proposed for use at Projects 1 – 6 includes surfaces designed to absorb as much light as possible, and therefore do not create a significant source of glare. The SGFs will include the use of night lighting for both safety and security purposes, which may adversely affect nighttime views in the area adjacent to Projects 1 – 6. Further analysis of the potential to adversely affect nighttime views will be included in the EIR.

2. AGRICULTURE / FOREST

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☒	☐	☐	☐

Project 4 contains land designated as Prime Farmland, although recent agricultural activity has ceased. Development of a solar generation facility will preclude farming in this area. Further analysis of the effects of converting farmland to non-agricultural uses will be included in the EIR.

b) Conflict with existing zoning for agricultural use, with a designated Agricultural Opportunity Area, or with a Williamson Act contract?	☒	☐	☐	☐

Projects 1 – 6 contain lands that have been used for a variety of agricultural purposes. Project 1 is designated A-1, which does not contain provisions for renewable energy development; therefore a zone change application has been submitted. Projects 2, 3, 4, and 5 are designated A-2, and Project 6 is designated D-2. Both A-2 and D-2 zoning classifications identify renewable energy development as a conditionally permitted use. Projects 1 – 6 are not under a Williamson Act Contract, nor are they designated in an Agricultural Opportunity Area. Further analysis of the effects of converting farmland to non-agricultural uses will be included in the EIR.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code § 12220 (g)), timberland (as defined in Public Resources Code § 4526), or timberland zoned Timberland Production (as defined in Government Code § 51104(g))?	☐	☐	☐	☒

Projects 1 – 6 do not include forest land, timberland, or timberland zoned Timberland Production. Therefore, there will be no impact.

d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

Projects 1 – 6 do not include forest land. Therefore, there will be no impact.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☒	☐

Projects 1 – 6 will not preclude the future use of land for agricultural use. Projects 1 – 6 will also not affect any land use outside of the development sites' limits. Conversion of Prime Farmland at the location of Project 4 to non-agricultural use will be evaluated in the EIR, as discussed previously in item (a), above.

3. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Conflict with or obstruct implementation of applicable air quality plans of either the South Coast AQMD (SCAQMD) or the Antelope Valley AQMD (AVAQMD)?	☒	☐	☐	☐

Projects 1 – 6 are located within the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD), therefore the air quality analysis shall follow the AVAQMD's guidelines. Projects 1 – 6 air quality analyses and greenhouse gas analyses will be prepared to quantify Projects 1 – 6 emissions during short term construction and long term operation activities, as they relate to significance thresholds established by the AVAQMD. Further analysis of emissions will be included in the EIR.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐	☐	☐

Projects 1 – 6 air quality analyses and greenhouse gas analyses will be prepared to quantify emissions during short term construction and long term operation activities, as they relate to significance thresholds established by the AVAQMD. These analyses will include Projects 1 – 6 impacts on existing and projected air quality violations. Further analysis of emissions will be included in the EIR.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☒	☐	☐	☐

The above mentioned air quality and greenhouse gas emissions studies will include Projects 1 – 6 impacts on non-attainment status for the Mojave Desert Air Basin as defined by applicable federal and state ambient air quality standards. Further analysis of emissions, including cumulative impacts, will be included in the EIR.

d) Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐

Sensitive receptors are defined as populations that are more susceptible to the effects of pollution than the population at large. Sensitive receptors include long-term health care facilities, convalescent centers, hospitals, residences, playgrounds, rehabilitation centers, retirement homes, schools, child care centers, and athletic facilities. Projects 1 – 6 may contain areas of development in the vicinity of sensitive receptors. Considering the character of the SGFs and the short term temporary construction activities, it is not likely that the proposed SGFs will result in potentially significant impacts. However, in order to analyze the

impacts of Projects 1 – 6 to potential sensitive receptors, additional air quality and greenhouse gas analyses will be conducted to quantify the impacts on sensitive receptors during short term construction and during long-term operation of the SGFs. Further analysis of emissions with respect to sensitive receptors will be included in the EIR.

e) Create objectionable odors affecting a substantial number of people? ☒ ☐ ☐ ☐

Long term operation of the SGFs will not generate objectionable odors. Projects 1 – 6 have the potential to generate objectionable odors during short term construction activities. Potential sources of objectionable odors may include diesel exhaust from construction equipment, and dust. Further analysis of impacts with regard to the creation of objectionable odors will be included in the EIR.

4. BIOLOGICAL RESOURCES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game (CDFG) or U.S. Fish and Wildlife Service (USFWS)?	☒	☐	☐	☐

The location of Project 1 contains vegetative communities consisting of the following classifications: Disturbed, Disturbed Saltbrush Scrub, and developed. The location of Project 2 contains vegetative communities consisting of the following classifications: Ruderal vegetation, Valley Needlegrass Grassland, Non-native Annual Grasslands, Desert Saltbrush Scrub, and Rubber Rabbitbrush Scrub. The location of Project 3 contains vegetative communities consisting of the following classifications: non-native annual grassland and Disturbed Rubber Rabbitbrush Scrub. The location of Project 4 contains vegetative communities consisting of the following classifications: non-native annual grassland, Rubber Rabbitbrush Scrub, Tamarisk Scrub, Valley Needlegrass Grassland, and Ruderal. The location of Project 5 contains vegetative communities consisting of the following classifications: non-native annual grassland, Rubber Rabbitbrush Scrub, and Valley Needlegrass Grassland, and Developed. The location of Project 6 contains vegetative communities consisting of the following classifications: Desert Saltbrush Scrub, Disturbed Desert Saltbrush Scrub, and Saltgrass Grassland.

According to previously completed Biological Technical Reports, the location of Project 1 has the potential to provide suitable habitat, or foraging area, for the following species identified as candidate, sensitive, or special status: American badger, ferruginous hawk, merlin, Le Conte's thrasher, mountain plover, burrowing owl, loggerhead shrike, and Swainson's hawk. The location of Project 2 has the potential to provide suitable habitat, or foraging area, for the following species identified as candidate, sensitive, or special status: ferruginous hawk, coast horned lizard, and burrowing owl. The location of Project 3 has the potential to provide suitable habitat, or foraging area, for the following species identified as candidate, sensitive, or special status: merlin, silvery legless lizard, burrowing owl, and ferruginous hawk. The location of Project 4 has the potential to provide suitable habitat, or foraging area, for the following species identified as candidate, sensitive, or special status: silvery legless lizard, burrowing owl, coast horned lizard, and ferruginous hawk. The location of Project 5 has the potential to provide suitable habitat, or foraging area, for the following species identified as candidate, sensitive, or special status: American badger, ferruginous hawk, coast horned lizard, and burrowing owl. The location of Project 6 has the potential to provide suitable habitat, or foraging area, for the following species identified as candidate, sensitive, or special status: Bell's sage sparrow, coast horned lizard, Cooper's hawk, ferruginous hawk, least Bell's vireo, Le Conte's thrasher, Mohave ground squirrel, mountain plover, Swainson's hawk, burrowing owl, and loggerhead shrike.

Projects 1 – 6 have the potential to significantly impact, either directly or indirectly through habitat modifications, several candidate, sensitive, or special status species as identified by the California Department of Fish and Game or U.S. Fish and Wildlife Service. Further analysis of potential impacts to these species will be included in the EIR.

b) Have a substantial adverse effect on any sensitive natural communities (e.g., riparian habitat, coastal sage scrub, oak woodlands, non-jurisdictional wetlands) identified in local or regional plans, policies, regulations or by CDFG or USFWS? ☒ ☐ ☐ ☐

The location of Project 1 contains vegetative communities consisting of the following classifications: Disturbed, Disturbed Saltbrush Scrub, and developed. The location of Project 2 contains vegetative communities consisting of the following classifications: Ruderal vegetation, Valley Needlegrass Grassland, Non-native Annual Grasslands, Desert Saltbrush Scrub, and Rubber Rabbitbrush Scrub. The location of Project 3 contains vegetative communities consisting of the following classifications: non-native annual grassland and Disturbed Rubber Rabbitbrush Scrub. The location of Project 4 contains vegetative communities consisting of the following classifications: non-native annual grassland, Rubber Rabbitbrush Scrub, Tamarisk Scrub, Valley Needlegrass Grassland, and Ruderal. The location of Project 5 contains vegetative communities consisting of the following classifications: non-native annual grassland, Rubber Rabbitbrush Scrub, and Valley Needlegrass Grassland, and Developed. The location of Project 6 contains vegetative communities consisting of the following classifications: Desert Saltbrush Scrub, Disturbed Desert Saltbrush Scrub, and Saltgrass Grassland.

Projects 1 – 6 have the potential to significantly impact sensitive natural communities. Further analysis of potential impacts to these sensitive natural communities will be included in the EIR.

c) Have a substantial adverse effect on federally or state protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, and drainages) or waters of the United States, as defined by § 404 of the federal Clean Water Act or California Fish & Game code § 1600, et seq. through direct removal, filling, hydrological interruption, or other means? ☒ ☐ ☐ ☐

Preliminary assessments for jurisdictional features have been conducted at the locations of Projects 1 – 6. The preliminary assessment at the location of Project 1 did not indicate the presence of jurisdictional features. The preliminary assessment at the location of Project 2 indicated the presence of man-made drainages. These features may be subject to state jurisdiction. The preliminary assessment at the location of Project 3 indicated the presence of man-made irrigation ditches, and natural depressions and swales. These features may be subject to state jurisdiction. The preliminary assessment at the location of Project 4 indicated the presence of an agricultural drainage, natural depressions and swales. These features may be subject to state jurisdiction. The preliminary assessment at the location of Project 5 indicated the presence of man-made agricultural irrigation basins and canals. These features may be subject to state jurisdiction. The preliminary assessment at the location of Project 6 indicated the presence of a man-made irrigation ditch and cracked clay soils indicative of pooling water. These features may be subject to state jurisdiction. The potential to have a significant adverse effect on a jurisdictional feature exists at the locations of Projects 1 – 6. Further analysis of potential impacts to these features will be included in the EIR.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery ☒ ☐ ☐ ☐

sites?

Projects 1 – 6 are located within an area of topographically homogeneous open space, and there are no local constraints to movement that development will impair.

Wildlife nursery sites may comprise nesting sites of native bird species, which are protected by the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755) and the California Fish and Game Code Section 3503.

Suitable habitat for ground-nesting birds and burrowing owl is present at the locations of Projects 1 – 6. Development related activities have the potential to disturb suitable bird nesting habitat. Further analysis of potential impacts to these species will be included in the EIR.

e) Convert oak woodlands (as defined by the state, oak woodlands are oak stands with greater than 10% canopy cover with oaks at least 5 inch in diameter measured at 4.5 feet above mean natural grade) or otherwise contain oak or other unique native trees (junipers, Joshuas, southern California black walnut, etc.)? ☐ ☐ ☐ ☒

Projects 1 – 6 do not contain oak, juniper, Joshua trees, or other unique native trees.

f) Conflict with any local policies or ordinances protecting biological resources, including Wildflower Reserve Areas (L.A. County Code, Title 12, Ch. 12.36), the Los Angeles County Oak Tree Ordinance (L.A. County Code, Title 22, Ch. 22.56, Part 16), the Significant Ecological Areas (SEAs) (L.A. County Code, Title 22, § 22.56.215), and Sensitive Environmental Resource Areas (SERAs) (L.A. County Code, Title 22, Ch. 22.44, Part 6)? ☐ ☐ ☐ ☒

Projects 1 – 6 do not contain or conflict with any SEAs, Wildflower Reserve Areas, or SERAs. Project 5 is the most proximate site to a SEA. The Portal Ridge-Liebre Mountain SEA is located approximately 2.6 miles to the southwest of Project 5, and the Fairmont & Antelope Buttes SEA is located approximately 2.5 miles northwest of Project 5. The Angeles National Forest is located approximately six miles south of Project 5 and the Antelope Valley California Poppy Preserve is located approximately three miles northwest of Project 5. Projects 1 – 4 and Project 6 are located between 3 to over 15 miles outside of the nearest SEA, SERA and other biological resource areas. Therefore, the SGFs will not conflict with any local policies or ordinances protecting biological resources.

g) Conflict with the provisions of an adopted state, regional, or local habitat conservation plan? ☐ ☐ ☐ ☒

There are no adopted state, regional, or local habitat conservation plans in effect within Projects 1 – 6 boundaries.

5. CULTURAL RESOURCES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines § 15064.5?	☒	☐	☐	☐

Historical records review included a cultural resource literature search of Projects 1 – 6 and vicinity at the South Central Coastal Information Center (SCCIC), at California State University, Fullerton; a review of geological maps and Los Angeles County Museum Records; and sacred lands records search with the Native American Heritage Commission (NAHC). In addition, archaeological block-transect surveys were undertaken by the environmental consultant to identify new and previously recorded cultural resources (if any) therein. Review of historical records and pedestrian surveys revealed no historic structures within the boundaries of Projects 1 – 6. Research indicated that there is a potential for historical resources to be encountered Project 4. Further research and potential impacts will be evaluated and discussed in the EIR.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines § 15064.5?	☒	☐	☐	☐

Projects 1 – 6 do not contain features that may indicate potential archaeological sensitivity, such as rock outcroppings, knolls, oak trees, or springs. However, since Projects 1 – 6 will require excavation and grading during the construction phase, the potential cannot be ruled out for the discovery of buried cultural resources not detected through surface inventory or through shovel testing. Since the proposed development may result in impacts related to the disturbance of archeological resources, the potential impacts will be discussed further in the EIR.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, or contain rock formations indicating potential paleontological resources?	☒	☐	☐	☐

Surface grading or shallow excavations in certain Quaternary alluvial deposits, either within the older Quaternary fan deposits or the younger Quaternary basin deposits typically found at the surface throughout the Antelope Valley, are unlikely to uncover significant vertebrate fossils. However, if deep project related excavations (10 feet or more below current grade) reveal that older Quaternary deposits and/or the later Miocene deposits are exposed, there will be a higher potential for encountering significant vertebrate fossil remains. Since the proposed Projects 1 – 6 may result in impacts related to the disturbance of paleontological resources; the potential impacts will be discussed further in the EIR.

d) Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐

A cultural resource records search was conducted through the Southern San Joaquin Valley Information Center and indicated that the potential to disturb human remains was generally low at the locations of Projects 1 – 6. However, one historic cemetery was identified on one site. The extent of the cemetery has not been defined. Projects 1 – 6 will require minor excavation and grading which creates the potential for disturbance. Projects 1 – 6 will be evaluated for the potential of disturbance in the EIR

Source:

Cultural Resource Survey of Silverado Power's Proposed Solar Panel Stations CUP #6-22, #7-29, #8-5, #9, #10A, #10B, #12-13, #12-25, #13-14 and #15-21. Prepared by Tetra Tech EC, Inc., September 2011

6. ENERGY

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Conflict with Los Angeles County Green Building Ordinance (L.A. County Code Title 22, Ch. 22.52, Part 20 and Title 21, § 21.24.440) or Drought Tolerant Landscaping Ordinance (L.A. County Code, Title 21, § 21.24.430 and Title 22, Ch. 22.52, Part 21)?	☒	☐	☐	☐

Los Angeles County Code Title 21 Section 21.24.440 requires compliance with applicable requirements of Title 22, Chapter 22.52 Part 20 for green building. These standards are applicable to construction of buildings and are designed to reduce energy consumption, save water and other natural resources, and divert waste from landfills when new buildings are constructed. Projects 1 – 6 are renewable energy electricity generation projects and do not include the construction of buildings. Therefore, the Green Building standards of Title 22 are not applicable.

Vegetation is anticipated to be used at Projects 1 – 6 and is expected to comply with the Drought Tolerant Landscaping Ordinance, although design specifications have not been completed. Therefore, the landscaping plan will be further examined in the EIR to evaluate compliance with the Drought Tolerant Landscaping Ordinance.

b) Involve the inefficient use of energy resources (see Appendix F of the CEQA Guidelines)?	☐	☐	☐	☒

EVALUATION OF ENVIRONMENTAL IMPACTS:

Projects 1 – 6 are renewable energy projects that will decrease California's reliance on fossil fuel energy and increase its reliance on renewable energy. Both of these are identified in Attachment F of the CEQA Guidelines as ways to accomplish the goal of the CEQA Guidelines for energy conservation. In addition, construction of these types of facilities is not energy-intensive since minimal grading is required for construction, the facilities will be unmanned and will not generate significant vehicle trips, and minimal use and movement of water is required for operations. Therefore, the SGFs will not involve the inefficient use of energy resources according to CEQA Guidelines.

7. GEOLOGY AND SOILS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known active fault trace? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒

Projects 1 – 6 are located in the western wedge-shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada), and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary). The California Geological Survey (CGS) Seismic Hazard Zone Maps (1997-2005) does not identify Projects 1 – 6 as being located in an active or potentially active fault zone. The closest fault zone is the San Andreas Fault Zone, which is located approximately 2 miles to the southwest of Project 5. Therefore, no impact will occur.

ii) Strong seismic ground shaking?	☒	☐	☐	☐

Seismicity near Projects 1 – 6 is primarily generated from the Garlock Fault Zone and the San Andreas Fault Zone. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones; however, and could also occur at any number of active faults in the regional vicinity. Seismicity may affect the site and proper mitigation and structural design of facilities may be required. Further analysis of potential strong seismic ground shaking impacts to Projects 1 – 6 will be included in the EIR.

iii) Seismic-related ground failure, including liquefaction and lateral spreading?	☐	☐	☐	☒

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. Projects 1 – 6 have relatively coarse grained material, and with groundwater typically greater than 100 feet below ground surface (USGS 2008), Projects 1 – 6 have very low susceptibility to liquefaction. Additionally, the California Geological Survey (CGS) Seismic Hazard Zone Maps (1997-2005) do not identify Projects 1 – 6 as being located in zones of required investigation for liquefaction hazards. Therefore, no impact will occur.

iv) Landslides?	☒	☐	☐	☐

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the generally low slope of less than one percent at Project 1 and Projects 3 - 6, the risk for landslides or slope failure is considered low. Additionally, the California Geological Survey (CGS) Seismic Hazard Zone Maps (1997-2005) do not identify Projects 1 – 6 as being located in zones of required investigation for earthquake induced landslides. However, Project 2 is located in an area with the potential for slope stability hazards. Further analysis of potential landslide impacts will be included in the EIR.

b) Result in substantial soil erosion or the loss of topsoil? ☒ ☐ ☐ ☐

Geotechnical analyses have been performed at Projects 1 – 6. The report for Project 1 indicated the presence of the following soil map unit type: Rosamond fine sandy loam. The report for Project 2 indicated the presence of the following soil map unit types: Greenfield sandy loam, Hanford coarse sandy loam, Hesperia fine sandy loam, Ramona coarse sandy loam, and terrace escarpments. The report for Project 3 indicated the presence of the following soil map unit type: Hesperia fine sandy loam. The report for Project 4 indicated the presence of the following soil map unit types: Greenfield sandy loam, Sunrise sandy loam, Ramona coarse sandy loam, and Hesperia sandy loam. The report for Project 5 indicated the presence of the following soil map unit types: Greenfield sandy loam and Ramona coarse sandy loam. The report for Project 6 indicated the presence of the following soil map unit type: Pond-Oban complex soils.

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The soil types identified at Projects 1 – 6 are susceptible, in varying degrees, to the two primary types of erosion: water erosion and wind erosion.

Without the implementation of appropriate erosion and sediment control best management practices (BMPs), there is a potential for the SGFs to result in potentially significant impacts related to soil erosion or the loss of topsoil. Further analysis of potential impacts related to soil erosion or the loss of topsoil will be included in the EIR.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? ☒ ☐ ☐ ☐

Slopes on and adjacent to Projects 1 and 3 - 6 are relatively flat, with grades at most locations ranging from five percent to less than one percent. As described in item (a) (iv) above, there is a potential for unstable slopes on Project 2. If structures are installed on this portion of the slope, there is a potential to decrease the stability of the soil resulting in a potential landslide. Therefore, the SGFs have a minimal potential to result in landslides and further evaluation will be discussed in the EIR.

Lateral spreading is a phenomenon that can occur from seismic shaking or other lateral loading when the ground surface is not laterally supported on one or more sides, for example, on ridge tops or near edges of terraces or slopes. It can also occur near the edges of areas that liquefy during seismic shaking because the liquefied soil does not provide lateral support. As described in item (a)(iii) above, Projects 1 – 6 have a very low susceptibility to liquefaction. Due to the low susceptibility to liquefaction, generally flat terrain, and general lateral support, there is low potential for lateral spreading.

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can

cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence at the locations of Projects 1 – 6 include groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster (Sneed and Galloway 2000). Although historical and continued depletion of water could result in future land subsidence throughout the Antelope Valley, Projects 1 – 6 will not increase groundwater extraction or other withdrawal of fluids from unconsolidated geologic deposits. Therefore, subsidence is expected to be minimal.

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. Projects 1 – 6 are located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage at Projects 1 – 6 will continue to follow most natural drainage patterns or drainage channels where roads or permanent grading exist. Site-specific geotechnical investigations will identify site-specific soil characteristics necessary to confirm the presence of such soils. Projects 1 – 6 may result in potentially significant impacts related to landslide, lateral spreading, subsidence, liquefaction or collapse of soils. Further analysis of potential impacts will be included in the EIR.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the years and lead to differential settlement beneath foundations. Soil series at Projects 1 – 6 are rated for a low shrink/swell potential. Therefore, impacts will be less than significant.

e) Have soils incapable of adequately supporting the use of onsite wastewater treatment systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Projects 1 – 6 do not propose the use of any sanitary facilities that will require septic tanks for sanitary wastewater disposal during operation. Therefore, no impact will occur.

f) Conflict with the Hillside Management Area Ordinance (L.A. County Code, Title 22, § 22.56.215) or hillside design standards in the County General Plan Conservation and Open Space Element?	☒	☐	☐	☐

Projects 1 – 6 are generally located on the floor of the Antelope Valley where the terrain is nearly flat. Project 1 and Projects 3 - 6 are not in or near any hillside area and are not affected by Hillside Management Areas. Project 2 is located near the foothills and has slightly greater slopes. Conflict with the Hillside Management Area Ordinance or hillside design standards will be discussed further in the EIR.

8. GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Generate greenhouse gas (GHGs) emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐	☐	☐

The SGFs will operate year-round, producing electric power during daytime hours. An air quality analysis shall include direct and indirect impacts of construction and operation activities of Projects 1 – 6. Short-term air quality impacts may occur during the construction of Projects 1 – 6. Additional air quality and greenhouse gas analysis needs to be prepared to study the emissions during short term construction and during long-term operation of Projects 1 – 6 in relation to the significance thresholds established by the AVAQMD. Emissions from Projects 1 – 6 are potentially significant; therefore, impacts to greenhouse gas emissions will be discussed further in the EIR.

b) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Projects 1 – 6 consist of six solar photovoltaic generating facilities that will convert solar energy into electric energy without GHG emissions. Once constructed, the electric energy produced by the SGFs will reduce the dependency on fossil fuel-produced electric energy thereby providing a long-term GHG benefit. In addition, the generation of power from solar energy is a substantial reduction in GHG emissions over conventional power generation from the combustion of fossil fuels.

Projects 1 – 6 will not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Projects 1 – 6 will be in accordance with the state's need for the construction of renewable energy power plants to meet the state's GHG reduction objectives including:

- California's Renewable Portfolio Standard (RPS) that requires California's investor-owned electric utilities to obtain, from renewable sources, 20 percent of the electricity that they supply by 2010;
- Executive Order S-14-08 that established RPS targets for California that "all retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020."
- Executive Order S-03-05 on climate change to advance renewable energy and other solutions to lower California's GHG emissions.
- The California Global Warming Solutions Act of 2006 (Assembly Bill 32) that established a comprehensive program of regulatory and market mechanisms to reduce GHG emissions to 1990 levels by the year 2020.

9. HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, storage, production, use, or disposal of hazardous materials?	☒	☐	☐	☐

Wastes generated during construction may include the following: cardboard, wood pallets, copper wire, scrap steel, common trash, and wood wire spools. Silverado Power does not expect to generate hazardous waste during construction. However, field equipment used during construction will contain various hazardous materials such as hydraulic oil, diesel fuel, grease, lubricants, solvents, adhesives, paints, and other petroleum-based products contained in construction vehicles. Transport, storage, use, and disposal of hazardous substances during the construction phases will be carefully managed to prevent a significant impact through the implementation of best management practices.

Projects 1 – 6 will produce a small amount of waste associated with maintenance activities. Solar facility wastes may include broken and rusted metal, defective or malfunctioning modules, electrical materials, empty containers, and other miscellaneous solid wastes, including the typical refuse generated by workers. Since Projects 1 – 6 may result in the production, use or disposal of hazardous material, further analysis of potential impacts will be included in the EIR.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials or waste into the environment?	☒	☐	☐	☐

The construction of Projects 1 – 6 will not create a significant hazard to the public or the environment from upset or accident conditions. Construction will require the short-term use of hazardous materials such as fuels, lubricants, adhesives, solvents and paints.

The operation of Projects 1 – 6 will use a limited number of hazardous materials and only in relatively small quantities. Projects 1 – 6 do not require the storage of bulk fuels, lubricants, or other hazardous materials. Projects 1 – 6 will not utilize pressure vessels or chemical reagents. Hazardous waste is not routinely generated or managed onsite. Since Projects 1 – 6 may result in the production, use or disposal of hazardous material, further analysis of potential impacts will be included in the EIR.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of sensitive land uses?	☒	☐	☐	☐

The SGFs will convert solar energy into electrical energy without hazardous emissions. The primary hazardous emissions generated by Projects 1 – 6 will be air emissions from vehicle and equipment exhaust generated during construction and maintenance activities. Further analysis of emissions impacts will be included in the EIR.

d) Be located on a site which is included on a list of	☒	☐	☐	☐

hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

An environmental data review (EDR) was conducted for Projects 1 – 6. Projects 1 – 6 are not located on known sites that are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; however, multiple Recognized Environmental Conditions (RECs) were identified on, or in the vicinity, of three of the projects. RECs indicated to be in the vicinity of Project 1 include an underground storage tank (UST). RECs indicated to be in the vicinity of Project 3 include an underground storage tank (UST). RECs indicated to be in the vicinity of Project 4 include an underground storage tank (UST) and a clandestine drug lab (CDL). No RECs were indicated to be located in the vicinity of Projects 2, 5, or 6. No known releases have occurred at Projects 1 – 6, or adjacent to Projects 1 – 6. Further analysis of hazardous materials sites will be included in the EIR.

e) For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? ☒ ☐ ☐ ☐

Project 3 is located approximately two miles from the General William J. Fox Airfield and is located in General William J. Fox Airfield's Zone C: Extended Approach/Departure Zone. Projects 1 – 6 are generally not anticipated to require an airspace review. However, due to the location of Project 3 and the potential to have a structure in excess of 50 feet in height, further analysis will be conducted in the EIR

Projects 1 – 6 are not identified on the "Cortese" list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. However, further analysis of impacts on public airport or public use airports will be included in the EIR.

(Source: California Environmental Protection Agency http://www.calepa.ca.gov/sitecleanup/corteseliEIAst/SectionA.htm)

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? ☒ ☐ ☐ ☐

Project 4 is located in the vicinity of Bohunk's Airpark private airstrip. Project 1 is located approximately two miles northwest of the Little Buttes Antique Airfield Airport, another privately owned dirt airstrip. Safety hazard impacts to people residing or working in the project areas of Projects 1 and 4 will be discussed in the EIR.

g) Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan? ☒ ☐ ☐ ☐

Activities associated with the construction and operation of Projects 1 – 6 will not impede existing emergency response plans for Projects 1 – 6 and/or for other land uses in the vicinity of Projects 1 – 6. All vehicles and stationary equipment will be staged off public roads and will not block emergency access routes. Further analysis of impacts on emergency response plans and emergency evacuation plans will be

included in the EIR.

h) Expose people or structures to a significant risk of loss, injury or death involving fires, because the project is located:

i) within a Very High Fire Hazard Severity Zones (Zone 4)? ☐ ☐ ☐ ☒

Projects 1 – 6 are not located in a Very High Fire Hazard Severity Zone. The closest Very High Fire Hazard Severity Zone is located approximately 0.5 miles south of Project 2. Therefore, no impact will occur.

ii) within a high fire hazard area with inadequate access? ☐ ☐ ☐ ☒

Projects 1 – 6 are not located in a Very High Fire Hazard Severity Zone. Therefore, no impact will occur.

iii) within an area with inadequate water and pressure to meet fire flow standards? ☒ ☐ ☐ ☐

A public water system for fire control does not exist near Projects 1 – 6. The SGF design includes a dedicated 10,000-gallon fire water storage tank to be installed and maintained at Projects 1 – 6 in compliance with LA County Fire Department Regulation 19 and other applicable Fire Department water tank specifications. Because the SGF design includes a dedicated fire water tank meeting Fire Department requirements, the water and pressure will meet fire flow needs. Therefore, no impacts are expected. Further analysis of the fire control plan will be included in the EIR.

iv) within proximity to land uses that have the potential for dangerous fire hazard? ☐ ☐ ☐ ☒

Projects 1 – 6 are surrounded by rural agricultural lands with no industrial uses, manufacturing uses or other particularly high fire hazard uses in the vicinity. Therefore, no impact will occur.

i) Does the proposed use constitute a potentially dangerous fire hazard? ☒ ☐ ☐ ☐

A Fire Protection and Prevention Plan shall address construction and operation activities for Projects 1 – 6 and shall establish standards and practices that will minimize the risk of fire danger. Further discussion of the Fire Protection and Prevention Plan will be included in the EIR.

10. HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☒	☐	☐	☐

Projects 1 – 6 have the potential to discharge waste or pollutants that could impact water quality. The primary concern with impacts to surface water or groundwater quality related to construction activities is hazardous material infiltration, sedimentation, and soil erosion. Hazardous materials, such as fuels, solvents, coatings, etc., associated with construction activities will be stored and used in accordance with manufacturer's specifications and applicable hazardous material regulations, reducing potential impacts to groundwater to less than significant levels. Sedimentation and soil erosion due to wind or storm water is also possible due to ground surface alteration activities during construction. Further discussion of impacts on water quality standards and waste discharge requirements will be included in the EIR.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☒	☐	☐	☐

Water demands for Projects 1 – 6 will occur primarily during the construction phase, along with semi-annual washing of the solar modules and water storage for emergency fire suppression. Total water demand is expected to be lower than historic demand associated with farming activities that have occurred during the last several decades. The ground water will be extracted from four wells located on Projects 1, 3 and 4. Significant impacts to the groundwater table are not anticipated; however, further discussion of impacts on water supplies and the local groundwater table will be included in the EIR.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☒	☐	☐	☐

Drainages and existing surface flow patterns have the potential to be altered on Projects 1 – 6. However, no development will be located within the area of significant drainages at Projects 1 – 6. The PV modules will be placed on pole mounted racking systems and elevated at least two feet above ground. SGF development is not expected to significantly change the overall permeability of the locations of Projects 1 -6. Although runoff will be created by the impervious solar modules, this runoff will fall from the leading edge of each solar module and infiltrate into the ground or maintain existing sheetflow conditions. The features of Projects 1 – 6 will be designed to minimize erosion and siltation on and off-site. Due to the soil under each solar module being left as a permeable, vegetated surface, and the limited amount of paved and/or compacted surfaces being added, the existing peak run-off is not expected to increase significantly for the

developed condition. Further discussion of the impacts on drainage, erosion, and siltation will be included in the EIR.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? ☒ ☐ ☐ ☐

Projects 1 – 6 experience both flow onto and off-site and therefore have the potential to affect or alter drainage patterns. Review of the FEMA flood map 06037C0400F shows that Projects 1 – 6 are mapped as Zone A and Zone X. Zone A is defined as an area subject to inundation by the one percent annual chance flood (100-year flood). Zone X is defined as an area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Impacts to the existing drainage pattern and flooding are expected to be less than significant. Due to the potential for flooding at Projects 1 – 6, and drainage patterns at Projects 1 – 6, further discussion of the potential impacts will be included in the EIR.

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? ☒ ☐ ☐ ☐

Projects 1 – 6 have the potential to increase runoff potential which could impact drainage systems. Best management practices will have to be implemented for storm water pollution prevention consistent with requirements of the State General NPDES Permit for discharges of storm water from construction sites and the storm water and runoff pollution control ordinance of the County of Los Angeles (LA County Municipal Code Title 12 Chapter 12.80). The Applicant will have to prepare a construction Storm Water Pollution Prevention Plan (SWPPP) prior to ground-breaking identifying construction-phase BMPs to be implemented. Without the BMPs, Projects 1 – 6 have the potential to generate additional sources of runoff. It is expected that no significant wastewater or polluted runoff will be generated from construction and operation of the solar facilities. However, due to the potential impacts to storm water drainage systems, further analysis will be included in the EIR.

f) Generate construction or post-construction runoff that would violate applicable stormwater NPDES permits or otherwise significantly affect surface water or groundwater quality? ☒ ☐ ☐ ☐

Projects 1 – 6 do not propose to discharge waste or pollutants that could impact surface or groundwater quality. Therefore, neither impact to surface or groundwater quality nor any violation of a surface or groundwater quality standard is expected. The primary concern with impacts to surface water or groundwater quality related to construction activities is hazardous material infiltration, sedimentation, and soil erosion. Hazardous materials, such as fuels, solvents, coatings, etc., associated with construction activities will be stored and used in accordance with manufacturer's specifications and applicable hazardous material regulations, reducing potential impacts to surface and groundwater to less than significant levels. Without appropriate measures, Projects 1 – 6 have the potential to generate post-construction runoff that may violate applicable storm water NPDES permits or otherwise significantly affect surface water or groundwater quality. Further discussion of the impacts on construction and post-construction runoff will be included in the EIR.

g) Conflict with the Los Angeles County Low Impact Development Ordinance (L.A. County Code, Title 12, Ch. 12.84 and Title 22, Ch. 22.52)? ☐ ☐ ☐ ☒

The design of Projects 1 – 6 is consistent with the Low Impact Development Ordinance (LID). The final grading and drainage plans will be subject to review and approval by the Department of Public Works in conjunction with grading permit issuance providing assurance that LID standard are adhered to. Therefore, there is no conflict with the LID development ordinance.

h) Result in point or nonpoint source pollutant discharges into State Water Resources Control Board-designated Areas of Special Biological Significance? ☐ ☐ ☐ ☒

Projects 1 – 6 are not located in a SWRCB-designated Area of Special Biological Significance. Therefore, no impact will occur.

i) Use onsite wastewater treatment systems in areas with known geological limitations (e.g. high groundwater) or in close proximity to surface water (including, but not limited to, streams, lakes, and drainage course)? ☐ ☐ ☐ ☒

No domestic wastewater will be generated as part of Projects 1 – 6 and as such, no onsite wastewater treatment is required.

j) Otherwise substantially degrade water quality? ☒ ☐ ☐ ☐

The potential of Projects 1 – 6 to degrade water quality is addressed in items (a) and (f), above. Projects 1 – 6 do not have reasonably foreseeable potential to substantially degrade water quality other than impacts and mitigation measures addressed in items (a) and (f), above. Further discussion of the potential to substantially degrade water quality will be included in the EIR.

k) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, or within a floodway or floodplain? ☐ ☐ ☐ ☒

Projects 1 – 6 do not involve placement of housing or inhabitable structures. Therefore, no impact will occur.

l) Place structures, which would impede or redirect flood flows, within a 100-year flood hazard area, floodway, or floodplain? ☒ ☐ ☐ ☐

As discussed in item (d) above, a review of the FEMA flood map 06037C0400F shows that Projects 1 – 6 are mapped as Zone A and Zone X. Zone A is defined as an area subject to inundation by the 1% annual chance flood (100-year flood). Projects 1 – 6 have the potential to impede or redirect flood flows, within a 100-year flood hazard area. Further discussion of the potential impact to flood flows will be included in the EIR.

m) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? ☐ ☐ ☐ ☒

Operations will typically be unmanned and facilities will not increase the flood hazard. Projects 1 – 6 are also located in an area of minimal flood hazard (see item l, above) and do not expose people or structures to a significant risk of loss, injury or death involving flooding. Projects 1 – 6 are not located in an area with levees or dams. Therefore, no impact will occur.

n) Place structures in areas subject to inundation by seiche, tsunami, or mudflow? ☒ ☐ ☐ ☐

There are no water bodies in the vicinity of Projects 1 – 6; therefore, there is no seiche hazard at Projects 1 – 6. Projects 1 – 6 are located approximately 45 miles from the ocean, and separated by mountain ranges; therefore, there is no potential tsunami risk. The topography at Projects 1 – 6 is generally flat; however, there may be potential for slow-moving mud flows in the vicinity of Projects 1 – 6 when very large storms occur (e.g., 100-year and greater recurrence interval storms). However, where such flows occur they are shallow sheet flows with low velocity due to the nearly flat surface grades. Electric equipment will be elevated in pads two feet above ground where applicable so they will not be subject to inundation by mud flows. Further discussion of mudflow impacts will be included in the EIR.

11. LAND USE AND PLANNING

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒

Projects 1 – 6 are not located within any established communities. Projects 1 – 6 will not physically divide any community nor will they change any public access routes to it. Therefore, there will be no impact.

b) Be inconsistent with the applicable County plans for the subject property including, but not limited to, the General Plan, specific plans, local coastal plans, area plans, and community/neighborhood plans?	☐	☐	☐	☒

Projects 1 – 6 will be required to comply with the plan designations and applicable provisions of the Countywide General Plan and the Antelope Valley Areawide General Plan. Projects 1 – 6 are not located within the boundaries of a Community Standards District; therefore, no District development standards apply to Projects 1 – 6.

The Antelope Valley Areawide General Plan designates Projects 1 – 6 for "N1 – Non-Urban" uses. This designation states that development of "non-residential uses requiring, or appropriate for, remote locations may be allowed in Non-urban areas" if the proposed use follows general guidelines and development standards outlined in the Antelope Valley Areawide General Plan for non-residential uses within the N1 – Non-Urban land use classification. "Utility and communication installations" are uses allowed in the N1 – Non-Urban land classification. Therefore, Projects 1 – 6 are consistent with the Antelope Valley Areawide General Plan.

Development of Projects 1 – 6 will be consistent with permissible uses associated with the land use designations and the policies, goals, and objectives outlined in the Los Angeles County General Plan and the Antelope Valley Areawide General Plan (see Table below for policy consistency).

Policy	**Relationship of Project to Policy**
Los Angeles Countywide General Plan	
Conservation, Open Space and Recreation	
2. Support the conservation of energy and encourage the development and utilization of new energy sources including geothermal, thermal waste, solar, wind and ocean-related sources.	Consistent – The SGFs will collectively produce 172 MW of solar power. Therefore, Projects 1 – 6 utilize new energy sources.
3. Promote the use of solar energy to the extent possible.	Consistent – Projects 1 – 6 consist of photovoltaic solar facilities totaling 172 MW.
Antelope Valley Area Wide Plan	
Resource Conservation	

40. Encourage efficient utilization of resources in the allocation of land to various uses, and incorporate energy conservation measures into the design and implementation of public and private projects.	Consistent – Projects 1 – 6 propose use of photovoltaic solar modules, which absorb renewable solar energy resources in order to generate power, will thereby conserve fossil fuel use. Projects 1 – 6 are located on previously disturbed agricultural lands, and facilities will require modest quantities of water compared with other traditional power generation technologies.
Energy Consumption	
217. Promote use of alternative energy sources (including solar and wind) for heating and cooling.	Consistent – The SGFs will collectively produce 172 MW of solar power. Therefore, the Projects 1 – 6 utilize new energy sources.

c) Be inconsistent with the County zoning ordinance as applicable to the subject property? ☒ ☐ ☐ ☐

Development of Projects 1 – 6 is regulated by the County of Los Angeles Zoning Ordinance (Title 22). Title 22 contains the regulatory framework that specifies: allowable uses for real property and development intensities; technical standards such as site layout, building setbacks, heights, lot coverage, parking, etc.; aesthetics related to physical appearance, landscaping, and lighting; and the procedural standards for amending or establishing new zoning regulations, including Conditional Use Permits. Projects 2, 3, 4 and 5 are designated A-2 Heavy Agriculture on the Zoning Map. Pursuant to Section 22.24.150 of the Los Angeles County Code, "Electric distribution substations, electric transmission substations and generating plants" are permissible uses within the A-2 Heavy Agriculture zone pursuant to the issuance of a Conditional Use Permit (CUP). Project 6 is zoned D-2 Desert-Mountain. Pursuant to Section 22.32.080 of the Los Angeles County Code, properties in Zone D-2 Desert-Mountain may be used for any use permitted in Zone A-2 Heavy Agriculture; as described above, generating plants are permissible uses within the A-2 Heavy Agriculture zone, pursuant to the issuance of a CUP. Projects 2, 3, 4, 5 and 6 will follow all applicable requirements of Sections 22.24.150, 22.32.080 and 22.24.170 of the Los Angeles County Code, therefore, they will be consistent with the County zoning ordinance. Project 1 is zoned A-1 Light Agriculture, which does not permit electric generating plants within its zoning district. Since Project 1 is located within Zone A-1, a zone change from Zone A-1 to A-2 will be required to construct and operate the SGF. The impacts of the zone change will be further analyzed in the EIR.

d) Conflict with Hillside Management criteria, Significant Ecological Areas conformance criteria, or other applicable land use criteria? ☒ ☐ ☐ ☐

Projects 1 – 6 are not located within a designated SEA, therefore, SEA conformance criteria do not apply to Projects 1 – 6. No local community conservation plans that could contain applicable land use criteria apply to Projects 1 – 6, therefore, no impact will occur. Projects 1, 3, 4, 5 and 6 are not in or near any hillside area and therefore will not conflict with Hillside Management criteria. However, Project 2 is located near the foothills and has slightly greater slopes. Conflict with Hillside Management criteria will be discussed further in the EIR.

Sources:

Los Angeles Countywide General Plan. County of Los Angeles Department of Regional Planning,1980.

Antelope Valley Areawide General Plan. County of Los Angeles Department of Regional Planning, 1986.

12. MINERAL RESOURCES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

The State of California's Geological Survey (California Department of Conservation, Division of Mines and Geology) identifies deposits of regionally significant aggregate resources. According to state geological survey, Projects 1 – 6 are not located within a Mineral Resources Zone. Additionally, according to Map 3-1 of the Antelope Valley General Plan Update-Background Report, Projects 1 – 6 are not designated as mineral resource areas by the County. Therefore, Projects 1 – 6 will result in no impact to a known mineral source that will be of value to the region and residents of the state.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Map 3-1 of the Antelope Valley General Plan Update-Background Report indicates that Projects 1 – 6 are not designated as mineral resource areas by the County. Therefore, Projects 1 – 6 will result in no impact to a known locally-important mineral resource.

13. NOISE

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project result in:				
a) Exposure of persons to, or generation of, noise levels in excess of standards established in the County General Plan or noise ordinance (Los Angeles County Code, Title 12, Chapter 12.08), or applicable standards of other agencies?	☒	☐	☐	☐

Projects 1 – 6 may create short- and long-term noise impacts. Short term noise may result from the increase in traffic flow on local streets associated with the transportation of workers, equipment and materials; and from construction equipment operating on Projects 1 – 6. Long term noise may be generated from electricity generating equipment on Projects 1 – 6. A noise study needs to be prepared to analyze the potential impacts of noise generation by Projects 1 – 6. Since Projects 1 – 6 may result in noise impact, this issue will be discussed further in the EIR.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☒	☐	☐	☐

Due to construction related impacts and proposed pile driving, Projects 1 – 6 have the potential to generate groundborne vibration and noise. As discussed in item (a), above, a noise study needs to be prepared to analyze the potential impacts of noise generation by Projects 1 – 6. Since Projects 1 – 6 may result in noise impact, this issue will be discussed further in the EIR.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, including noise from parking areas?	☒	☐	☐	☐

Equipment onsite has the potential to generate ambient noise in the vicinity of Projects 1 – 6. As discussed in item (a) above, a noise study needs to be prepared to analyze the potential impacts of noise generation by Projects 1 – 6. Since Projects 1 – 6 may result in noise impact, this issue will be discussed further in the EIR.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project, including noise from amplified sound systems?	☒	☐	☐	☐

Projects 1 – 6 have the potential to increase ambient noise levels above levels existing without Projects 1 – 6 during the construction and operation phases. As discussed in item (a) above, a noise study needs to be prepared to analyze the potential impacts of noise generation by Projects 1 – 6. Since Projects 1 – 6 may result in noise impact, this issue will be discussed further in the EIR.

e) For a project located within an airport land use plan or, where such a plan has not been adopted,	☒	☐	☐	☐

within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Projects 1 – 6 are not located in an airport land use plan. Additionally, Projects 1, 2, 4, 5 and 6 are not within two miles of a public airport or public use airport. Project 3 is approximately two miles west of General William J. Fox Airfield and is located in General William J. Fox Airfield's Zone C: Extended Approach/Departure Zone. Projects 1 – 6 will typically be unmanned during the operation phase. However, workers will be onsite during construction and periodically onsite throughout operations for security, maintenance, and system monitoring. Since workers at Project 3 could potentially be exposed to excessive noise from General William J. Fox Airfield, the issue will be evaluated in the EIR.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? ☒ ☐ ☐ ☐

Project 4 is located next to the Bohunk's Airpark Airport, a privately owned dirt airstrip. Although there is minimal traffic associated with this airstrip, there is a potential for significant aircraft noise from this facility. Project 1 is located approximately two miles northwest of the Little Buttes Antique Airfield Airport, another privately owned dirt airstrip. Workers at Projects 1 and 4 are not expected to be exposed to excessive noise levels from these private airstrips, however, this issue will be discussed further in the EIR.

14. POPULATION AND HOUSING

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐

Projects 1 – 6 are not expected to generate significant population growth. Projects 1 – 6 do not propose any housing or commercial development, or any significant extension of roads or infrastructure. Construction jobs will be short term and are expected to be filled mostly by the existing workforce and sourced from existing available residences and lodging. During operations, Projects 1 – 6 will typically be unmanned besides periodic onsite personnel visitations for security, maintenance, and system monitoring. Therefore, impacts to population growth will be less than significant.

b) Displace substantial numbers of existing housing, especially affordable housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Projects 1 – 6 will not physically displace existing housing units because no housing exists at Projects 1 – 6. Surroundings of Projects 1 – 6 consist of scattered rural residences, none of which will have to be relocated as a result of the development of the SGFs. Therefore, no replacement housing will need to be constructed and no impact will occur.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Projects 1 – 6 are proposed in a rural area of the Antelope Valley mostly on vacant land. Only one residence is located on Project 4, but residents have plans to vacate. Construction and operation of Projects 1 – 6 will not displace substantial people or housing, therefore, there will be no impact to population or housing.

d) Cumulatively exceed official regional or local population projections?	☐	☐	☐	☒

As described in item (a) above, Projects 1 – 6 will have no residential uses and will mostly utilize the existing workforce. Therefore, Projects 1 – 6 will not materially affect local or regional population projections.

15. PUBLIC SERVICES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Would the project create capacity or service level problems, or result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☒	☐	☐	☐

Projects 1 – 6 are within Los Angeles County Fire Department's (LACFD) North Region. Division 5, Battalion 11. During construction, there will workers, machinery, construction supplies, and hazardous materials such as hydraulic oil, diesel fuel, grease, lubricants, solvents, adhesives, paints, and other petroleum-based products contained in construction vehicles onsite. There is a possibility that construction activities could accidentally ignite a fire that could require assistance from the Fire Department. However, a fire prevention plan will be created to minimize fire risks onsite. Operation of the unmanned facilities is generally passive and will require limited fire protection services. The need for fire protection services will be discussed further in the EIR.

Sheriff protection?	☐	☐	☒	☐

Projects 1 – 6 are located in Field Operations Region 1 of the Los Angeles County Sheriff's Department (LACSD), which provides police protection and public safety to unincorporated areas of Los Angeles County. Facility, materials and equipment security during construction of Projects 1 – 6 will be provided by the Applicant. Operation of the unmanned facilities is generally passive and will require limited Sheriff protection services. Construction and operations of Projects 1 – 6 will therefore have a less than significant impact on Sheriff protection services and their staffing or response times.

Schools?	☐	☐	☐	☒

As described in Section 14(a), Projects 1 – 6 are not expected to generate population growth. Consequently, no new demands on school facilities are expected, no impact on school capacities, service levels or performance objectives would be present, and therefore, there will be no impact to schools.

Parks?	☐	☐	☐	☒

As described in Section 14(a), Projects 1 – 6 are not expected to generate population growth and no new demands on park facilities are expected, therefore, there will be no impact on park capacities, service levels or performance objectives.

Libraries? ☐ ☐ ☐ ☒

As described in Section 14(a), Projects 1 – 6 are not expected to generate population growth and no new demands on library facilities are expected, therefore, there will be no impact on library capacities, service levels or performance objectives.

Other public facilities? ☐ ☐ ☐ ☒

As described in Section 14(a), Projects 1 – 6 are not expected to generate population growth, extend roads or other public infrastructure. Therefore, it will not create new demands on other public facilities.

16. RECREATION

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐

As previously discussed in Section 14. Population and Housing, construction and operation of Projects 1 – 6 will not cause significant population changes in the communities near Projects 1 – 6, nor will it create a demand for additional housing. Sufficient local labor is available to work on Projects 1 – 6 and therefore it is unlikely that a substantial number of workers will come from outside the area and establish new residences for short-term construction jobs related to Projects 1 – 6. During operations, the facilities will typically be unmanned. The Antelope Valley Poppy Preserve, Angeles National Forest, and existing regional and neighborhood parks are sufficient for the minor growth associated with Projects 1 – 6. Existing facilities will provide adequate recreational opportunities, if needed, for the construction and operations work force, and Projects 1 – 6 are not expected to result in substantial physical deterioration of these recreational facilities. Therefore, impacts to recreation facilities will be less than significant.

b) Does the project include neighborhood and regional parks or other recreational facilities or require the construction or expansion of such facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Projects 1 – 6 do not involve, nor require the construction or expansion of regional parks or other recreational facilities, therefore, no impacts will occur.

c) Would the project interfere with regional open space connectivity?	☐	☐	☒	☐

Projects 1 – 6 are not located in an undeveloped or undisturbed area that contains unique open space features or open space. Surroundings are typical of the western Antelope Valley. Projects 1 – 6 are located in an area that has been primarily used for agriculture. Land use at Projects 1 – 6 includes disturbed, undeveloped land with varying degrees of disturbance due to previous agricultural activities. Land adjacent to Projects 1 – 6 is primarily former farmland that is currently undeveloped. There are no recreational (trail) easements that will be impacted by the construction of Projects 1 – 6. Projects 1 – 6 will not interfere with regional open space connectivity given the surrounding land uses and disturbance at Projects 1 – 6. Therefore, impacts will be less than significant.

17. TRANSPORTATION/TRAFFIC

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☒	☐	☐	☐

Traffic generated during the construction phase will include construction worker commuter trips, water truck trips, and delivery truck trips. A transportation impact study needs to be prepared to analyze the potential impacts of traffic generated by Projects 1 – 6. Since Projects 1 – 6 may result in traffic impact, this issue will be discussed further in the EIR.

b) Conflict with an applicable congestion management program (CMP), including, but not limited to, level of service standards and travel demand measures, or other standards established by the CMP for designated roads or highways?	☒	☐	☐	☐

Projects 1 – 6 are located within the boundary of the 2010 Los Angeles County Congestion Management Plan (CMP). As mentioned in item (a), above, a transportation impact study needs to be prepared to analyze the potential impacts of traffic generated by Projects 1 – 6. Since Projects 1 – 6 may result in traffic impact, this issue will be discussed further in the EIR.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

Projects 1, 2, 4, 5 and 6 are not within two miles of a public airport or public use airport. Project 3 is approximately two miles west of General William J. Fox Airfield and is located in General William J. Fox Airfield's Zone C: Extended Approach/Departure Zone. Additionally, Project 1 and Project 4 are within two miles of private airstrips. However, Projects 1 – 6 will not include any buildings or operations that would change air traffic patterns, including either an increase in traffic levels or a change in location that could result in substantial safety risks. PV modules that will be used at Projects 1 – 6 are non-reflective and will not pose a hazard to general aviation pilots. No impact on air traffic patterns will occur.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒

Projects 1 – 6 do not include any significant construction or realignment of any existing road facilities. The terrain in the vicinity of Projects 1 – 6 is generally flat and roads are straight with long sight distances. During operations, the facilities will typically be unmanned. Considering this low traffic level, the long sight distances characteristic of the existing environment and the safe design of the proposed driveways to the satisfaction of the Department of Public Works, Projects 1 – 6 will not substantially increase hazards due to design features or incompatible uses.

e) Result in inadequate emergency access? ☐ ☐ ☐ ☒

Projects 1 – 6 will not result in inadequate emergency access. Projects 1 – 6 will not obstruct any existing access route, and onsite access roads will be provided in accordance with Fire Department requirements. The design for Projects 1 – 6 includes perimeter and interior access roads in accordance with Fire Department requirements. Roads will be installed according to Los Angeles County code prior to operating the facilities and will be maintained in a drivable condition throughout the operation of Projects 1 – 6.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? ☐ ☐ ☐ ☒

Projects 1 – 6 are located in a rural area of Los Angeles County where alternative transportation facilities are not available. Development of Projects 1 – 6 will utilize the existing road network and will not impact or conflict with bike trails, pedestrian access, transit services, or other modes of alternative transportation. Additional programs regarding public transit, bicycle, or pedestrian facilities would occur in the LA County right-of-way and are not within the boundaries of Projects 1 – 6.

18. UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Exceed wastewater treatment requirements of either the Los Angeles or Lahontan Regional Water Quality Control Boards?	☐	☐	☒	☐

Projects 1 – 6 will generate a minimal amount of wastewater during operation. The PV module wash water will be demineralized water and will only contain dust washed off of the modules. This wash water will be allowed to infiltrate into the ground and evaporate as it drips off the PV modules. No domestic wastewater will be generated as part of Projects 1 – 6. Therefore, less than significant impacts will occur.

b) Create water or wastewater system capacity problems, or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☒	☐	☐	☐

As stated previously, no significant wastewater will be generated from Projects 1 – 6. Projects 1 – 6 will not require construction of new storm water drainage facilities or expansion of existing facilities. Construction and operation will use ground water extracted from wells located on Projects 1, 3 and 4. The potential impacts to groundwater recharge and supply will be discussed further in the EIR.

c) Create drainage system capacity problems, or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☒	☐	☐	☐

A storm water pollution prevention plan (SWPPP) addressing construction and operations of Projects 1 – 6 will be prepared. Without BMPs, Projects 1 – 6 have the potential to generate additional sources of polluted runoff. The potential impacts to drainage will be discussed further in the EIR.

d) Have sufficient reliable water supplies available to serve the project demands from existing entitlements and resources, considering existing and projected water demands from other land uses?	☒	☐	☐	☐

Projects 1 – 6 will use groundwater extracted from water wells located on Projects 1, 3 and 4. Historical and recent yields indicate that the aquifer is capable of meeting demands for proposed and existing entitlements and resources. However, the basin is undergoing an adjudication process and the potential impacts to future groundwater recharge and supply will be discussed further in the EIR.

e) Create energy utility (electricity, natural gas,	☐	☐	☒	☐

propane) system capacity problems, or result in the construction of new energy facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Projects 1 – 6 do not require natural gas or propane. Projects 1 – 6 require the use of local Southern California Edison facilities to deliver electricity for construction and ongoing maintenance operations. The power generated by Projects 1 – 6 will be connected to Southern California Edison's existing transmission network with the voltage transformation equipment and system safety equipment constructed onsite. Therefore, negative impacts to energy utility system capacity will be less than significant.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? ☐ ☐ ☒ ☐

Construction and operation of Projects 1 – 6 will produce a small amount of solid waste associated with construction and maintenance activities. Solid waste generated from construction activities may include paper, wood, glass, plastics from packing material, waste lumber, insulation, scrap metal and concrete, empty non-hazardous containers, and vegetation wastes. These materials will be collected, hauled by truck, separated for recycling where available, and disposed of at a regional disposal facility. Any defective or broken solar modules will be returned to the manufacturer for recycling.

The level of hazardous materials used or waste generated on Projects 1 – 6 is estimated to be negligible. Used biodegradable dielectric fluid and mineral oil from the transformers and miscellaneous electrical equipment are potentially hazardous materials. The spent oil will be collected and delivered to a recycling company when it is removed from the equipment. This material will not be stored onsite.

Class I, II, and III landfills with the potential to serve Projects 1 – 6 have sufficient permitted capacity to accommodate each Project solid waste disposal needs. Therefore, impacts will be less than significant.

g) Comply with federal, state, and local statutes and regulations related to solid waste? ☐ ☐ ☐ ☒

Construction and operation non-hazardous waste will be transferred from Projects 1 – 6 by licensed waste hauling contractors and recycled or disposed of at facilities licensed for this use. Hazardous wastes will be shipped offsite and treated or disposed in accordance with California Code of Regulations Title 22 Division 4.5 regulations for hazardous waste management. Projects 1 – 6 will have no impact relative to compliance with existing federal or state regulations pertaining to solid waste because Projects 1 – 6 will be required to comply with all relevant regulations during both construction and operations.

19. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐

As discussed in previous sections, additional studies and analysis are required to further assess the environmental impacts to aesthetics, air quality, biological resources, cultural resources, geology/soils, greenhouse gas emissions, hazards/hazardous materials, hydrology/water quality, noise, transportation/traffic and utilities/service. These potential impacts will be discussed further in the EIR.

b) Does the project have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals?	☒	☐	☐	☐

Projects 1 – 6 meet short term and long term environmental goals of generating clean renewable energy through photovoltaic solar electricity generation. Conditions for Projects 1 – 6, including decommissioning provisions at the end of each SGF's life, insure that Projects 1 – 6 will be restored to near their original condition. However, the EIR will address potential impacts on long term environmental goals such as the preservation of cultural and biological resources.

c) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☒	☐	☐	☐

Additional studies and analysis are required to further assess the environmental impacts to aesthetics, agriculture/forest, air quality, biological resources, cultural resources, energy, geology/soils, greenhouse gas emissions, hazards/hazardous materials, hydrology/water quality, land use/planning, noise, public services, transportation/traffic and utilities/services. These potential individually limited impacts will be discussed further in the EIR, as well as the cumulative impacts to these areas.

As described in preceding sections of this Initial Study, Projects 1 – 6 will have a less than significant impact or no impact on mineral resources, population/housing and recreation.

A list of past, current and probable future projects considered for the Overall Development's cumulative impact analysis are identified at the beginning of this Initial Study.

d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? ☒ ☐ ☐ ☐

Additional studies and analysis are required to further assess the impacts of Projects 1 – 6 on the environment and on human beings, either directly or indirectly. Additional studies and analysis are required to further assess the effects on human beings in regards to aesthetics, agriculture/forest, air quality, biological resources, cultural resources, energy, geology/soils, greenhouse gas emissions, hazards/hazardous materials, hydrology/water quality, land use/planning, noise, public services, transportation/traffic and utilities/services. The EIR will further analyze all the potential environmental impacts of Projects 1 – 6.

APPENDIX A-3

MAILING LIST

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Silverado Solar
NOP Distribution List
August 29th, 2012
(Certified Mail with return receipt or other delivery methods providing records of receipt)

Public Works Department
Land Development Division

900 South Fremont Avenue
Alhambra, CA 91803
Attn: Toan Duong

Los Angeles County

Department of Regional Planning
Special Projects Section

320 West Temple St., Room 1348
Los Angeles, CA 90012
Attn: Carolina Blengini

County of Los Angeles Department of Public Health
Bureau of Environmental Protection

Land Use Program
5050 Commerce Drive
Baldwin Park, CA 91706-1423
Attn: Becky Valenti

County of Los Angeles
Public Health – Environmental Hygiene

5050 Commerce Drive, Room 115
Baldwin Park, CA 91706-1423
Attn: Environmental Review

County of Los Angeles – Dept. of Public Health
Environmental Health
5050 Commerce Drive
Baldwin Park, CA 91706
Attn: Environmental Review

Mr. Ken Habaradas
Bureau of Environmental Protection

Environmental Health
5050 Commerce Drive,
Baldwin Park, CA 91706

County of Los Angeles

County of Los Angeles Fire Department
Forestry Division, Prevention Bureau

5823 Rickenbacker Rd., Rm. 123
Commerce, CA 90040
Attn: Ms. Cusick

County of Los Angeles Sheriff Department
Mr. Gary T. K. Tse

Director of Facilities Planning
Building A9-East/5th Floor North
1000 S. Fremont Avenue
Alhambra, CA 91803
Attn: Mr. Tom Bellizia

County of Los Angeles Sheriff Department
Lancaster – Area # 2

501 W. Lancaster Blvd.
Lancaster, CA 93534
Attn: Environmental Review

Norm Hickling
Supervisor Michael Antonovich

Antelope Valley Field Office
1113 W Avenue M-4, Suite A
Palmdale, CA 93551

Edel Vizcarra
Fifth Supervisorial District

869 Kenneth Hahn Hall of Administration
500 W. Temple Street
Los Angeles, CA 90012

Los Angeles County – County Clerk Office
12400 Imperial Highway

P.O. Box 53592
Norwalk, CA 90650

County Libraries

Lancaster Library
601 West Lancaster Blvd.
Lancaster, CA 93534

Quartz Hill Library
42018 North 50th St. West

Quartz Hill, CA 93536

Canyon Country Jo Anne Darcy Library
18601 Soledad Canyon Rd.
Santa Clarita, CA 91351

Antelope Valley Bookmobile
601 West Lancaster Blvd.
Lancaster, CA 93534

Lake Los Angeles Library
16921 East Avenue O, #A
Palmdale, CA 93591

Federal Agencies

Angeles National Forest
701 N. Santa Anita Avenue

Arcadia, CA 91006
Attn: Environmental Review

U.S. Department of the Army
Los Angeles District, Corps of Engineers
P.O. Box 532711

Los Angeles, CA 90053
Attn: Environmental Review

U.S. Fish & Wildlife Service
Southern California Field Station
6010 Hidden Valley Rd.

Carlsbad, CA 92009-4219
Attn: Environmental Review

Edward Air Force Base

AFFTC/XPX

1 South Rosamond Boulevard
Edwards Air Force Base, CA 93524-1036

Attn: Environmental Review

Henry Rigol
Edwards Air Force Base

AFFTC/XPT
100 E Sparks Drive
Edwards AFB, CA 93534

Federal Aviation Administration
P.O. Box 92007

Los Angeles, CA 90009
Attn: Environmental Review

Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
Attn: Environmental Review

State Agencies

California Regional Water Quality Control Board
Lahontan Region
15428 Civic Dr., Ste. 100
Victorville, CA 92392
Attn: Environmental Review

California Energy Commission
1516 Ninth Street, MS-29
Sacramento, CA 95814-5512
Attn: Environmental Review

Mr. Ian MacMillan
CEQA-IGR Section
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178

Antelope Valley Air Pollution Control District
District Office
43301 Division Street, Suite 206
Lancaster, CA 93535
Attn: Environmental Review

Office of Planning and Research
P.O. Box 3044
Sacramento, CA 95812-3044
Attn: Environmental Review

Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814
Attn: Environmental Review

California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812
Attn: Environmental Review

California EPA
P.O. Box 2815
Sacramento, CA 95812-2815
Attn: Environmental Review

California Energy Commission
Climate Change and California

1516 Ninth Street, MS-29
Sacramento, CA 95814
Attn: Environmental Review

California Climate Action Registry

523 W. Sixth Street, Suite 428

Los Angeles, CA 90014
Attn: Environmental Review
email: info@climateregistry.org

Climate Action Team
Climate Change Activities

California Environmental Protection Agency
P.O. Box 2815
Sacramento, CA 95812-2815
Attn: Eileen Tutt

California Public Utility Commission
505 Van Ness Avenue, Room 3-B

San Francisco, CA 94102

Attn: Environmental Review

Department of Conservation
Division of Oil, Gas & Geothermal Resources
5816 Corporate Ave., Suite 200
Cypress, CA 90630
Attn: Environmental Review, Syndi Pompa
Pompa, Syndi@DOC
[mailto:Syndi.Pompa@conservation.ca.gov]

Native American Heritage Commission
915 Capitol Mall, Room 364

Sacramento, CA 95814
Attn: Environmental Review

Department of Toxic Substance Control

Cypress regional office

5796 Corporate Avenue
Cypress, CA 90630-4732

Department of Parks and Recreation
Angeles District

1925 Las Virgenes Road
Calabasas, CA 91302
Attn: Environmental Review

Ms. Cheryl J. Powell

Caltrans – District 7

Planning Division/CEQA MS16
100 South Main Street
Los Angeles, CA 90012
cheryl_j_powell@dot.ca.gov

Department of Transportation
Division of Aeronautics – M.S. # 40

P.O. Box 942873
Sacramento, CA 94273-0001
Attn: Environmental Review

California Department of Fish and Game
4949 Viewridge Avenue

San Diego, CA 92123
Attn: Environmental Review
William Condon wcondon@dfg.ca.gov
Stephen M Juarez sjuarez@dfg.ca.gov
Eric Weiss eweiss@dfg.ca.gov
Erinn Wilson ewilson@dfg.ca.gov (main responder)

Scott Harris
Department of Fish and Game

South Coast Region 5
1508 North Harding Avenue
Pasadena, CA 91104

Antelope Valley Indian Museum State Historic Park
c/o Mojave Desert Information Center

43779 15th Street West
Lancaster, CA 93534

State Water Resources Control Board
P.O. Box 100

Sacramento, CA 95812-0100
Attn: Environmental Review

California Highway Patrol
P.O. Box 942898
Sacramento, CA 94298-0001

Department of Water Resources
Division of Land & Right of Way
P.O. Box 942836
Sacramento, CA 94236-0001
Attn: Environmental Review

Department of Water Resources
1416 Ninth St.
Sacramento, CA 95814
Attn: Environmental Review

State Department of Health Services
Drinking Water Program District Offices
500 North Central Ave, suite 500
Glendale, CA 91203
Attn: Environmental Review

Southern California Association of

818 W. 7th Street, 12th Floor
Los Angeles, CA 90017
Attn: Environmental Review

State Clearinghouse
P.O. Box 3044

Sacramento, CA 95812-3044
Attn: Environmental Review

Local and Other Agencies

City of Palmdale

Planning Department
38300 N. Sierra Hwy.
Palmdale, CA 93550-4798
Attn: Environmental Review

Lancaster Department of Community Development
44933 North Fern Avenue

Lancaster, CA 93534
Attn: Environmental Review

Wendy Reed, President

Antelope Valley Conservancy
P.O. Box 3133
Quartz Hill, CA 93586-0133

LA City/County Native American Indian Commission
Ron Andrade, Director

3175 West 6th Street, Rm. 403
Los Angeles, CA 90020

Antelope Valley-East Kern Water Agency
6500 W. Avenue N
Palmdale, CA 93551
Attn: Environmental Review

Santa Monica Mtns. Conservancy
5750 Ramirez Canyon Rd.
Malibu, CA 90265
Attn: Environmental Review

Organizations and Interested Parties

South Central Coastal Information Center
California Historical Resources Information System
California State University Fullerton
Department of Anthropology
800 N. State College Blvd.
Fullerton, CA 92834-6846

SCV Historical Society
P.O. Box 221925

Newhall, CA 91322-1925

Janet Laurain
Adams Broadwell Joseph & Cardozo

601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080- -7037

Dan Silver, Executive Director
Endangered Habitats League

8424 Santa Monica Blvd., Suite A 592
Los Angeles, CA 90069-4267

California Native Plant Society

2707 K Street, Suite 1
Sacramento, CA 95816-5113
Attn: Environmental Review

The Nature Conservancy
3639 Harbor Blvd., Suite 201

Ventura, CA 93001

Sierra Club
3435 Wilshire Blvd., Suite 320

Los Angeles, CA 90010
Attn: Environmental Review

Center for Biological Diversity

PMB 447, 8033 Sunset Blvd.
Los Angeles, CA 90046-2401

TriCounty Watchdogs

11667 Steinhoff Rd

Frazier Park, CA 93225

Charles Cooke

32835 Santiago Road

Acton, CA 93510

John Valenzuela
San Fernando Band of Mission Indians

P.O. Box 221838
Newhall, CA 91322

Owl Clan
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48825 Sapaque Road
Bradley, CA 93426

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365 North Pole Ave.
Ojai, CA 93023

Beverly Salazar Folkes
1931 Shadybrook Drive
Thousand Oaks, CA 91362

Fernandeno Tataviam Band of Mission Indians
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Grover Beach, CA 93433

Diane Napoleone and Associates
Diane Napoleone
6997 Vista del Rincon
La Conchita, CA 93001

Southern California Edison
P.O. Box 800
Rosemead, CA 91770

Poppy Reserve/ Mojave Desert Interpretive Association
43779 15TH Street West

Lancaster, CA 93534-9008

Attn: President
Antelope Acres Town Council
P.O. Box 8176
Lancaster, CA 93539-8176

Attn: President
Antelope Acres Town Council
49618 90th Street West
Lancaster CA 93536

Antelope Valley Conservancy
P.O. Box 3133
Quartz Hill, CA 93586-0133

Attn: Real Estate Editor
Antelope Valley Press
P.O. Box 4050
Palmdale, CA 93590-4050

Attn: Vice President
Quartz Hill Town Council
42036 N 52nd Street West
Quartz Hill, CA 93536-3655

Attn: President
Quartz Hill Town Council
P.O. Box 3481
Quartz Hill, CA 93586

Antelope Valley College
Office of Business Svcs.
3041 West Avenue K
Lancaster, CA 93534

Gorman School Dist.
Star Rt. 2
P.O. Box 104
Gorman, CA 93243

Attn: Eileen Hoenshell, Pres.
Green Valley County Water Dist.

P.O. Box 882
Green Valley, CA 91350

Office Manager
Shadow Acres Mutual Water Co.
P.O. Box 900669
Palmdale, CA 93590

Attn: Marvin Himlin
Himlin Realty & Investments

41757 11th Street West, #F1
Palmdale, CA 93551-1417

Vickie Nelson
49618 90th Street W.
Lancaster, CA 93536
nelsonacres3@yahoo.com

Jim McAvoy
3625 E Avenue T-6
Palmdale, CA 93550

CA ISO
P.O. Box 639014
Folsom, CA 95763-9014

Antelope Valley Association of Rural Town Councils
P.O. Box 358

Littlerock, CA 93543-0358

AV Group of the Sierra Club
Post Office Box 901875
Palmdale, CA 93590
avg@angeles.sierraclub.org

Desert & Mountain Conservation Authority

44811 N. Date Ave., Suite G,

Lancaster, CA 93534

AV Farm Bureau
41228 12th Street West, Suite A

Palmdale, CA 93551-1400

AV Board of Trade

548 W. Lancaster Blvd., Suite 103

Lancaster, CA 93534-2534

AV Resource Conservation District
Antelope Valley Resource Conservation District
44811 N. Date Ave., Suite G
Lancaster, CA 93534

Greater AV Economic Alliance
1028 W. Ave L-12 #101
Lancaster, CA 93534
info@aveconomy.org

Rosamond Community Service District
3179 35th St. West

Rosamond, CA 93560

Attn: David Kerr - President
Fairmont Town Council
Po Box 6335
Lancaster, CA 93539-6335
fairmont@antelecom.net

Richard Skaggs President
Oso Town Council
26803 W Avenue C-15
Lancaster, CA 93536-9202
info@osotc.com
richard.skaggs@sbcglobal.net

John Tommy Rosas
tattnlaw@gmail.com

Del Sur Elementary School
9023 West Ave. H
Lancaster, CA 93536

Richard Hague
PO Box 767
Lancaster, CA 93564

Friends of Antelope Valley Open Space (FAVOS)
avopenspace.org
contact person: Margaret Rhyne,
margaretrhyne@yahoo.com
41342 Sequoia Avenue,
Palmdale CA 93551
661 609-7280

Yvonne Brunet
[mailto:onniee@aim.com]

Joseph Brunet
PO Box 39
Lake Hughes, CA. 93532
jdbru123@gmail.com

Donald and Laurie O'Connor
loconnor@ucla.edu

Susan Zahnter
[mailto:ontishima1775@gmail.com]

Therese Brunet
[mailto:terrie4567@aim.com]

Carol Brunet
Laurence Brunet
[mailto:shared.oconnor@me.com]

Nancy Janik & Donald Janik
[mailto:djanik@aol.com]

Janice and Eric Blackwell
PO Box 1868
Simi Valley, CA 93062
[mailto:jani_email@yahoo.com]

Joseph Brunet
PO Box 39
Lake Hughes, CA. 93532
jdbru123@gmail.com

Barry Munz
[mailto:avengineering@verizon.net]

Russ Dingman
Staff Environmental Planner CA State Parks
Fax:661-724-1176

Joseph and Carolyn Bullock
1915 Surrey Trail
College Park, GA 30349

Concerned Citizens of the West Antelope Valley
P O Box 786
Lake Hughes, CA 93532
661.724.2043

Virginia Stout
9136 W. Avenue F-4
Antelope Acres, CA 93536

Judith Fuentes
41758 92nd St. West
Antelope Acres, CA 93536

Margaret Rhyne
[mailto:margaretrhyne@yahoo.com]

Beverly Salazar Folkes
1931 Shadybrook Drive
Thousands Oaks, CA 91362
Folkes@msn.com
Chumash, Tataviam Fermandeno

Kitanemuk & Yowlumne Tejon Indians
Delia Dominguez, Chairperson
115 Radio Street
Bakersfield, CA 9335
deedominguez@juno.com
626-339-6785
Yowlumne, Kitnemuk

San Fernando Band of Band of Mission Indians
John Valenzuela, Chariperson
P.O. Box 221838
Newhall, CA 91322
Tsen2u@hotmail.com
661-753-9833
Fernandeno, Tataviam, Serrano, Kitanemuk

LA City/County Native American Indian Comm
Ron Andrade, Director
3175 West 6th St, Rm. 403
Los Angeles, CA 90020
randrade@css.lacounty.gov

Randy Guzman – Folkes
6471 Cornell Cirlce
Moorpark, CA 93021
ndnRandy@yahoo.com
Chumash, Fernandeno, Tataviam, Shoshone Paiute, Yaqui

Ron Wermuth
P.O. Box 168
Kernville, CA 93238
warmoose@earthlink.net
Tubatulabal, Kawaiisu, Koso, Yokuts

San Manuel Band of Mission Indians
Ann Breirty, Policy/Cultural Resources Department
26569 Community Center Drive
Highland, CA 92346
abrierty@snamanuel-nsn.gov
Serrano

Kern Valley Indian Council
Robert Robinson, Co-Chairperson
P.O. Box 401
Weldon, CA 93283
brobinson@iwvisp.com
Tubatulabal, Kawaiisu, Koso, Tokuts

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APPENDIX A-4

COMMENTS RECEIVED

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State of California -- The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

FACSIMILE TRANSMITTAL

Please complete in ink.

		DATE: 7/25/2012
TO	NAME: Caroline Blengini	FACSIMILE PHONE NO.: 213 626-0434
	OFFICE/ORGANIZATION/COMPANY: Los Angeles Department of Regional Planning	OFFICE PHONE NO.: 213 974-1522
FROM	NAME: Russ Dingman	FACSIMILE PHONE NO.: 661 724-1176
	UNIT: Staff Environmental Planner - CA State Parks	OFFICE PHONE NO.: 661 724-2304
SUBJECT: Comment Letter - Silverado Power		NO. OF PAGES SENT INCLUDING TRANSMITTAL SHEET *: 2

ACTION

- ☐ INFORMATION
- ☐ FORWARDED PER REQUEST
- ☐ COMMENT
- ☐ NOTE AND FILE
- ☐ REPLY-MY SIGNATURE
- ☐ INVESTIGATE
- ☐ NOTE AND RE-ROUTE
- ☐ REPLY - CC ME
- ☐ CONTACT ME

MESSAGE/REMARKS

** IF YOU DO NOT RECEIVE ALL OF THE PAGES INDICATED, PLEASE CALL THE SENDER AS SOON AS POSSIBLE.*

State of California • Natural Resources Agency
Edmund G. Brown, Jr., *Governor*

DEPARTMENT OF PARKS AND RECREATION
Ruth Coleman, *Director*
Tehachapi District
15101 Lancaster
Lancaster, CA 92536
(661) 724-1206 * Fax (661) 724-1176

July 25, 2012

Carolina Blengini
Los Angeles Department of Regional Planning
Special Projects Section
320 West Temple Street
Los Angeles CA 90012-3225

RE: Notice of Preparation for Draft Environmental Impact Report for Silverado Power West Los Angeles County Project SCH #2012061068.

Dear Ms. Blengini:

The Tehachapi District of the California Department of Parks and Recreation (State Parks) appreciates the opportunity to comment on the Notice of Preparation for the Draft Environmental Impact Report for Silverado Power West Los Angeles County Project SCH #2012061068.

State Parks is a State Agency as defined by the California Environmental Quality Act (CEQA) § 21082.1, a Trustee Agency as used by CEQA, its Guidelines and as defined by CCR § 15386 for the resources affected by this proposed project. Our mission is to provide for the health, inspiration, and education of the people of California by helping preserve the state's extraordinary biodiversity, protecting its most valued natural and cultural resources, and creating opportunities for high quality outdoor recreation.

We appreciate receipt of the Notice of Preparation and by submitting this letter; State Parks reserve the right to comment on the Draft Environmental Impact Report at a later date. For further discussion please feel free to contact me or Russ Dingman, Staff Environmental Planner at (661) 724-2380.

Sincerely,

Kathy Weatherman
District Superintendent

To: Carolina Blengini
County of Los Angeles Regional Planning Dept
Special Projects Section
320 W. Temple St., Room 1362
Los Angeles, CA 90012

Re: Silverado Power West Los Angeles County
Project 1: R2011-00833 (CUP201100079, RZC201100005)
North Lancaster Ranch
Project 2: R2011-00798 (CUP201100070),
Western Antelope Blue Sky Ranch
Project 3: R2011-00799 (CUP201100071),
American Solar Greenworks
Project 4: R2011-00807 (CUP201100076),
Antelope Solar Greenworks
Project 5: R2011-00801 (CUP201100072),
Silver Sun Greenworks
Project 6: R2011-00805 (CUP201100074),
Lancaster WAD

From: Virginia Stout
9136 W. Ave. F-4
Antelope Acres, CA 93536

Judith Fuentes
47458 92nd St. West
Antelope Acres, CA 93536
661-723-1882

We are residents of Antelope Acres who live in close proximity and downwind of the proposed Silverado solar generating facilities.

Following are our views and concerns of which we request the EIR to address in detail.

- Western Antelope Valley has a high percentage of children with asthma-like breathing problems. What monitoring system will be in place to measure the amount of air pollution and particulate matter, especially around Del Sur School and the community?

- Projects 1-6 are in an established community (Antelope Acres). The NOP (II.a.) is incorrect. The project will physically and visually divide the rural setting and connectivity of traditional equestrian trails and dirt roads. We request to have this addressed at a local level.

- The project area is N-1. It is not a "remote" area. Please detail the reasons why Antelope Acres qualifies as a "remote area which is appropriate for energy generating facilities.

- Include, as an alternative, to promote and facilitate solar systems on all roof tops and buildings and parking lots to meet the energy requirements of the State - to be truly environmentally friendly and to not destroy the remaining open space in Los Angeles County. Please conduct a detailed study comparing industrial facilities to retrofitting homes, businesses, etc.

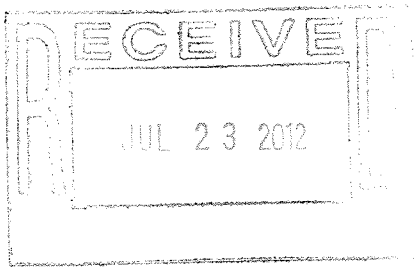
1915 Surrey Trail
College Park, GA 30349
July 18, 2012

Carolina Blengini
County of Los Angeles
Regional Planning Dept.
Special Projects Section

In response to your letter dated June 13, 2012. Regretfully the information was not only very disturbing to me, but also very confusing. I understand that quite a lot of the area will be used for Solar Energy. You refer to the surrounding land as useless, formerly used as farmland but not any longer due to lack of water. I do not agree with that assumption, as we bought the land as subdivided residential property. We planned (at the time) to retire in the area, building on the property. This development greatly disturbs us because your project basically dooms the land for any growth. No one wants to live near a Solar Plant. You are not bringing any jobs to the area, nor any businesses. Also, the information sent, as well as the web sites give no concrete information. We highly disapprove of the proposed project as we will be greatly impacted adversely. Please send information regarding plans for the surrounding area. If you recommend a website, please keep in mind that not all people involved are internet savvy. We are senior citizens, as well as out of State owners, however, we have invested in this property, paid our taxes for many year, and feel that now we are being given the shaft. Thank you in advance for any future information. we look forward to receiving more precise information, especially on the impact on the surrounding area.

Owners of Fifth Street Store Tract
Lots 1 and 14 Blk. 14
APN 3218-024-013

Joseph M. Bullock Sr.
Joseph M. Bullock Sr.
Carolyn F. Bullock
Carolyn F. Bullock



July 18, 2012

Carolina Blengini
County Of Los Angeles
Regional Planning Department
Special Projects Section
320 West Temple Street Rm. 1362
Los Angeles, California 90012

Re: Silverado Power Project

Dear Ms Blengini,

I am writing to voice my objection to the development of this project in the current proposed locations. I feel that the proposed locations are too close to the present developed areas. There are more remote areas in the Antelope Valley where this project could be developed. As a property owner near one of the sights, I feel that this development will negatively affect my future land usage and/or my ability to sale my property.

In addition, I have some concerns about the environmental impact of Hazards and Hazardous Materials, Hydrology and Water Usage, Air Quality, Geology and Soils and Noise. Even though the Environmental Report will consider these issues, I feel that there should be an ongoing evaluation to moniter these issues.

If the decision is to proceed with this project as proposed, I suggest that some remedy be provided to nearby land owners. Silverado Power, Edison or Los Angeles County should purchase these properties at a fair market value. Or, the property owners should receive a share of the profits generated by Silverado Power.

Sincerely,

Emma Walsh

Emma Walsh

RECEIVED
JUL 23 2012

Antelope Valley Air Quality Management District
43301 Division St., Suite 206
Lancaster, CA 93535-4649

661.723.8070
Fax 661.723.3450

Eldon Heaston, Executive Director

In reply, please refer to AV0712/063

July 19, 2012

Carolina Blengini
County of Los Angeles
Regional Planning Department
Special Project Section
320 West Temple Street
Room 1362
Los Angeles, CA 90012

RE: Notice of Preparation Silverado Power's Six West Los Angeles County Projects

Dear Ms. Blengini:

The Antelope Valley Air Quality Management District (District) has received and reviewed the Notice of Preparation (NOP) Silverado Power's West Los Angeles County Projects.

The District concurs with the proposed analysis of potential short-term and long-term air quality impacts associated with the proposed project. The District recommends the use of URBEMIS as the appropriate computer model to be used to estimate emissions associated with land development projects in the District. District California Environmental Quality Act (CEQA) significance thresholds and be found in the "Antelope Valley AQMD CEQA and Federal Conformity Guidelines, August 2011" located at:
http://www.avaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=2911

Prior to commencing construction, the District will require, pursuant Rule 403, *Fugitive Dust,* the submittal and approval of a Dust Control Plans for each project that will provide detail on the strategies that will be employed to mitigate dust during construction of each facility.

Thank you for the opportunity to review this planning document. If you have any questions regarding this letter, please contact me at (661) 723-8070 ext. 2 or Julie McKeehan at ext. 8.

Sincerely,

Bret Banks
Operations Manager

RECEIV

Clean Cities
Antelope Valley

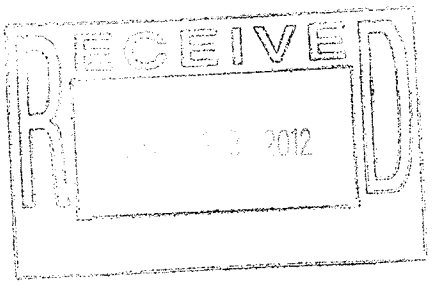
DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

5816 Corporate Avenue • Suite 200 • CYPRESS, CALIFORNIA, 90630-4731

PHONE 714 / 816-6847 • FAX 714 / 816-6853 • WEBSITE conservation.ca.gov

July 18, 2012



Carolina Blengini (Special Projects Section)
County of Los Angeles Regional Planning Dept.
320 West Temple Street, Room 1362
Los Angeles, CA 90012

Attention Carolina Blengini:

NOTICE OF PREPARATION FOR OVERALL DEVELOPMENT/SILVERADO POWER, LLC SIX PROPOSED SOLAR GENERATING FACILITIES ENVIRONMENTAL REVIEW NO. #ENV201100109

The Department of Conservation's Division of Oil, Gas, and Geothermal Resources (Division), Cypress office, has reviewed the above referenced project. Our comments are as follows:

The proposed project is located within the administrative boundaries of Los Angeles County. There is one well near the western boundary of Project 2. The well belongs to C.W. Colgrove. "Shwandt" 57-23 (037-05294) is a plugged and abandoned oil/gas well. This well is located on Division map W1-1 and in Division records.

The Division is mandated by Section 3106 of the Public Resources Code (PRC) to supervise the drilling, operation, maintenance, and plugging and abandonment of wells for the purpose of preventing: (1) damage to life, health, property, and natural resources; (2) damage to underground and surface waters suitable for irrigation or domestic use; (3) loss of oil, gas, or reservoir energy; and (4) damage to oil and gas deposits by infiltrating water and other causes. Furthermore, the PRC vests in the State Oil and Gas Supervisor (Supervisor) the authority to regulate the manner of drilling, operation, maintenance, and abandonment of oil and gas wells so as to conserve, protect, and prevent waste of these resources, while at the same time encouraging operators to apply viable methods for the purpose of increasing the ultimate recovery of oil and gas.

The scope and content of information that is germane to the Division's responsibility are contained in Section 3000 et seq. of the Public Resources Code (PRC), and administrative regulations under Title 14, Division 2, Chapter 4 of the California Code of Regulations.

If any structure is to be located over or in the proximity of a previously plugged and abandoned well, the well may need to be plugged to current Division specifications. Section 3208.1 of the Public Resources Code (PRC) authorizes the State Oil and Gas Supervisor (Supervisor) to order the reabandonment of any previously plugged and abandoned well when construction of any structure over or in the proximity of the well could result in a hazard.

An operator must have a bond on file with the Division before certain well operations are allowed to begin. The purpose of the bond is to secure the state against all losses, charges, and expenses incurred by it to obtain such compliance by the principal named in the bond. The operator must also designate an agent, residing in the state, to receive and accept service of all orders, notices, and processes of the Supervisor or any court of law.

Written approval from the Supervisor is required prior to changing the physical condition of any well. The operator's notice of intent (notice) to perform any well operation is reviewed on engineering and geological basis. For new wells and the altering of existing wells, approval of the proposal depends primarily on the following: protecting all subsurface hydrocarbons and fresh waters; protection of the environment; using adequate blowout prevention equipment; and utilizing approved drilling and cementing techniques.

The Division must be notified to witness or inspect all operations specified in the approval of any notice. This includes tests and inspections of blowout-prevention equipment, reservoir and freshwater protection measures, and well-plugging operations.

The Division recommends that adequate safety measures be taken by the project manager to prevent people from gaining unauthorized access to oilfield equipment. Safety shut-down devices on wells and other oilfield equipment must be considered when appropriate.

If any plugged and abandoned or unrecorded wells are damaged or uncovered during excavation or grading, remedial plugging operations may be required. If such damage or discovery occurs, the Division's Cypress district office must be contacted to obtain information on the requirements for and approval to perform remedial operations.

Sincerely,

Syndi Pompa

Syndi Pompa
Associate Oil & Gas Engineer - Facilities

Jesus Is Mine

Boys J.I.M. Club
OF AMERICA

Christian Leadership Training

" Discipling boys
to love Jesus deeply
and express Him vividly "

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JUL 1 5 2012

July 10, 2012

Carolina Blengini
County of Los Angeles Regional Planning Department
Special Projects Section
320 West Temple Street, Room 1362
Los Angeles, CA 90012

Dear Ms. Blengini,

The Boys J.I.M. Club of America has property in Los Angeles County that we are interested in selling. The location of our property is: between 120th Street West and 110th Street West and Avenue H and Avenue I, in Lancaster California. Please see attached Property Location Plat Copy.

Our land seems to be within the area described by the L.A. County Dept. of Regional Planning documents, relative to the development of solar generating facilities. If your group or anyone else is interested in purchasing our land, please have them contact me at The Boys J.I.M. Club of America, PO Box 58, Bemus Point, NY 14712, or e-mail at info@boysjimclub.org, or phone 716-386-3806. Thank you for your time.

Sincerely,

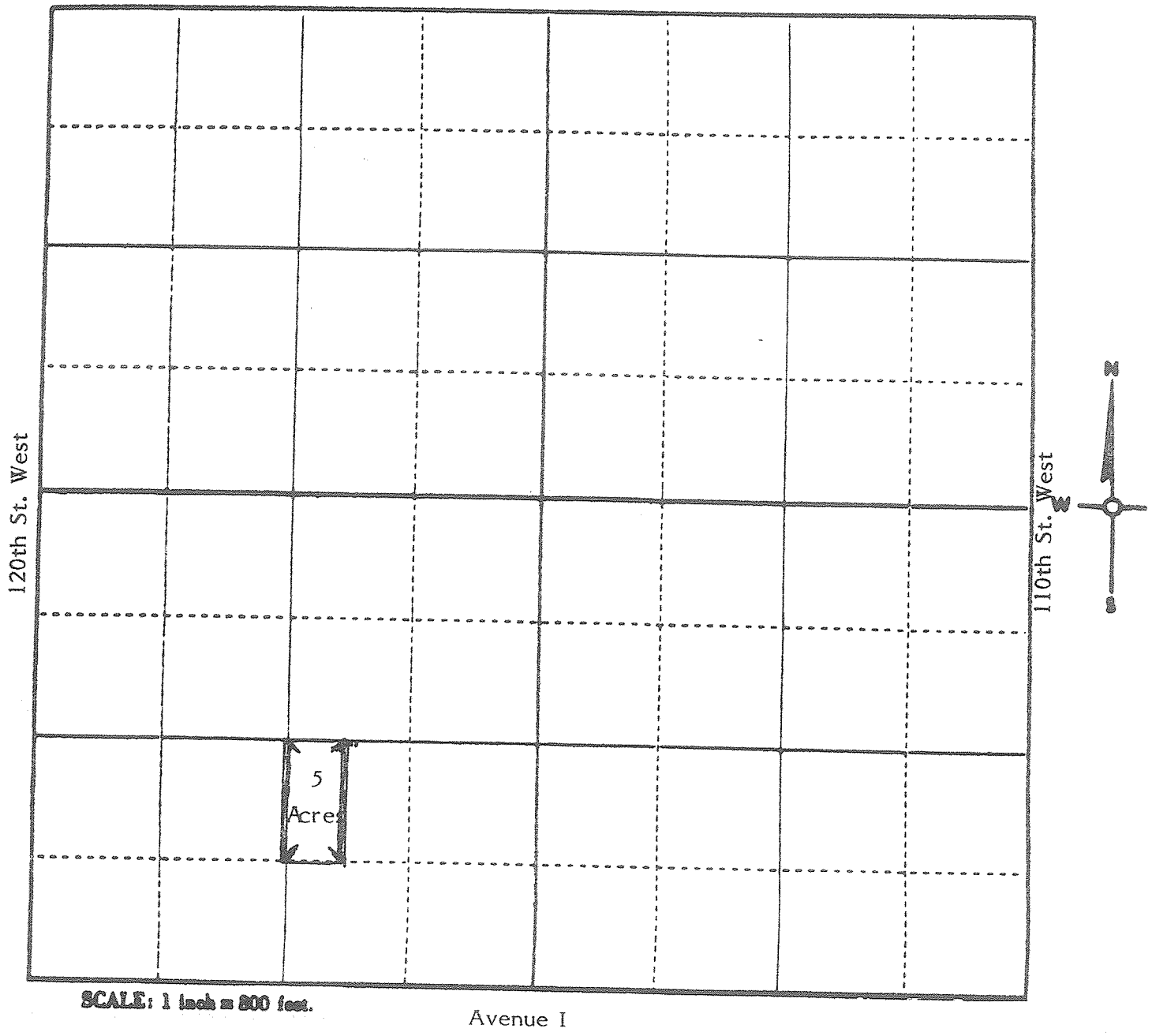
Brian Stapley

The Boys J.I.M. Club of America, Director

PROPERTY LOCATION PLAT

SW¼ Section 11 Tp 7N R 14W Meridian

Los Angeles County



Sierra Century Corporation
P.O. BOX 2304 • ORANGE, CA 92669 • (714) 639-9170

YOUR COPY

PALMDALE
a place to call home

July 23, 2012

JAMES C. LEDFORD, JR.
Mayor

STEVEN D. HOFBAUER
Mayor Pro Tem

LAURA BETTENCOURT
Councilmember

MIKE DISPENZA
Councilmember

TOM LACKEY
Councilmember

38300 Sierra Highway

Palmdale, CA 93550-4798

Tel: 661/267-5100

Fax: 661/267-5122

TDD: 661/267-5167

Ms. Carolina Blengini
Los Angeles County Department of Regional Planning
Special Projects Section
320 West Temple Street, Room 1362
Los Angeles, CA 90012

RE: Notice of Preparation for Silverado Power West Los Angeles County; Six Individual Solar Generating Facilities Ranging in Size from 38.49 Acres to 256 Acres (County ENV No 201100109)

Dear Ms. Blengini:

Thank you for the opportunity to review and reply to your Notice of Preparation for the above referenced projects. The Planning Department staff has reviewed the documents, including the Initial Study and attached maps. At this time, the City of Palmdale has no comment on the proposed projects.

If you have any questions regarding this matter, please contact Susan Koleda, AICP, Senior Planner, or me at (661) 276-5200.

Sincerely

Susan Koleda

for Richard Kite
Planning Manager

RK:sk

RECEIVED
JUL 25 2012

Auxiliary aids provided for communication accessibility upon 72 hours' notice and request.

From:	Carolina Blengini
To:	DiSano, Michael
Subject:	FW:
Date:	Monday, July 23, 2012 8:28:31 AM

FYI

From: Jd [mailto:jdbru123@gmail.com]
Sent: Friday, July 20, 2012 9:50 PM
To: Carolina Blengini
Subject:

My name is Joseph Brunet and I am a resident in the area where a new solar farm is being proposed, 110th Street West and Avenue K, 157 acres (Sp site 7-29 western antelope valley blue sky ranch llc) This letter is to voice my strong opposition to the construction of this industrial complex in the foothills of some of the most beautiful and choice property in the Antelope Valley. Please do not allow this project to ruin our valley.

Thank you,

Joseph Brunet
PO Box 39
Lake Hughes, CA. 93532
jdbru123@gmail.com

From:	Carolina Blengini
To:	DiSano, Michael
Subject:	FW: 157 Acre Solar-electric Generating Facility at Ave K and 110th Street West
Date:	Monday, July 23, 2012 7:35:01 AM
Attachments:	K-110th STW solar protest.pdf

FYI

From: Swain, Jocelyn [mailto:jswain@cityoflancasterca.org]
Sent: Friday, July 20, 2012 2:57 PM
To: Carolina Blengini
Subject: FW: 157 Acre Solar-electric Generating Facility at Ave K and 110th Street West

Another one.

Jocelyn

From: Laurie O'Connor [mailto:loconnor@ucla.edu]
Sent: Friday, July 20, 2012 1:06 PM
To: Swain, Jocelyn; Reyes, Joy
Subject: Re: 157 Acre Solar-electric Generating Facility at Ave K and 110th Street West

Our protest letter is attached. Please read.

Laurie and Donald O'Connor

From:	Carolina Blengini
To:	DiSano, Michael
Subject:	FW: 157 acre Solar-Electric Generating Project at 110th & K, Lancaster
Date:	Monday, July 23, 2012 7:47:26 AM

FYI

From: Shared O'Connor [mailto:shared.oconnor@me.com]
Sent: Friday, July 20, 2012 5:58 PM
To: Carolina Blengini
Cc: Laurence Brunet
Subject: Fwd: 157 acre Solar-Electric Generating Project at 110th & K, Lancaster

From:
Laurence and Carol Brunet
Lancaster, Calif 93536
661-943-2560

We are protesting the 157 acre Solar-Electric Generating Project proposed for 110th West, north of Avenue K in Lancaster, Los Angeles County area.

This West Lancaster area, which is now scenic and rolling hills, will be ruined with this extremely large solar farm and generating facility. We own a home and land close by.

I understand that approximately 9.8 billion has been spent on such projects (with taxpayer/government subsidies) for only an end result of 910 permanent jobs. A short construction period will give us some temporary jobs. But, our cities and counties will be left with of miles and miles of these solar panels strewn throughout.

When the subsidies end, the result will be more bankrupt solar companies like Solyndra. Two more recent

bankruptsies include Abound Solar and Nevada Geothermal Power. Many others will follow, and we taxpayers will foot the bills, and ruin our countryside.

This location on 110th Street West at Avenue K is close to lovely homes on 2.5 acre to 5.0 acre sites.

Have all of the environmental and cultural aspects been addressed for this mammoth sized project?

Please deny this project.

Carol Brunet
Laurence Brunet

From:	Carolina Blengini
To:	DiSano, Michael
Subject:	FW: Letter of Protest - Concerning Solar Electric Facility at 110th St. West & Avenue K - (SP Site 7-29, Western Antelope Blue Sky Ranch LLC)
Date:	Monday, July 23, 2012 7:51:40 AM

FYI

From: Nancy Janik [mailto:djanik@aol.com]
Sent: Friday, July 20, 2012 8:59 PM
To: Carolina Blengini
Subject: Letter of Protest - Concerning Solar Electric Facility at 110th St. West & Avenue K - (SP Site 7-29, Western Antelope Blue Sky Ranch LLC)

To:
Carolina Blengini,
County of Regional Planning Department
Special Projects Section
320 West Temple Street, Room 1362
Los Angeles, California 90012

Telephone: (213) 974-1522
Fax: (213) 626-0434
Email: cblengini@planning.lacounty.gov

Letter of Protest - Concerning Solar Electric Facility at 110th St. West & Avenue K (SP Site 7-29, Western Antelope Blue Sky Ranch LLC)

Carolina Blengini,

I object to the proposed use of the land for a 157-acre Solar Electric Facility on the Northwest corner of 110th St. West and Avenue K.

I own property less than 1/4 mile from this location. The property surrounding your proposed Solar Panel Electric Facility has beautiful custom homes, and homeowners should not have their property values destroyed by poor planning of the County Planning Department. We purchased this property because it is zoned rural residential, and has a beautiful view of the Lancaster area. I do not want it destroyed by 157 acres of aluminum panels.

Solar Panels should be put in a more distant location than in the backyard of beautiful custom homes in Lancaster. Another problem with the use of this land for Solar Panels is that it is viewable from the Aqueduct; this land should be reserved for residential homes as it is currently zoned. Solar Panels will be a blight on this land.

I only accidentally found out about the proposed use of this site. If the owners of land within a few miles of this proposed plan were informed of this proposed use, I am sure there would be a tremendous upheaval over the proposal.

This is not good planning for the use of this this scenic land.

Sincerely,

Nancy Janik
Donald Janik

From: Carolina Blengini
To: DiSano, Michael
Subject: FW: Project No.: ENV No. 201100109
Date: Tuesday, July 24, 2012 8:10:12 AM

FYI

From: DRP Zoning LDCC
Sent: Tuesday, July 24, 2012 8:08 AM
To: Carolina Blengini; Kim Szalay; Samuel Dea; Mark Herwick
Subject: FW: Project No.: ENV No. 201100109

Good Morning all,
Here are comments for the Silverado EIR project.
Thanks,
Velma

From: Barry Munz [mailto:avengineering@verizon.net]
Sent: Monday, July 23, 2012 3:52 PM
To: DRP Zoning LDCC
Subject: Project No.: ENV No. 201100109

Case Planners,

The Scoping meeting for the Silverado EIR was held on Saturday, July 14th and we were suppose to have written comments returned by Friday, July 20th. However, I was told by Silverado that the deadline had been extended to today, July 23rd. Either way, this does not provide much time for us to provide you with our comments. We were not notified of the meeting as we are not within the 1000' radius (which is much too small for these projects that affect such a large area). Below our my comments:

Aesthetics

- Scenic Vista's will be significantly impacted as large swaths of natural beauty will be interrupted. The projects can and should be screened, but most of the site are still removing significant amounts of area that have wild flowers every years. How do you mitigate these impacts?
    - Lancaster Road is one of the most beautiful roads 6-8 weeks every year. It is also very unique for the County in general, no matter what time of year. It should be designated as a Scenic Highway and this type of development, which is in conflict with the scenic value, should not be allowed with a mile of the road.
        - The west end of Ave I (paved portion) is very similar and it should be treated similarly in regards to these projects.
- These projects will change the visual characteristics of the entire area.
- Will there be glare for those of us that live in the area?
- How visible will these projects be from the Poppy Preserve?

- What are the impacts to the Pacific Crest Trail which crosses the Valley on the West side?
- The cumulative effects from all 35 projects identified in the County so far, as well as all of the projects within the City limits, need to be included.
    - With all of the open areas, why are the proposed projects concentrated on the west end of the Antelope Valley adjacent to the Poppy Preserve? It's not just transmission as there are transmission lines crossing areas that are more desolate where the impacts would be less.
- Mitigation for impacts must be in "like kind" property in the same area and should be on at least a ?:1 basis (the basis for mitigation to scenic vista and visual characteristics is difficult as it impacts much larger areas than the project itself).

<u>Agriculture</u>

- These projects will be converting some potentially prime farm land to non usable areas
    - With the world population expanding, they say we need to increase our food supply by 70% by 2050. How do you do that if you remove prime farm land? However, the viability of the sites being prime farm land needs to be reviewed as some of the sites may be marginal.
    - Mitigation for the loss of prime farm land should be in "like kind" in the same area on a 1:1 (?) basis.
        - Mitigation could include assisting in establishing an agricultural operation

<u>Air Quality</u>

- Permanent dust control measure after construction are needed.
    - Native vegetation for each site should be used at each site. (The vegetation at each site is different).
- Dust Control can be a problem during construction
- Enforcement is the most important part of minimizing these impacts.

<u>Biological</u>

- These projects will significantly disturb the native vegetation. At some sites, re-establishing the pre-project vegetation could be difficult due to the soil conditions, etc.
    - How do you re-establish vegetation under the solar panels, especially if wild flowers? If you can't, how do you control dust?
- Disturbed vegetation will also disturb the animals. How many will actually return, maybe 50% if not fenced. Fencing will further disturb the habitat for larger animals. Mitigation should again be in "like kind" and on at least a 2:1 basis to offset the loss of habitat.
- Suitable mitigation properties should be identified in EIR.

<u>Cultural Impacts</u>

- Impact to Historical Resources
    - What is considered a Historical Resource?
    - How close to the historical resource before the project impacts it? Obviously, there are the physical impacts, but what about visual impacts, etc.
- These projects may not have as significant impact directly, but cumulatively, there could be significant impact to Historical, as well as archeological resources.

Geology and Soils

- Most of the sites are on flat ground, so soil stability should not be an issue
- Potential for wind erosion is significant
    - Vegetation should be used to mitigate these impacts for the long term
    - Water can be used for the short term mitigation of wind erosion

Hydrology and Water Quality

- With the Ground Water Basin under adjudication, what gives them the right to extract any ground water.
    - Construction will have the highest water demand in order to control dust.
    - Some long term demands for dust control
    - Some long term demands for landscaping used to "screen" the sites
- Best to use recycled, water trucked in, except for landscape demands
- Some sites may re-direct storm water runoff
    - All runoff must be returned to it's natural condition before leaving the sites
    - Will sites increase storm water runoff? Maybe a little due to compacted access roads, etc. Any increase must be mitigated to a zero increase in discharge from the site.
- Enforcement is the key to mitigation of these issues.

Land Use

- These projects have such a significant cumulative impact, they need to be held to the a different standard than they would if it was one project on a case by case basis. The T&C plan would be a good place to start as well as the soon to come Renewable Energy Ordinance.
- **Public Notification Standards for these projects need to be modified.** You can't limit the notification to the adjacent owners for these projects that impact the entire community. And in the rural areas, the parcels are so big that even the adjacent neighbors may be excluded from the notifications.
- Limiting the written comment period to 45 days is cheating the public. If it takes the experts 8-15 months to prepare the EIR, how can the public possibly provide meaningful comments in 45 days?

Traffic

- Local roads will take a lot of extra traffic during construction. Many of the roads are already dilapidated, especially sections of Ave I. How do they mitigate this impact?
- Project construction should be schedule outside of peak poppy bloom to avoid conflict with all of the tourist traveling the roads.

Utilities

- Are there in Master Planned Storm Channels, or flow paths, (currently of previously identified) that are affected by these sites?

I hope the County really takes into account the cumulative impacts to the lives of all of the people that live in the west Antelope Valley as well as their habitat and uniqueness of the area that could be “paved” over by all of Utility Scale Renewable Energy. If it was only a couple of projects in the correct locations, but as proposed, they will surround the Poppy Preserve and destroy what we cherish and respect, nature!

Thank You.

From:	Carolina Blengini
To:	DiSano, Michael
Subject:	FW: Proposed 157 Acre Solar Development - West Lancaster at 110th West & Ave. K (SP Site 7-29)
Date:	Monday, July 23, 2012 7:46:58 AM

FYI

From: Terrie4567 [mailto:terrie4567@aim.com]
Sent: Friday, July 20, 2012 5:16 PM
To: Carolina Blengini
Subject: Proposed 157 Acre Solar Development - West Lancaster at 110th West & Ave. K (SP Site 7-29)

Carolina Blengini
County of Los Angeles Regional Planning Department
Special Projects Section
320 West Temple Street, Room 1362
Los Angeles, California 90012

To Carolina Blengini,

I am writing regarding the proposed 157 acre solar development at Avenue K and 110th in West Lancaster. I am opposed to this development very close to my property as this is a prime residential area and is specifically zoned for 2 1/2 acre residential lots. There are many custom homes in this area with some of the prettiest views in the Lancaster area. This development will have a significant negative impact on the value of the surrounding properties. I am also concerned with the lack of adequate communication to local property/home owners that will be negatively impacted by this development. My request is that this solar proposal/application be denied.

Sincerely,
Therese Brunet

From:	Carolina Blengini
To:	DiSano, Michael
Subject:	FW: Protest Letter - !10th St. West & Ave. K - Solar Electric Facility - (SP Site 7-29, Western Antelope Blue Sky Ranch LLC)
Date:	Monday, July 23, 2012 7:53:02 AM

FYI

From: J J [mailto:jani_email@yahoo.com]
Sent: Saturday, July 21, 2012 12:00 AM
To: Carolina Blengini
Subject: Protest Letter - !10th St. West & Ave. K - Solar Electric Facility - (SP Site 7-29, Western Antelope Blue Sky Ranch LLC)

July 20, 2012

Carolina Blengini
County of Regional Planning Department
Special Projects Section
320 West Temple Street, Room 1362
Los Angeles, CA 90012

To Carolina Blengini,

This letter should serve as my official protest to the proposed 157-acre Solar Electric Facility on the Northwest corner of 110th St. West and Avenue K.

I was surprised to hear of this proposed 157 acre solar electric facility and do not think it has been adequately communicated to the community which will be impacted. Additionally, the time frame for commenting and protests is inadequate.

I strongly oppose this plan. I am the owner of property that is very close to this proposed planned development. The impact to us is enormous. A solar farm would significantly depreciate the land and destroy the beautiful scenery in the area.

I ask that you deny this project.

Sincerely,

Janice and Eric Blackwell
PO Box 1868
Simi Valley, CA 93062

From:	Carolina Blengini
To:	DiSano, Michael
Subject:	FW: Protest Letter Solar Farm 110th St W and Ave K
Date:	Monday, July 23, 2012 7:34:29 AM

FYI

-----Original Message-----
From: Swain, Jocelyn [mailto:jswain@cityoflancasterca.org]
Sent: Friday, July 20, 2012 2:57 PM
To: Carolina Blengini
Subject: FW: Protest Letter Solar Farm 110th St W and Ave K

More comment letters on the project at 110th St West and Avenue K.

Jocelyn

Jocelyn Swain
Associate Planner - Environmental
661-723-6249
jswain@cityoflancasterca.org

-----Original Message-----
From: Jd [mailto:jdbru123@gmail.com]
Sent: Friday, July 20, 2012 12:11 PM
To: Reyes, Joy
Cc: Swain, Jocelyn
Subject: Protest Letter Solar Farm 110th St W and Ave K

My name is Joseph Brunet and I am a resident in the area where a new solar farm is being proposed, 110th Street West and Avenue K, 157 acres (Sp site 7-29 western antelope valley blue sky ranch llc) This letter is to voice my strong opposition to the construction of this industrial complex in the foothills of some of the most beautiful and choice property in the Antelope Valley. Please do not allow this project to ruin our valley.

Thank you,

Joseph Brunet
PO Box 39
Lake Hughes, CA. 93532
jdbru123@gmail.com

Sent from my iPhone

From:	Carolina Blengini
To:	DiSano, Michael
Subject:	FW: Protest of 157 Acre Solar-Electric 110th West at Ave. K Lancaster, CA
Date:	Monday, July 23, 2012 7:48:42 AM

FYI

From: Yvonne Brunet [mailto:onniee@aim.com]
Sent: Friday, July 20, 2012 6:35 PM
To: Carolina Blengini
Subject: Protest of 157 Acre Solar-Electric 110th West at Ave. K Lancaster, CA

July 20, 2012

To: Carolina Blengini, County Regional Planning
Special Projects Section
320 West Temple St Room 1362
Los Angeles. California 90012

From: Laurence and Carol Brunet
Lancaster, CA 93536 661 943-2560

We are protesting the 157 Acre Solar-Electric Generating Project proposed for 110th West, north of Avenue K in Lancaster, Los Angeles County area.

This West Lancaster area, which is now scenic and rolling hills, will be ruined with this extremely large solar farm and generatiing facility. We own a home and land close by.

I understand that approximately 9.8 Billion has been spent on such projects (with taxpayer/government subsidies) for only an end result of 910 permanent jobs. A short construction period will give us some temporary jobs. But our cities and counties will be left with miles and miles of these solar panels strewn throughout.

When the subsidies end, the result will be more bankrupt solar companies like Solyndra. Two more recent bankruptcies include Abound Solar and Nevada Geothermal Power. Many others will follow and we taxpayers will foot the bills and ruin our countryside.

This location on 110th West at Ave. K. is close to lovely homes on 2.5 acre to 5 acre sites.

Have all the environmental and cultural aspects been addressed for this mammoth size project?

Please deny this project.

Carol Brunet
Laurence Brunet

From:	Carolina Blengini
To:	DiSano, Michael
Subject:	FW: Silverado Power West LA County Projects NOP
Date:	Monday, July 23, 2012 7:32:53 AM
Attachments:	silverado comments.pdf

FYI

From: Margaret Rhyne [mailto:margaretrhyne@yahoo.com]
Sent: Friday, July 20, 2012 10:40 AM
To: Carolina Blengini
Cc: Jim Dodson; Kathy Porter; Chris Glass; Jean Youngquist; Susan Zahnter; Robert Kerekes; Norm Hickling; Debbie Schmidt; Jill Bays; John Calvert; Jill Moran; R. Hague; Helen Henry; Katherine Allen; judy clay; Jeff Olesh; Mitch Glaser; Vern and Marge Biehl; C. Moran
Subject: Silverado Power West LA County Projects NOP

Please advise if a paper copy should also be mailed. These comments are for:

Project 1: R2011-00833 (CUP201100079, RZC201100005), North Lancaster Ranch
Project 2: R2011-00798 (CUP201100070), Western Antelope Blue Sky Ranch
Project 3: R2011-00799 (CUP201100071), American Solar Greenworks
Project 4: R2011-00807 (CUP201100076), Antelope Solar Greenworks
Project 5: R2011-00801 (CUP201100072), Silver Sun Greenworks
Project 6: R2011-00805 (CUP201100074), Lancaster WAD

Thank you, Margaret Rhyne, Friends of Antelope Valley Open Space. 661 609-7280

prmdia.org savesaddleback.org avopenspace.org

"Everyone needs beauty as well as bread, places to play in and pray in where nature may heal and cheer and give strength to the body and soul." John Muir

From:	Carolina Blengini
To:	DiSano, Michael
Subject:	FW: SP Site 7-29, 157 acre solar farm 100th West & Ave. K
Date:	Monday, July 23, 2012 7:35:23 AM

FYI

-----Original Message-----
From: Yvonne Brunet [mailto:onniee@aim.com]
Sent: Friday, July 20, 2012 4:55 PM
To: Carolina Blengini
Subject: SP Site 7-29, 157 acre solar farm 100th West & Ave. K

Carolina Blengini
County of Los Angeles Regional Planning Department Special Projects Section
320 West Temple Street, Room 1362
Los Angeles, California 90012

To Carolina Blengini,

I am writing to protest the proposed solar project at the corner of 110th Street West and Avenue K.

I own land very close to this proposed development and am strongly opposed to it. This area of land is some of the most beautiful and desirable land in the Antelope Valley. There are also several very nice custom homes in the area on 2 to 5 acre parcels. A 157 acre solar farm would be a massive development that would ruin the beautiful scenery of this area and greatly depreciate the value of the land and homes in the area.

A solar farm of this size should not be be placed in this area. It would be much more appropriate to place a development of this size in outlying areas where it will not have such a detrimental effect on such a large area.

The planning commission is charged with making good decisions for appropriate land development in the county. A massive 157-acre solar farm for this location is an extremely poor choice. I ask that you deny the application.

Sincerely,

Yvonne Brunet

From:	Carolina Blengini
To:	DiSano, Michael
Subject:	FW: SP Site 7-29, 157 acre solar farm 11th & Ave. K
Date:	Monday, July 23, 2012 7:33:22 AM

FYI

-----Original Message-----
From: Swain, Jocelyn [mailto:jswain@cityoflancasterca.org]
Sent: Friday, July 20, 2012 11:08 AM
To: Carolina Blengini
Subject: FW: SP Site 7-29, 157 acre solar farm 11th & Ave. K

Carolina,

I received the below email this morning regarding Silverado's project at 110th Street West and Avenue K. I believe she meant for this email to go to the County. I have sent her a separate email notifying her that this is a County project and giving her your contact information.

Sincerely,

Jocelyn

Jocelyn Swain
Associate Planner - Environmental
661-723-6249
jswain@cityoflancasterca.org

-----Original Message-----
From: Yvonne Brunet [mailto:onniee@aim.com]
Sent: Thursday, July 19, 2012 9:46 PM
To: Reyes, Joy; Swain, Jocelyn
Subject: SP Site 7-29, 157 acre solar farm 11th & Ave. K

Attn: Brian S. Ludicke, Planning Director and Joselyn Swain, Planning Staff City of Lancaster - Planning Dept.
44933 Fern Avenue
Lancaster, CA 93534

To Brian Ludicke and Joselyn Swain,

I am writing to protest the proposed solar project at the corner of 110th Street West and Avenue K.

I own land very close to this proposed development and am strongly opposed to it. This area of land is some of the most beautiful and desirable land in the Antelope Valley. There are also several very nice custom homes in the area on 2 to 5 acre parcels. A 157 acre solar farm would be a massive development that would ruin the beautiful scenery of this area and greatly depreciate the value of the land and homes in the area.

A solar farm of this size should not be be placed in this area. It would be much more appropriate to place a development of this size in outlying areas where it will not have such a detrimental effect on such a large area.

The planning commission is charged with making good decisions for appropriate land development in the city. A massive 157-acre solar farm for this location is an extremely poor choice. I ask that you deny the application.

Sincerely,

Yvonne Brunet

Carolina Blengini
County of Los Angeles Regional Planning Department
Special Projects Section
320 West Temple Street, Room 1362
Los Angeles, California 90012

July 19, 2012

To: Carolina Blengini, Planning Department

Re: No. SP SITE 7-29 157 Acre Solar-electric Generating Facility Conditional Use Permit at the Northwest corner of Avenue K and 110th Street West.

We are protesting the proposed construction and operation of a solar-electric generating facility located at the Northwest corner of 110th Street West and Ave K in Lancaster. This proposed facility is also known as Western Antelope Blue Sky Ranch

We recently purchased a parcel of land in the county, near 115th St. West and Ave. K-4, in close proximity to the proposed solar facility. We felt horrible when we learned of this proposed solar facility. In addition to being near existing residential communities, this is on the route to peaceful Lake Elizabeth and Leona Valley. It is also on the route that is commonly used by tourists to travel to the Poppy Reserve. The proposed site 157 acre site is clearly viewable from the aqueduct trails.

PLEASE NOTE: The environmental assessment report that was filed with the application makes several misleading or false statements that need to be corrected and be addressed.

The environmental assessment asks: Will the project impact a riding or hiking trail, ridgeline, shoreline view, significant natural feature or previously undisturbed area? The answer states that "no trails, ridgelines, or natural features will be disturbed". This is a false statement. **The proposed site is clearly visible from the aqueduct area and trails and even from the rest area facility.**

While the report indicates that little grading will be needed and that there are no slopes over 25%, some of the hillsides on the southern portion of that parcel are greater than a 25% slope, and will need to be graded. A major reason that Avenue K has not yet been extended past 110th Street West is because of the hilly terrain and large slope differentials in the area. There is also an overflow channel in the aqueduct that ultimately drains across this proposed location.

The additional lighting that will need to be on at night will impact the night sky for the neighboring community who relocated here to get away from the traffic and lights of the city. This does change the nature, pattern, and character of the surrounding land. This is out of character with current usage, contrary to the statement made in the environmental report.

An alternative would be to place solar facilities further away, out into the mostly flat desert areas, instead of so close to the beautiful foothills.

It is when I drive out to the areas surrounding Lancaster and Palmdale, that I find the beauty that makes our valley special. As a desert community, the Antelope Valley foothills offers scenic views that stretch for miles, the California Aqueduct recreational areas, species of plants that are unique to our area, and tourist-attractions such as the Poppy Reserve, the Leona Valley Cherry Festival, and Elizabeth Lake and Lake Hughes.

Do we really need to ruin what we have in exchange for solar power? Can't you approve solar facilities for a more appropriate location that is further away from existing rural communities, and where it is not an eyesore from the aqueduct trails and foothills, and that is not along a major route to Leona Valley, Elizabeth Lake, and the Poppy Reserve? Surely you can do better!

The planning department has the charter for planning a path for development that preserves and enhances the current and future value of our communities. A 157 acre solar-electric generating facility for this close-in, scenic location is an extremely poor choice. We request that the application is denied

Sincerely,

Donald and Laurie O'Connor
loconnor@ucla.edu
(805) 368-2617

City of Lancaster - Planning Dept.
44933 Fern Avenue
Lancaster, California 93534

July 19, 2012

To: Brian S. Ludicke, Planning Director, and Jocelyn Swain, Planning Staff

Re: No. SP SITE 7-29 157 Acre Solar-electric Generating Facility Conditional Use Permit at the Northwest corner of K and 110th Street West.

We are protesting the proposed construction and operation of a solar-electric generating facility located at the Northwest corner of 110th Street West and Ave K in Lancaster. This proposed facility is also known as Western Antelope Blue Sky Ranch

We recently purchased a parcel of land, near 110th St. West and Ave. K, in close proximity to the proposed solar facility. We felt horrible when we learned of this proposed solar facility. In addition to being near existing residential communities, this is on the route to peaceful Lake Elizabeth and Leona Valley. It is also on the route that is commonly used by tourists to travel to the Poppy Reserve. The proposed site 157 acre site is clearly viewable from the aqueduct trails.

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While the report indicates that little grading will be needed and that there are no slopes over 25%, some of the hillsides on the southern portion of that parcel are greater than a 25% slope, and will need to be graded. A major reason that Avenue K has not yet been extended past 110th Street West is because of the hilly terrain and large slope differentials in the area. There is also an overflow channel in the aqueduct that ultimately drains across this proposed location.

The additional lighting that will need to be on at night will impact the night sky for the neighboring community who relocated here to get away from the traffic and lights of the city. This does change the nature, pattern, and character of the surrounding land. This is out of character with current usage, contrary to the statement made in the environmental report.

An alternative would be to place solar facilities further away, out into the mostly flat desert areas, instead of so close to the beautiful foothills.

A question for the city officials and planners. Can you do a better job of planning this city for the future that preserves what natural assets we do have? When I drive through the streets of Lancaster

and Palmdale, I cannot tell the difference between here and the middle of the San Fernando Valley. Is that the vision that you have for our entire valley?

It is when I drive out to the surrounding areas, that I find the beauty that makes our valley special. As a desert community, the Antelope Valley foothills offers scenic views that stretch for miles, the California Aqueduct recreational areas, species of plants, such as the Joshua tree, that are unique to our area and tourist-inviting events such as Poppy Season and the Cherry Festival.

Do we really need to ruin what we have in exchange for solar power? Can't you approve solar facilities for a more appropriate location that is further away from existing rural communities, and where it is not an eyesore from the aqueduct trails and foothills, and that is not along a major route to Leona Valley, Elizabeth Lake, and the Poppy Reserve? Surely you can do better!

The planning commission has the charter for planning a path for city development that preserves and enhances the current and future value of our community. A 157 acre solar-electric generating facility for this close-in, scenic location is an extremely poor choice. We request that the application is denied

Sincerely,

Donald and Laurie O'Connor
loconnor@ucla.edu
(805) 368-2617

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
ds_nahc@pacbell.net

2012 JUN 25 PM 4:

June 21, 2012

Ms. Carolina Blengini, Project Planner
Los Angeles County Department of Regional Planning
320 West Temple Street, Room 1362
Los Angeles, CA 90012

Re: SCH#2012061068; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the **"Silverado Power West Los Angeles County Project;"** located in the Lancaster area or northeastern Los Angeles County, California.

Dear Ms. Blengini:

The Native American Heritage Commission (NAHC), the State of California 'Trustee Agency' for the protection and preservation of Native American cultural resources pursuant to California Public Resources Code §21070 and affirmed by the Third Appellate Court in the case of EPIC v. Johnson (1985: 170 Cal App. 3rd 604).

This letter includes state and federal statutes relating to Native American historic properties of religious and cultural significance to American Indian tribes and interested Native American individuals as 'consulting parties' under both state and federal law. State law also addresses the freedom of Native American Religious Expression in Public Resources Code §5097.9.

The California Environmental Quality Act (CEQA – CA Public Resources Code 21000-21177, amendments effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as 'a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE), and if so, to mitigate that effect. The NAHC did conduct a Sacred Lands File (SLF) search within the 'area of potential effect (APE} and Native American cultural resources were not identified in the project area specified.

The NAHC "Sacred Sites,' as defined by the Native American Heritage Commission and the California Legislature in California Public Resources Code §§5097.94(a) and 5097.96. Items in the NAHC Sacred Lands Inventory are confidential and exempt from the Public Records Act pursuant to California Government Code §6254 (r).

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries of cultural resources or burial sites once a project is underway. Culturally affiliated tribes and individuals may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). We strongly urge that you make contact with the list of Native American Contacts on the attached list of Native American

contacts, to see if your proposed project might impact Native American cultural resources and to obtain their recommendations concerning the proposed project. Pursuant to CA Public Resources Code § 5097.95, the NAHC requests cooperation from other public agencies in order that the Native American consulting parties be provided pertinent project information. Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e). Pursuant to CA Public Resources Code §5097.95, the NAHC requests that pertinent project information be provided consulting tribal parties. The NAHC recommends *avoidance* as defined by CEQA Guidelines §15370(a) to pursuing a project that would damage or destroy Native American cultural resources and Section 2183.2 that requires documentation, data recovery of cultural resources.

Furthermore, the NAHC if the proposed project is under the jurisdiction of the statutes and regulations of the National Environmental Policy Act (e.g. NEPA; 42 U.S.C. 4321-43351). Consultation with tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 *et seq*), 36 CFR Part 800.3 (f) (2) & .5, the President's Council on Environmental Quality (CSQ, 42 U.S.C 4371 *et seq.* and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. The aforementioned Secretary of the Interior's *Standards* include recommendations for all 'lead agencies' to consider the historic context of proposed projects and to "research" the cultural landscape that might include the 'area of potential effect.'

Confidentiality of "historic properties of religious and cultural significance" should also be considered as protected by California Government Code §6254(r) and may also be protected under Section 304 of he NHPA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APEs and possibility threatened by proposed project activity.

Furthermore, Public Resources Code Section 5097.98, California Government Code §27491 and Health & Safety Code Section 7050.5 provide for provisions for inadvertent discovery of human remains mandate the processes to be followed in the event of a discovery of human remains in a project location other than a 'dedicated cemetery'.

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. Regarding tribal consultation, a relationship built around regular meetings and informal involvement with local tribes will lead to more qualitative consultation tribal input on specific projects.

Finally, when Native American cultural sites and/or Native American burial sites are prevalent within the project site, the NAHC recommends 'avoidance' of the site as referenced by CEQA Guidelines Section 15370(a).

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton
Program Analyst

Cc: State Clearinghouse

Attachment: Native American Contact List

Native American Contacts
Los Angeles County
June 21, 2012

Beverly Salazar Folkes
1931 Shadybrook Drive
Thousand Oaks, CA 91362
folkes@msn.com
805 492-7255
(805) 558-1154 - cell

Chumash
Tataviam
Ferrnandeño

Kitanemuk & Yowlumne Tejon Indians
Delia Dominguez, Chairperson
115 Radio Street
Bakersfield , CA 93305
deedominguez@juno.com
(626) 339-6785

Yowlumne
Kitanemuk

Fernandeno Tataviam Band of Mission Indians
Ronnie Salas, Cultural Preservation Department
601 South Brand Boulevard, Suite 102
San Fernando CA 91340
rsalas@tataviam-nsn.gov
(818) 837-0794 Office

(818) 837-0796 Fax

Fernandeno
Tataviam

S an Fernando Band of Mission Indians
John Valenzuela, Chairperson
P.O. Box 221838
Newhall , CA 91322
tsen2u@hotmail.com
(661) 753-9833 Office
(760) 885-0955 Cell
(760) 949-1604 Fax

Fernandeño
Tataviam
Serrano
Vanyume
Kitanemuk

LA City/County Native American Indian Comm
Ron Andrade, Director
3175 West 6th St, Rm. 403
Los Angeles , CA 90020
randrade@css.lacounty.gov
(213) 351-5324
(213) 386-3995 FAX

Randy Guzman - Folkes
6471 Cornell Circle
Moorpark , CA 93021
ndnRandy@yahoo.com
(805) 905-1675 - cell

Chumash
Fernandeño
Tataviam
Shoshone Paiute
Yaqui

Ron Wermuth
P.O. Box 168
Kernville , CA 93238
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(760) 376-4240 - Home
(916) 717-1176 - Cell

Tubatulabal
Kawaiisu
Koso
Yokuts

San Manuel Band of Mission Indians
Ann Brierty, Policy/Cultural Resources Departmen
26569 Community Center. Drive
Highland , CA 92346
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Serrano

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2012061068; CEQA Notice of Preparation (NOP); draft Encovironmental Impact Report (DEIR) for the Siverado Pwer West Project; Los Angeles County, California; located in the Lancaster area.

Native American Contacts
Los Angeles County
June 21, 2012

Kern Valley Indian Council
Robert Robinson, Co-Chairperson
P.O. Box 401
Weldon , CA 93283
brobinson@iwvisp.com
(760) 378-4575 (Home)
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This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2012061068; CEQA Notice of Preparation (NOP); draft Encovironmental Impact Report (DEIR) for the Siverado Pwer West Project; Los Angeles County, California; located in the Lancaster area.

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

Notice of Preparation

June 20, 2012

To: Reviewing Agencies

Re: Silverado Power West Los Angeles County
SCH# 2012061068

Attached for your review and comment is the Notice of Preparation (NOP) for the Silverado Power West Los Angeles County draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Carolina Blengini
Los Angeles County Department of Regional Planning
320 West Temple Street, Rm 1362
Los Angeles, CA 90012

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan

2012 JUN 25 PM 4:25

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH#	2012061068
Project Title	Silverado Power West Los Angeles County
Lead Agency	Los Angeles County

Type NOP Notice of Preparation

Description Silverado Power, LLC (Silverado Power) is a utility scale solar photovoltaic (PV) developer proposing the development of six solar PV sites (referred to as the Overall Development) addressed in this EIR. The Overall Development is located in an area of the western Antelope Valley that was historically used for agricultural activities. Production and economic constraints led to the cessation of agricultural activities in the area, resulting in disturbed and vacant land. Silverado Power has located six SGFs on disturbed and vacant land throughout the western Antelope Valley.

The Overall Development proposes to increase electricity generated from renewable technology by generating 172 MW of electrical energy from the sun. Recent legislation enacted in CA encourages the development of renewable energy resources to reduce reliance on fossil fuels, diversify energy portfolios, reduce greenhouse gas emissions, and assist creation of "green" jobs within the state of CA.

The Overall Development proposes to assist CA in meeting the newly established Renewable Energy Portfolio Standards (RPS). Senate Bill 14 established RPS targets for CA, stating, "all retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020."State government agencies have been directed to take all appropriate actions to implement this target in all regulatory proceedings, including siting, permitting, and procurement for renewable energy power plants and transmission lines. The six sites qualify as an eligible renewable energy resource as defined by the CA Public Resources Code.

Document Details Report
State Clearinghouse Data Base

Lead Agency Contact

Name	Carolina Blengini
Agency	Los Angeles County Department of Regional Planning
Phone	213 974 1522 *Fax*
email	
Address	320 West Temple Street, Rm 1362
City	Los Angeles *State* CA *Zip* 90012

Project Location

County	Los Angeles
City	Lancaster
Region	
Cross Streets	
Lat / Long	
Parcel No.	
Township	*Range* *Section* *Base*

Proximity to:

Highways	Hwy 138, 14
Airports	Bohunk; William J. Fox Airfield
Railways	No
Waterways	
Schools	Del Sur ES
Land Use	Various

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Noise; Public Services; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wildlife; Landuse; Cumulative Effects

Reviewing Agencies Resources Agency; California Energy Commission; Department of Parks and Recreation; Department of Fish and Game, Region 5; Native American Heritage Commission; Public Utilities Commission; California Highway Patrol; Caltrans, District 7; Regional Water Quality Control Bd., Region 6 (Victorville)

Date Received 06/20/2012 *Start of Review* 06/20/2012 *End of Review* 07/19/2012

Note: Blanks in data fields result from insufficient information provided by lead agency.

NOP Distribution List

Resources Agency

- [x] Resources Agency
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- [ ] Dept. of Boating & Waterways
  Nicole Wong
- [ ] California Coastal Commission
  Elizabeth A. Fuchs
- [ ] Colorado River Board
  Gerald R. Zimmerman
- [ ] Dept. of Conservation
  Elizabeth Carpenter
- [x] California Energy Commission
  Eric Knight
- [ ] Cal Fire
  Dan Foster
- [ ] Central Valley Flood Protection Board
  James Herota
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  Ron Parsons
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- [ ] Cal EMA (Emergency Management Agency)
  Dennis Castrillo
- [x] Native American Heritage Comm.
  Debbie Treadway
- [x] Public Utilities Commission
  Leo Wong
- [ ] Santa Monica Bay Restoration
  Guangyu Wang
- [ ] State Lands Commission
  Jennifer Deleong
- [ ] Tahoe Regional Planning Agency (TRPA)
  Cherry Jacques

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Cal EPA

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  Jim Lerner
- [ ] Transportation Projects
  Douglas Ito
- [ ] Industrial Projects
  Mike Tollstrup
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  Regional Programs Unit
  Division of Financial Assistance
- [ ] State Water Resources Control Board
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [ ] State Water Resouces Control Board
  Phil Crader
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- [ ] RWQCB 2
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- [ ] RWQCB 3
  Central Coast Region (3)
- [ ] RWQCB 4
  Teresa Rodgers
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- [ ] RWQCB 5S
  Central Valley Region (5)
- [ ] RWQCB 5F
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- [ ] RWQCB 5R
  Central Valley Region (5)
  Redding Branch Office
- [ ] RWQCB 6
  Lahontan Region (6)
- [x] RWQCB 6V
  Lahontan Region (6)
  Victorville Branch Office
- [ ] RWQCB 7
  Colorado River Basin Region (7)
- [ ] RWQCB 8
  Santa Ana Region (8)
- [ ] RWQCB 9
  San Diego Region (9)

- [ ] Other _____
- [ ] _____ Conservancy

Last Updated 5/24/2012

State of California -The Natural Resources Agency
DEPARTMENT OF FISH AND GAME
South Coast Region
3883 Ruffin Road
San Diego, CA 92123
(858) 467-4201
http://www.dfg.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

July 25, 2012

Carolina Blengini
County of Los Angeles Regional Planning Department
Special Projects Section
320 West Temple Street, Room 1362
Los Angeles, California 90012

Subject: Comments on the Notice of Preparation for Silverado Power West, Photovoltaic Solar Electricity Generation Facilities (Conditional Use Permits CUP201100079, CUP201100070, CUP201100071, CUP201100076, CUP201100072, and CUP201100074), Los Angeles County (SCH# 2012061068).

Dear Ms. Blengini:

The Department of Fish and Game (DFG) has reviewed the Notice of Preparation (NOP) prepared by the County of Los Angeles Planning Department (Lead Agency) for the proposed construction of six (detailed below) solar photovoltaic (PV) facilities (Project(s)) by Silverado Solar, LLC. We appreciate the Lead Agency granting DFG an extension of the comment period on the NOP until July 27, 2012. The Projects are proposed for construction as six distinct sites. Construction of each Project comprises three phases: 1) site preparation; 2) PV system installation, testing and start up; and 3) Site cleanup/restoration. The six Projects together would cover 747.1 acres and produce 172 megawatts (MW). All 747.1 acres are fallowed agriculture land west of State Route 14.

Project 1: 20-MW North Lancaster Ranch project located on 80 acres northeast of 105th Street West and West Avenue B. Interconnection to Southern California of Edison (SCE) infrastructure would occur at the existing 66 kilovolt (kV) transmission line via a 0.5 mile underground generation tie-line (gen-tie).

Project 2: 40-MW Western Antelope Blue Sky Ranch project located on 157 acres northwest of 110th Street West and West Avenue K. Interconnection to existing SCE infrastructure would occur via a 2 mile underground gen-tie to the Antelope Substation northeast of the site.

Project 3: 35 MW American Solar project is located on 35.51 acres southwest of 70th Street West and West Avenue G. Interconnecting to an existing SCE 66 kV transmission line located on the northern border of the property.

Project 4: 52 MW Antelope Solar Greenworks project is located on 256 acres northeast 97th Street West and West Avenue I. Interconnecting to an existing SCE 66 kV transmission line located on the southern border of the property.

Project 5: 20 MW Silver Sun Greenworks project is located on 80 acres southeast of 120th Street West and West Avenue I. Interconnection to existing SCE infrastructure would occur via a 3 mile underground gen-tie to the Antelope Substation southeast of the site.

Project 6: 5 MW Lancaster WAD project is located on 38.49 acres northeast of 35th Street West and Avenue D. Interconnection to SCE's infrastructure would be made via existing 12.47 distribution line at the southern property border.

DFG Jurisdiction: The following statements and comments have been prepared pursuant to the Department of Fish and Game (DFG)'s authority as Trustee Agency with jurisdiction over natural resources affected by the project (California Environmental Quality Act [CEQA] Guidelines Section 15386) and as a Responsible Agency under CEQA Guidelines Section 15381 over those aspects of the proposed project that come under the purview of the California Endangered Species Act (CESA – Chapter 1.5 of the Fish and Game Code), and/or require a Lake and Streambed Alteration Agreement (Fish and Game Code section 2050 *et seq.*).

Bird Protection: The Department has jurisdiction over actions that may result in the disturbance or destruction of active nest sites or the unauthorized "take" of birds. Sections of the Fish and Game Code that protect birds, their eggs and nests include Sections 3503 (regarding unlawful "take," possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the "take," possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful "take" of any migratory nongame bird).

Construction activities may significantly overlap the migratory bird nesting season. DFG recommends the Lead Agency analyze the project's potential impacts to breeding and migratory birds and raptors, and include the analysis and proposed mitigation measures in the draft Environmental Impact Report (DEIR).

Gen-tie Alignment: The NOP does not provide specific details for the gen-tie lines and their potential impacts. DFG recommends the EIR include the location and alignment of the gen-tie lines. In addition, the EIR should specify the number, height, design, and locations of any transmission poles, or other means of conveyance to fully disclose the extent of impacts from the proposed projects.

Biological Inventories: The NOP identifies the vegetation communities for each Project. Although the sites are located on previously disturbed and fallow agricultural lands, all but Project 1 appear to support native grasslands. Given the proximity to the Poppy Preserve, it's likely the native grasslands include forbs and wildflower fields. DFG recommends the Lead Agency include an analysis of the Project's potential impacts (and proposed mitigation measures) to native grasslands, forbs, and wildflower fields in the DEIR.

Burrowing owls: The NOP concludes the Project would have a less than significant effect on burrowing owl (*Athene cunicularia*); however, no protocol surveys for burrowing owls were conducted prior to issuing the NOP. The Biological Technical Reports (BTRs) identify suitable burrowing owl habitat on each site. Although suitable habitat was not mapped, small mammal burrows suitable for burrowing owls were also identified on each site. In addition, the NOP has identified historic burrowing owl observations within one-mile of the Project. The BTRs recommends pre-construction surveys for BUOW within 30 days of construction to avoid, minimize, and/or mitigate potential impacts to the species. This measure neither provides public disclosure for the existing baseline conditions of the project site nor provides sufficient information to conduct an analysis of the projects impacts on the species. Based on the information provided in the BTRs, DFG recommends the Lead Agency utilize the three-tiered approach detailed in the DFG's Staff Report on Burrowing Owl Mitigation (March 7, 2012 [Burrowing Owl Staff Report]) to analyze the potential for impacts to the species. The three components to evaluating species impacts are: 1) habitat assessment, 2) surveys, and 3) impact assessments. Using this methodology would result in a more robust analysis could be made to accurately identify potential impacts to the species during the CEQA process instead of deferring the analysis to consultation with DFG after and outside the CEQA process.

Without species specific surveys and adequate impact assessments, DFG can not address the adequacy of mitigation measures proposed in the NOP. DFG recommends using the Burrowing Owl Staff Report as a guide for designing the project to avoid/minimize impacts and in developing suitable mitigation measures to reduce potential impacts to levels less than significant.

After protocol surveys (that fully analyze the potential impacts to burrowing owls) are complete, DFG may agree with the Lead Agency's requirement that a qualified biologist conduct a focused survey no more than 30 days before the onset of any ground-disturbing activities, although DFG would likely recommend that the Lead Agency require another survey be conducted no sooner then 7 days prior to the start of vegetation clearing activities.

To further minimize impacts to the species the Lead Agency should consider including the following measures:

> If burrowing owls occupy the site during the non-breeding season (February 1st through August 31st), a passive relocation effort may be instituted. Otherwise, DFG recommends that projects avoid occupied burrows with a minimum 250-foot no-construction buffer zone until a Lead Agency and DFG-approved biologist verifies through non-invasive methods that either 1) the birds are not nesting; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Failure to implement buffer zones could cause adult burrowing owls to abandon the nest, cause eggs or young to be directly impacted (crushed), and/or result in reproductive failure. Impacts of this nature would violate Fish and Game Code § 3503, 3503.5, 3513, and the International Migratory Bird Treaty Act. DFG recommends the results of any surveys, regardless of their results, be submitted to the Lead Agency and DFG's Regional staff prior to ground disturbance for their concurrence that no mitigation for burrowing owl would be required.

Swainson's hawk: DFG is concerned the NOP may not have fully characterized the extent of the impacts to Swainson's hawk (*Buteo swainsoni*), a species listed as threatened under the California Endangered Species Act (CESA). Each site appears to support suitable Swainson's hawk foraging habitat. In Addition, DFG is aware of two active Swainson's hawk nests within 3 miles of the Project.

DFG recommends the Lead Agency require protocol surveys and analyze the potential impacts prior to the circulation of the DEIR. As described in the DFG protocols for the species revised in 2010 for the Antelope Valley (DRECP BMP, 2010), DFG recommends a five-mile survey radius of all potential nest trees, towers or other potential nest sites be surveyed by a DFG-approved raptor biologist. The results of the surveys may influence the mitigation measures ultimately adopted for the final CEQA document

Based on known nesting locations and foraging accounts, DFG concludes that the construction of the Project would result in the loss of potential foraging and/or nesting habitat for Swainson's hawk. Foraging habitat for Swainson's hawk includes dry land and irrigated pasture, alfalfa, fallow fields, low-growing row or field crops, rice land, and cereal grain crops (CDFG 1994). Swainson's hawk may also forage in non-native annual grassland, and other desert scrub habitats that support a suitable prey base.

Other Raptor species: Various raptor species are known to winter and forage within the vicinity of the Projects. The County has identified Fairmont and Antelope Buttes Significant Ecological Area (SEA No. 57) as a limited growth area. Specifically, SEA No. 57 is identified as principal priority class four habitats (habitats which serve as concentrated breeding, feeding, resting or migratory resting grounds) and as secondary priority classes five and seven (biotic resources of scientific interest and relatively undisturbed biotic examples respectively [County of Los Angeles General Plan, Technical Supplement]). Raptors are protected under Section 3503.5 of the Fish and Game Code. DFG recommends completing surveys for other raptor species and analyzing the Project's potential impacts to raptors prior to the circulation of the CEQA document. DFG is available for consultation on appropriate avoidance, minimization and habitat compensation measures.

Botanical surveys: DFG also recommends additional botanical surveys be conducted consistent with DFG's guidance document for botanical surveys - *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf [Protocols]). The protocols facilitate a consistent and systematic approach to the survey and assessment of botanical resources, including, special status native plants and natural communities, so that reliable information is produced and the potential for locating a special status plant species or natural community is maximized. To allow the Lead Agency to fully disclose to the public and DFG, the scope and magnitude of impacts to biological resources, we recommend the Lead Agency require the applicant conduct focused surveys for sensitive species prior to the circulation of the CEQA document. We recommend the results from these surveys be submitted to the Lead Agency and DFG for review and consultation before preparation of the final CEQA document. DFG is available to assist the Lead Agency in evaluating survey results, assessing potential impacts, and developing effective mitigation for the species.

Impact to Streams: The NOP identifies several sites having the potential to support streams under the regulatory authority of DFG. DFG has regulatory authority over activities in streams and/or lakes that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream, or use material from a streambed. For any such activities, the project applicant (or "entity") must provide written notification to DFG pursuant to Section 1600 et seq. of the Fish and Game Code. Based on this notification and other information, DFG determines whether a Lake and Streambed Alteration Agreement (LSA) with the applicant is warranted prior to conducting the proposed activities. DFG's issuance of a LSA for a project that is subject to CEQA will require CEQA compliance by DFG as a Lead or responsible agency. DFG as a responsible agency under CEQA may consider the Lead Agency's EIR for the project. To minimize additional requirements by DFG pursuant to Section 1600 et seq. and/or under CEQA, the document should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the LSA.

DFG may take jurisdiction on episodic streams, including alluvial fan streams even where flow occurs as sheetflooding. The paper, Review of Steam Processes and Forms in Dryland Watersheds, recently published by DFG (Vyverberg, 2010), discusses the alluvial process and the significance to water resources. DFG recommends the Lead Agency require a jurisdictional delineation be completed by a hydrogeomorphologist familiar with assessments in dryland watersheds to complete a delineation of the creeks to be included in the draft EIR. The delineation should be conducted pursuant to the U. S. Fish and Wildlife Service (Service)

wetland definition adopted by DFG[1]. Please note that some wetland and riparian habitats subject to DFG's authority may extend beyond the jurisdictional limits of the U.S. Army Corps of Engineers.

Cumulative Impacts: DFG recommends that the draft EIR include a cumulative impacts analysis considering the proposed project's impacts along with the impacts of other photovoltaic projects in the project area. In addition to the several known approved projects west of State Route 14, DFG is aware of ten photovoltaic projects proposed by Silverado, LLC within an approximate 3.5-mile radius of one another. Many of these proposed project sites have similar habitat values as the projects proposed in the NOP. Approximately 1,123 acres of combined potential habitat for Swainson's hawk, ferruginous hawk (*Buteo regalis*), and burrowing owl, will be lost as a result of the development of these ten Silverado, LLC projects. Given either the known use of the sites or their near proximity, DFG would consider potential impacts to the aforementioned species as potentially significant without mitigation.

General Comments

1. To adequately review and comment on the proposed project from the standpoint of the protection of plants, fish and wildlife, DFG recommends the following information be included in the draft EIR.

   a) A complete discussion of the purpose and need for, and description of, the proposed project, including all staging areas and access routes to the construction and staging areas.

   b) Include a range of feasible alternatives to ensure that alternatives to the proposed project are fully considered and evaluated. Include alternatives that avoid or otherwise minimize impacts to sensitive biological resources and consider alternative project locations in areas of lower resource value

Biological Resources within the Project's Area of Potential Effect

1. DFG considers impacts to Fully Protected species (Fish and Game Code §§ 3511, 4700, 5050, and 5515) for the purposes of CEQA, to be significant without mitigation. DFG has jurisdiction over fully protected species of birds, mammals, amphibians, reptiles, and fish, pursuant to Fish and Game Code sections 3511, 4700, 5050, and 5515. Except as provided in the Fish and Game Code (e.g. for necessary scientific research), take of any fully protected species is prohibited, and cannot be authorized by DFG.

2. DFG considers adverse impacts to a species protected by the CESA, for the purposes of CEQA, to be significant without mitigation. As to CESA, take of any endangered, threatened, or candidate species that results from the project is prohibited, except as authorized by state law (Fish and Game Code, §§ 2080, 2085.) Consequently, if the Project, Project construction, or any Project-related activity during the life of the Project results in take of a species designated as endangered or threatened, or a candidate for listing under CESA, DFG recommends that the project proponent seek appropriate take authorization under CESA prior to implementing the project. Appropriate authorization from DFG may include an incidental take permit or a consistency determination in certain

[1] Cowardin, Lewis M., et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service.

circumstances, among other options (Fish and Game Code §§ 2080.1, 2081, subds. (b), (c)). Early consultation is encouraged, as significant modification to a project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, may require that DFG issue a separate CEQA document for the issuance of a 2081 permit unless the project CEQA document addresses all project impacts to CESA-listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a 2081 permit. For these reasons, biological mitigation monitoring and reporting proposals should be of sufficient detail, resolution and enforceability to satisfy the requirements for a CESA Permit.

3. To enable DFG to adequately review and comment on the proposed project from the standpoint of the protection of plants, fish and wildlife, we recommend the following information be included in the draft EIR.

   c) A complete discussion of the purpose and need for, and description of, the proposed project, including all staging areas and access routes to the construction and staging areas.

   d) A range of feasible alternatives to ensure that alternatives to the proposed project are fully considered and evaluated; the alternatives should avoid or otherwise minimize impacts to sensitive biological resources particularly wetlands and wildlife dispersal. Specific alternative locations should be evaluated in areas with lower resource sensitivity where appropriate.

Biological Resources within the Project's Area of Potential Effect

4. To provide a complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, sensitive, and locally unique species and sensitive habitats. The draft EIR should include the following information.

   a) Per CEQA Guidelines, Section 15125(c), information on the regional setting that is critical to an assessment of environmental impacts, with special emphasis should be placed on resources that are rare or unique to the region.

   b) A thorough assessment of rare plants and rare natural communities, following DFG's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (see: http://www.dfg.ca.gov/habcon/plant/) (hard copy available on request).

   c) A current inventory of the biological resources associated with each habitat type on site and within the area of potential effect. DFG's California Natural Diversity Data Base in Sacramento should be contacted at (916) 322-2493 or www.dfg.ca.gov/biogeodata/ to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code.

   d) An inventory of rare, threatened, and endangered, and other sensitive species on site and within the area of potential effect. Include all species which meet the CEQA definition of endangered, rare or threatened (see CEQA Guidelines, §15380) including sensitive fish, wildlife, reptile, and amphibian species. We recommend that seasonal

variations in use of the project area also be addressed. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. We recommend species-specific survey procedures be developed in consultation with DFG and the Service.

Analyses of the Potential Project-Related Impacts on the Biological Resources

5. DFG recommends a thorough discussion of potential direct, indirect, and cumulative impacts to biological resources (with specific mitigation measures to reduce potential impacts to levels less than significant) including:,

   a) A discussion of direct Project impacts associated with increased lighting, noise, human activity, changes in drainage patterns, changes in water volume, velocity, and quality, soil erosion, and /or sedimentation in streams and water courses on or near the project site.

   b) Discussions regarding indirect project impacts on biological resources, including resources in nearby public lands, open space, adjacent natural habitats, riparian ecosystems, and any designated and/or proposed or existing reserve lands (*e.g.*, preserve lands associated with a Natural Community Conservation Plan). Impacts on, and maintenance of, wildlife corridor/movement areas, including access to undisturbed habitats in adjacent areas. A discussion of potential adverse impacts from lighting, noise, human activity, exotic species, and drainage. The latter subject should address: project-related changes to drainage patterns on and downstream of the project site; the volume, velocity, and frequency of existing and post-project surface flows; polluted runoff; soil erosion and/or sedimentation in streams and water bodies; and post-project fate of runoff from the project site. We also recommend addressing the proximity of the extraction activities to the water table, whether dewatering would be necessary, and the potential resulting impacts on the habitat supported by the groundwater.

   c) The zoning of areas for development projects or other uses that are nearby or adjacent to natural areas may inadvertently contribute to wildlife-human interactions. A discussion of possible conflicts and mitigation measures to reduce these conflicts.

Mitigation for the Project-related Biological Impacts

DFG recommends that the Lead Agency develop the following mitigation measures:

6. Measures to fully avoid and otherwise protect Rare Natural Communities from project-related impacts. DFG considers these communities as threatened habitats having both regional and local significance.

7. Measures for adverse project-related impacts to sensitive plants, animals, and habitats. Place emphasis on avoidance and reduction of project impacts. For unavoidable impacts, discuss on-site habitat restoration or enhancement in detail. If on-site mitigation is not feasible or would not be biologically viable and therefore would not adequately mitigate the loss of biological functions and values, discuss off-site mitigation through habitat creation and/or acquisition and management in perpetuity

8. Develop a habitat management plan (HMP) for proposed resource/lands preservation and/or restoration. The HMP should include measures to protect the targeted habitat functions from

direct and indirect adverse impacts in perpetuity. Issues that should be addressed include restrictions on access, proposed land dedications, monitoring and management programs, control of illegal dumping, water pollution, increased human intrusion, etc. DFG is available to assist in the development of HMPs.

9. Require that clearing of vegetation, construction, occur outside of the peak avian breeding season which generally runs from February 1 through September 1 (as early as January for some raptors). If project construction (not vegetation removal) is necessary during the bird breeding season a qualified biologist with experience in conducting breeding bird surveys conduct weekly bird surveys for nesting birds, within three days prior to the work in the area, and ensure no nesting birds in the project area would be impacted by the project. If an active nest is identified, establish a buffer between the construction activities and the nest so that nesting activities are not interrupted. DFG recommends the buffer be a minimum width of 300 feet (500 feet for raptors) and be delineated by temporary fencing. DFG also recommends that the buffer be maintained for the duration of construction or until the nest is no longer active. Further, DFG recommends that no project construction occur within the fenced nest zone until the young have fledged, are no longer being fed by the parents, have left the nest, and will no longer be impacted by the project.

10. DFG generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Studies have shown that these efforts are experimental in nature and largely unsuccessful. In DFG's experience, avoiding impacts to the resources and habitat conservation methodologies have proven most successful to managing rare, threatened or endangered species.

11. Before conducting restoration or revegetation activities, the Lead Agency should develop a restoration/revegetation plan. We recommend that these plans be prepared by persons with expertise in southern California ecosystems and native plant revegetation techniques. We also recommend that each plan include, at a minimum: (a) the location of the mitigation site; (b) the plant species to be used, container sizes, and seeding rates; (c) a schematic depicting the mitigation area; (d) planting schedule; (e) a description of the irrigation methodology; (f) measures to control exotic vegetation on site; (g) specific success criteria; (h) a detailed monitoring program; (i) contingency measures should the success criteria not be met; and (j) identification of the party responsible for meeting the success criteria and providing for conservation of the mitigation site in perpetuity.

Thank you for this opportunity to comment on the NOP. Questions regarding this letter and further coordination regarding these issues should be directed to Erinn Wilson, Staff Environmental Scientist at (562) 342-7172 or ewilson@dfg.ca.gov.

Sincerely,

Edmund Pert
Regional Manager
South coast Region

References:

County of Los Angeles General Plan Technical Supplement, 1980. http://planning.lacounty.gov/assets/upl/project/gp_web80-tech-supp.pdf#page=145

California Department of Fish and Game, Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations Natural Communities, November 24, 2009: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf

Vyverber, Kris. California Department of Fish and Game, Review of Stream Processes and Forms in Dryland Watersheds. October, 2010.

California Department of Fish and Game, California Wildlife Habitat Relationships website: (http://www.dfg.ca.gov/biogeodata)

California Natural Diversity Database, website: http://www.dfg.ca.gov/biogeodata

Renewable Energy Action Team, Best Management Practices and Guidance Manual, desert renewable energy projects: http://www.energy.ca.gov/2010publications/REAT-1000-2010-009/REAT-1000-2010-009.PDF

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DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

5816 Corporate Avenue • Suite 200 • CYPRESS, CALIFORNIA, 90630-4731

PHONE 714 / 816-6847 • **FAX** 714 / 816-6853 • **WEBSITE** conservation.ca.gov

July 18, 2012

Carolina Blengini (Special Projects Section)
County of Los Angeles Regional Planning Dept.
320 West Temple Street, Room 1362
Los Angeles, CA 90012

Attention Carolina Blengini:

NOTICE OF PREPARATION FOR OVERALL DEVELOPMENT/SILVERADO POWER, LLC SIX PROPOSED SOLAR GENERATING FACILITIES ENVIRONMENTAL REVIEW NO. #ENV201100109

The Department of Conservation's Division of Oil, Gas, and Geothermal Resources (Division), Cypress office, has reviewed the above referenced project. Our comments are as follows:

The proposed project is located within the administrative boundaries of Los Angeles County. There is one well near the western boundary of Project 2. The well belongs to C.W. Colgrove. "Shwandt" 57-23 (037-05294) is a plugged and abandoned oil/gas well. This well is located on Division map W1-1 and in Division records.

The Division is mandated by Section 3106 of the Public Resources Code (PRC) to supervise the drilling, operation, maintenance, and plugging and abandonment of wells for the purpose of preventing: (1) damage to life, health, property, and natural resources; (2) damage to underground and surface waters suitable for irrigation or domestic use; (3) loss of oil, gas, or reservoir energy; and (4) damage to oil and gas deposits by infiltrating water and other causes. Furthermore, the PRC vests in the State Oil and Gas Supervisor (Supervisor) the authority to regulate the manner of drilling, operation, maintenance, and abandonment of oil and gas wells so as to conserve, protect, and prevent waste of these resources, while at the same time encouraging operators to apply viable methods for the purpose of increasing the ultimate recovery of oil and gas.

The scope and content of information that is germane to the Division's responsibility are contained in Section 3000 et seq. of the Public Resources Code (PRC), and administrative regulations under Title 14, Division 2, Chapter 4 of the California Code of Regulations.

If any structure is to be located over or in the proximity of a previously plugged and abandoned well, the well may need to be plugged to current Division specifications. Section 3208.1 of the Public Resources Code (PRC) authorizes the State Oil and Gas Supervisor (Supervisor) to order the reabandonment of any previously plugged and abandoned well when construction of any structure over or in the proximity of the well could result in a hazard.

An operator must have a bond on file with the Division before certain well operations are allowed to begin. The purpose of the bond is to secure the state against all losses, charges, and expenses incurred by it to obtain such compliance by the principal named in the bond. The operator must also designate an agent, residing in the state, to receive and accept service of all orders, notices, and processes of the Supervisor or any court of law.

Written approval from the Supervisor is required prior to changing the physical condition of any well. The operator's notice of intent (notice) to perform any well operation is reviewed on engineering and geological basis. For new wells and the altering of existing wells, approval of the proposal depends primarily on the following: protecting all subsurface hydrocarbons and fresh waters; protection of the environment; using adequate blowout prevention equipment; and utilizing approved drilling and cementing techniques.

The Division must be notified to witness or inspect all operations specified in the approval of any notice. This includes tests and inspections of blowout-prevention equipment, reservoir and freshwater protection measures, and well-plugging operations.

The Division recommends that adequate safety measures be taken by the project manager to prevent people from gaining unauthorized access to oilfield equipment. Safety shut-down devices on wells and other oilfield equipment must be considered when appropriate.

If any plugged and abandoned or unrecorded wells are damaged or uncovered during excavation or grading, remedial plugging operations may be required. If such damage or discovery occurs, the Division's Cypress district office must be contacted to obtain information on the requirements for and approval to perform remedial operations.

Sincerely,

Syndi Pompa

Syndi Pompa
Associate Oil & Gas Engineer - Facilities

Concerned Citizens of the West Antelope Valley
P O Box 786
Lake Hughes, CA 93532
661.724.2043

EMAIL, US MAIL

20 July 2012

Los Angeles County Regional Planning
Special Projects Section
320 West Temple St. Room 1362
Los Angeles, CA 90012
email-cblengini@planning.lacounty.gov

Attention: Ms. Carolina Blengini,

Dear Ms. Blengini,

Re: Silverado Power West Los Angeles County
Project 1: R2011-00833 (CUP201100079, RZC201100005), North Lancaster Ranch Project 2: R2011-00798 (CUP201100070), Western Antelope Blue Sky Ranch
Project 3: R2011-00799 (CUP201100071), American Solar Greenworks
Project 4: R2011-00807 (CUP201100076), Antelope Solar Greenworks
Project 5: R2011-00801 (CUP201100072), Silver Sun Greenworks
Project 6: R2011-00805 (CUP201100074), Lancaster WAD
Environmental Review No. ENV201100109

Please find the list below, regarding concerns related to Silverado's projects, collectively, derived from a careful reading of the Initial Study and Notice of Preparation, and would seem necessary to answer in the Environmental Impact Review. There are many aspects to this project, as you will see, that may prove problematic in addressing properly, and require further analysis.

Ironically, it seems the "green" electricity that these projects propose producing will cost a great deal in foraging and nesting habitat for raptors like burrowing owls and Swainson's hawks. After buildout of the collection of projects, the nearly eight hundred acres of so-called "disturbed" land will prove unsuitable to many creatures due to environmental impacts that include fencing of open spaces, noise, water and soil pollution, introduction of invasive non-native botanical species, increased human activity, and disruptive nighttime lighting. Add to those the seriousness of fire hazards, difficulty fighting fires in solar arrays, electrical equipment, and especially, powerlines. Of particular note is dangerous blowing dust that will directly affect the residents of Antelope Acres and many other residents of the Antelope Valley. We wonder about declines in property values, loss of viewshed, and many other project components whose effects need careful evaluation.

We request your attention to each of the points outlined below and also request they be reviewed, answered and published in the environmental impact documents. There are many serious impacts that cannot be adequately reduced to less than significant, due to the improper siting of these utility-scale energy plants on fast-disappearing agricultural lands near residents who will be subject to the commercial, industrial electrification of their rural communities, open space, and conservation areas that the General Plan and the Antelope Valley Areawide Plan are charged with protecting.

Sincerely,

Susan Zahnter
Member, CCWAV

Viewshed

- Describe the effects to viewing the State of California Poppy Reserve from Avenue I-Lancaster Road—a Los Angeles County designated Second Priority Scenic Roadway from Gorman Post Road to 110th St. West along Lancaster Road.
- Loss of revenue to the Poppy Reserve due to viewshed destruction.
- Describe effects to key viewing areas from the State of California Poppy Reserve.
- Since this project will be seen from Antelope Acres, Highway 138, Lancaster Road, Munz Ranch Road, all residents of Portal Ridge, Hughes and Elizabeth Lakes should be noticed, and advertising announcements published in the Mountain Yodeler and Mountain Enterprise Newspapers in addition to the Antelope Valley Press.
- Detail the visual effects of all proposed solar arrays, powerlines, and gen-tie lines, and give actual locations on maps that can show them in relation to section lines and landmarks.
- Evaluate viewshed disturbance from safety signage.
- Evaluate viewshed disturbance from chain-link fencing, barbed wire, or concertina wire.
- How will this project conform to specific design and management guidelines in order to protect natural and scenic character and to reduce risks from fire, flood, and erosion,?
- How can the visual effects of 747 acres in Los Angeles County of solar panels be mitigated? (other than buying community support?)
- Page 7/44 of the Initial Study indicates there are no scenic highways in the vicinity of the project. Please check the Los Angeles County Scenic Highway Plan 1974.
- Discussion of impacts to wildflower fields in the area of the projects. Initial Study says Projects 1 – 6 and surrounding lands have been disrupted by past agricultural activities and do not have natural terrain or other features with high scenic quality. Quite to the contrary, Scenic views are unsurpassed for mountains and wildflower fields in the area of the projects. Evaluate impacts.

Cumulative Impacts

- Studies should reflect cumulative effects of the Silverado Projects and adjacent energy projects and surrounding area environments. Include the projected 100,000 population and area of Centennial Project to the west of the project area, and combined 24,000 acres of approved and proposed solar and wind projects in the Los Angeles County portion of the Western Antelope

Valley. What are the overall effects to the California Poppy Reserve, Ripley Desert Woodland, Los Angeles County Desert Pines Sanctuary?

- Evaluate cumulative impacts to rural residents who will most directly be affected by all projects —wind-borne dust, traffic, visual impacts, health impacts, lighting, human presence, etc.
- What are the cumulative impacts of projects on the Poppy Reserve, adjacent SEAs, conservation lands, agricultural lands, and Antelope Valley Audubon Important Bird Areas?
- Why was the State Department of Parks and Recreation not indicated on the Initial Study Checklist as a reviewing trustee agency? Silverado projects are in close proximity.

Health

- How will the project impact noise receptive quiet areas? Measure the effects of constant low frequency hum from transformers and electrical equipment, and require an independent health department report on effects to humans. Measure man-made noise, and ambient noise levels.
- Examine and explain the effects and impacts of nighttime lighting on humans and wildlife.
- Describe the effects of construction, noise, dust, and EMFs on children at Del Sur School.
- Will disturbances to the soil increase the number of Valley Fever cases and other forms of fugitive soil borne fungal and bacterial diseases?
- Discuss independent studies of deleterious impacts to humans from living in proximity to commercial industrial solar electrical generating plants via EMFs, noise, and lighting.
- Study exposure of transmission line electromagnetic frequency fields to humans.
- Explain the effects of oil leakage and runoff, possible cadmium-tainted runoff from solar panels on watersheds, water supplies.
- Describe effects of dielectric oil contamination on human health.
- Please indicate type of dielectric oil and provide a publicly available Materials Safety Data Sheet, and indicate its possible carcinogenic or ill health effects, if any.
- Please provide Materials Safety Data Sheet on all potentially harmful fuels, oils, grease, solvents, paints, etc., that are planned for use at the project sites.
- What are required setbacks from residences?
- Weekend and night shifts may be required, depending on construction and maintenance requirements. How will night shift operation, in addition to day shift, affect residents, and how will the project mitigate those impacts?

Fire

- What is risk of fire to the Poppy Reserve and residents of Antelope Acres, Willow Springs Canyon, Broad Canyon, and Myrick Canyon, and all of Portal Ridge?
- Estimate increased cost of insurance to homeowners nearby, especially after fire occurs.
- Electrical storage or substation facilities may house batteries and thousands of gallons of oil; will this cause additional risk, since they are highly flammable?
- Measure general risk from electrical or construction operations and their relationship to some of the worst fires in California history. AV Solar Ranch 1 already caused a fire, before their construction commenced.
- The increase in human presence poses increase in risk for fire. The NOP states proposed project is expected to have no impacts from exposing people or structures to a significant risk of loss,

- injury, or death involving fires as a result of being located in a high fire hazard area. Firefighters do not fight fire in areas that pose risk of electrical shock. This includes solar fields, power lines, and gen-tie lines.
- Will firefighters fight fires with the risk of breathing smoke containing toxic metals, like cadmium from solar panels, or toxic vapors from dielectric oil or fumes from substations, and transformers, and what additional risk does this pose to residents?
- Page 25/44 of the Initial Study indicates Projects 1 – 6 are not located in a Very High Fire Hazard Severity Zone. The closest Very High Fire Hazard Severity Zone is located approximately 0.5 miles south of Project 2. Therefore, no impact will occur. One-half mile from a Very High Fire Hazard Severity Zone could cause significant impact. If a fire starts one half mile away it could take mere minutes to spread into Fire Zone 4 areas.
- There is no mention of the nearest fire station and response times to area fires, which is important to area residents. The NOP indicates a prevalence of agricultural land, hence no threat of fire from other industrial businesses possessing flammable materials, and no impacts. The project proponents seem unaware of the high fire risk in the Western Antelope Valley, and are understating the risk from electrical sources.
- The proposed project would involve the use of hazardous materials during construction and O&M activities. Accidental release of potentially harmful substances, such as engine oil, diesel fuel, turbine lubricant, paints, solvents, and dielectric oil. Evaluate risk of fire from presence of flammables.

Property Value, Homes, and Residents

- The report should include the economic impact on residents living near the project, specifically property value. Review property values not related to owners contracting with the project, do not use studies paid for or written by solar industries or federal or state energy promotion bureaus or departments. Independent real estate studies should be consulted. Properties in our area could essentially become valueless if they cannot be sold after the project is built.
- Our concern is protection of rural residents, Portal Ridge, and the Poppy Reserve, and other listed preserved areas from threat of fire caused by the projects or personnel connected with the project. Who will be responsible for "accidental" fires caused by the high-fire-risk projects that will destroy homes and habitat?

Planning

- How will the project align with the West Mojave Plan or the Desert Renewable Energy Conservation Plan?
- Dark Night Skies Ordinance—how will the projects address nighttime lighting—and please, NO motion sensor lighting.
- Study project's compatibility with the General Plan (1980); the Antelope Valley Area Wide Plan (1984); all of which address acceptable land use that protects areas near parks, sanctuaries, conservation land, land in SEAs, open space, hillside management, scenic routes, hazardous areas, as well as distinct and unique rural communities.
- Add section lines to project maps so residents may more easily locate the project in relationship their properties. Maps need to be detailed and include all affected areas.

- What is Silverado Power's and Regional Planning's responsibility with regard to violations related to the Federal Bald Eagle and Golden Eagle Protection Act and the Migratory Bird Treaty Act?
- Oversight of construction and operations—we ask that you require important plans regarding grading, construction and operations, and possible mitigation to be completed before the project is approved, so members of the public and interested agencies can comment on the adequacy of those plans during the review period.
- A request for complete transparency—public access to all documents related to the project, so the public may be fully aware to the greatest extent possible, the effects of the project.
- The public are not experts in any way with regard to the business of planning and building utility-scale electrical installations, and they may not be able to ask all questions that really need asking. We must rely on Planning to thoroughly explain all factors that will impact residents and wildlife in proximity to the projects.
- Does current Planning (General Plan 1980, Antelope Valley Areawide Plan 1986) allow electrical generating plants on A-2 land when it is incompatible with protection of rural lifestyles and scenic areas?
- Los Angeles County does not have in place suitable zoning and ordinances regarding renewable energy, and we suggest a moratorium on projects until adequate, well-supported studies have been made regarding the effects commercial, utility-scale renewable energy plants have on the character of rural communities and property values. Recent peer-reviewed articles have appeared that support moratorium because of all but absent study of the effects of utility-scale solar installations. See attached article published by "American Institute of Biological Sciences," December 2011 Issue.
- A complete listing of all hazardous materials used in construction and operation.
- Explain the "non-toxic" nature of dielectric oil, of which thousands of gallons will be used during the life of the project. Is it required to be disposed of as "hazardous waste"?
- AVAP, General Conditions for Development, Unmapped Neighborhood Commercial, Section VI-28, states "The site should be to the extent possible compact and regular in shape to minimize impacts upon adjacent non-commercial developments." Does this condition apply to this commercial project, or is permitted with a CUP?
- NOP Maps should show the Poppy Reserve, Portal Ridge SEA 58, in relation to the Project, as well as San Andreas SEA 21, and its relation to the projects.
- How will portable maintenance lighting be shielded to conform with Dark Sky Ordinances?
- Detail the effects of all solar arrays, powerlines, and gen-tie lines, and give actual locations on maps that can show them in relation to section lines and landmarks.

Agriculture

- NOP indicates prime farmland and agricultural zoned land will be used. Consider cumulative loss of land across the Antelope Valley and the State for conversion to non-farming uses.
- Describe the costs of loss of farmland that is known to support native and migratory wildlife and raptor populations.
- Please define "disturbed land." Environmental review must consider the loss of agricultural lands that support wildlife and also possess the ability to produce crops.

- Discuss agricultural fields and their value as a carbon sink, and the possibility of the approval of this project affecting the conversion of additional farmland in the area to be converted to commercial, industrial use; and discuss the value of agricultural lands, and their loss, in this Audubon-designated Globally Important Bird Area, and effects of the project on avian and terrestrial wildlife.
- Page 9/44 of the Initial Study indicates no effect to land use to surrounding areas. See comment above.
- Please see attached document—"Assembly Select Committee on Renewable Energy Economy in Rural California, Testimony of John Gamper, Director of Taxation and Land Use, California Farm Bureau Federation, October 24th, 2011."

Soil

- Will disturbances to the soil increase the number of Valley Fever cases?
- Describe significant impacts of soil erosion in construction and operations.
- Again, please provide actual grading plans with the Environmental Impact Review, so residents and interested parties can evaluate and comment on plans. It is a unclear as to how much grading will occur at each project site.
- What is the estimated number of cubic feet of soil graded and excavated from all foundation sites, grading, roads, buildings? Where will it go?
- Specifically, what Best Management Practices will guarantee protection from run-off and erosion? Quartz Hill's suburban tract developments were presumably constructed according to County requirements for stormwater runoff, and flooding there has been problematic for years. Highway 138 west of Highway 14 experiences intersection flooding frequently during winter storms, and one would expect more runoff in areas that may affect roads and the literal 744 acre impervious "rooftop" created by solar panels.
- How will the movement or grading of soil affect invasive weed proliferation, especially near the Poppy Reserve, where invasive species spread would be disastrous and counterproductive to its purpose of preserving native grass and forb lands. Is there any scientifically supported data that extensive grading and human presence do not contribute to invasive species spreading throughout the area?
- Outline the effects of dust control chemicals as well as environmental dangers of Round-up herbicide.
- Ask residents about soil erosion in the area, in spite of professional soil conservation and grading plans.
- Provide independent, scientific, peer-reviewed documentation of the non-toxic properties of the "usually biodegradable" and "polymer-based" dust suppression chemicals. What specifically will the project use?

Biology

- Measure the value of the project area as a carbon sink over the thirty-five year life of the project, if built.
- The report should include current information on Condor movement—current and historical GPS tracking and proximity to the project, and possibility of Condors frequenting the area as a result of disturbance created by the proposed Centennial Project.

- Describe effects to the State of California Poppy Reserve, the Los Angeles County Desert Pines Wildlife Sanctuary, and transitional habitat intended for private conservation and preservation of wildlife movement corridors.
- Discuss effects of blowing dust on native vegetation and wildflower fields.
- Is there any documentation for this project that indicates "no net effect on habitats?"
- List loss of species from dislocation during construction and operation.
- Ongoing human presence during maintenance operations and effects on wildlife.
- What about risk to watershed, ephemeral streams, and local wells from oil leakage from equipment, building areas, and vehicles?
- Explain effects of additional roads and fencing on habitat, their fragmentation of habitat, gene pools, and subsequent effects on wildlife.
- Loss of raptor and passerine foraging—24,000 acres from combined projects. How many birds will die from loss of forage (fencing, disturbance) from these solar projects, adjacent solar projects, and thousands of acres of other fenced utility-scale solar projects?
- List project effects to the Pacific Flyway and the Audubon-designated Important Bird Area.
- Evaluate danger posed by electrical charge to animals and humans.
- Evaluate exposure of transmission line electromagnetic frequency fields to wildlife.
- It should not be assumed that the lack of presence of a species does not indicate it does not reside or forage on the project property.
- Examine AVAP policy (Section V-4, 22) that states "minimize environmental degradation by enforcing controls on sources of pollutants (including visual pollution) and noise" How will the project comply with this requirement?
- Who determines how preservation areas, as mitigation, are chosen, and what criteria are followed?
- How will revegetation under solar panels with "wildlife friendly" plants affect local wildlflower fields, the Poppy Reserve, etc.? What plants are suggested?
- Chain-link fencing is detrimental to the movement of wildlife, and we question if a 12 inch space at the bottom is adequate for that purpose.
- "Weekend and night shifts may be required, depending on the maintenance requirements." How will night shift operation, in addition to day shift, affect wildlife activities, diurnal, and nocturnal, and how will the project ameliorate those impacts?
- EIR should identify wildflower fields and effects of project-related disturbance and destruction of fields.
- How will fire department requirements of vegetation removal or trimming affect the biology of the area?
- Explain how the projects would mitigate loss of native Valley Needlegrass Grassland fast-disappearing in the Antelope Valley.
- Would this project conflict with the West Mojave Plan, the DRECP, or private conservation?
- The IBA falls within the path of a major spring migration route for songbirds, and waterfowl. The area has major water resources—the California Aqueduct, Fairmont Reservoir—which supports a breeding colony of tri-colored blackbirds that are documented foraging on the Poppy Reserve and surrounding areas.
- Record weather conditions prior to construction and, if approved, post-construction temperatures in project areas to determine if projects create islands of heat and change conditions for existence of wildlife and vegetation within project areas.

Water

- Will the use of substantial amounts of water during construction affect area wells and how does the project fit into the water adjudication currently ongoing, and Antelope Valley IRWMP?
- Who maintains water and mineral rights to the project area?
- How will construction and operation affect valuable watersheds?
- Will runoff containing herbicides, pesticides, rodenticides, solvents, oils, and fuels pollute surrounding areas near residences and wells?
- How will the project protect ephemeral drainages?
- Provide and maintain publicly accessible water testing records for runoff, drainage ponds, and ephemeral streams or drainages.

Economy and Jobs

- What about effects to film industry dollars, who rely on open space, desert views, mountain views, etc.?
- How will the project affect tourism dollars to the Antelope Valley from visitors to our mountain areas, wildflower fields, and the State of California Poppy Reserve, Ripley Desert Woodland, Desert Pines Wildlife Sanctuary?
- "Green" jobs are touted-- how many permanent jobs remain, and how much do they cost in relationship to investment, loan guarantees and grants—if applicable, loss of habitat, wildlife, views, tourism, pollution, neighboring property values? How much do the temporary jobs cost?
- The project claims it will employ more than 400 construction workers in the building phase. How many total positions will the project support, how many local jobs will be created, and how many of the paltry 10-15 jobs will be filled by local residents? There are huge taxpayer subsidized loan guarantees and capital investment grants for project proponents, tax dollars for the County, at great cost to the environment and viewshed, and virtually no permanent jobs here. Explain the immediate and long term benefits to rural residents.
- *No figures are revealed for how many AV residents would be employed compared to total project employment figures, or how long they would be employed. Will all jobs go to local workforce—not out of state workers?*

Noise

- Account for sound disturbances that include anything beyond ambient noise levels. How will this affect local residents and wildlife?
- See Health above.

CO2 and Temperature

- Measure the effects of metal tower and metals in the solar arrays' surface area heating, such as that of cars that sit in the sun, and the effect of temperature change to habitats, vegetation around each tower, and over the area of the projects. Will this affect microclimates, or climate in general, in habitat areas?

- What is the CO2 cost of the project per solar panel or megawatt? How much CO2 will be produced by manufacture and production of solar panels, manufacture of cement, production of all resources needed for the ultimate building of the project; which should include emissions and production from every source—vehicles, heavy equipment, steel production, wire production, paint, plastic, oil, shipping and transport, building supplies, and ancillary items. How long will it take for the project to "break even" in relation to CO2 saved, considering that the project will not produce electricity with perfect projected efficiency and output?
- Will this project actually displace the operation of any currently operating fossil fueled power plants?
- How much CO2 will result from truck trips, commuter trips, mining, shipping, transport, manufacture of components, manufacture of concrete and metals, and refining of dielectric oil?
- Will transmission associated with this site include the use of sulfur hexafluoride(SF6), an electrical insulator used in high-voltage transmission that is the most potent of the six greenhouse gases regulated by the EPA, with a global warming potential 23,800 times that of CO2? If so, how much will be used and how will it compare to the carbon emission offset claims of the project?

Transportation and Roads

- Add disruption to local residents' movement during road closures for construction and additional traffic.
- Loss of emergency access and risk for residents during construction and road closures.
- Cost of roadway wear and repairs from heavy equipment transport and operation.

Environmental Justice

"Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (EPA website). While I realize I have the opportunity to comment and participate; I , and others opposed to this project possess no professional expertise pertaining to renewable energy, but face the burden of being expendable for the good and profit of others, including large renewable energy corporations. How will environmental law protect us and our rural areas?

- Rural dwellers have been subject to entities desiring to place environmentally dangerous projects near their homes. We have seen attempts to place hazardous waste dumps in watershed areas, and sludge spreading in windblown areas. A cement plant that has burned hazardous waste sits at the rural west end of Antelope Valley.
- Southern California Edison and Los Angeles Department of Water and Power have placed 500kv transmission lines and smaller towers and lines spanning rights-of-way that reach hundreds of feet that increase fire risk, too. California's worst fires have been caused by downed powerlines, and puts rural residents at particular risk. Southern California Edison audaciously asked for rate increases to pay for insurance they felt necessary due to costs to them, caused by fires from powerline breaks.

- Rural residents have faced an improperly sited auto race track to be placed near the Poppy reserve and SEA 57.
- Residents directly, or even indirectly affected, will not have the professional or economic resources similar to Silverado Power to oppose this project if they attempt to protect their environment and their rural communities, presumed to be protected by the Antelope Valley Areawide Plan that seeks to preserve those communities through land use and planning.
- How do rural residents find protection from activities of local representatives willing to "sell" their approval of projects, and making personally profitable decisions on behalf of the public they claim to represent?

Miscellaneous

- Absolutely require transparency and immediate public availability of all information with regard to offers of money or "community benefits packages," either verbally or in writing.
- How will the project affect private conservation plans in the area?
- List actual efficiency rating and output of projects, not just maximum.
- How much foreign oil will be required to maintain and operate projects, substations, vehicles? Monthly? Yearly? For the life of the project?
- Will components of projects be Underwriters Laboratory Approved for the protection of the public, workers, and residents?
- The commonly held assumption that "green energy" does not require cost of resources is misplaced. "Renewable energy sounds so much more natural and believable than a perpetual-motion machine, but there's one big problem: Unless you're planning to live without electricity and motorized transportation, you need more than just wind, water, sunlight, and plants for energy. You need raw materials, real estate, and other things that *will* run out one day. You need stuff that has to be mined, drilled, transported, and bulldozed -- not simply harvested or farmed. You need non-renewable resources." See attached article by Dawn Stover, " The Myth of Renewable Energy," 22 November 2011. What is the actual cost of the projects in non-renewable resources?

To: Carolina Blengini
County of Los Angeles Regional Planning Department
Special Projects Section
320 West Temple Street, Room 1362
Los Angeles, California 90012

From: Friends of Antelope Valley Open Space (FAVOS)
avopenspace.org
contact person: Margaret Rhyne, margaretrhyne@yahoo.com
41342 Sequoia Avenue, Palmdale CA 93551, 661 609-7280

RE: Silverado Power West Los Angeles County
Project 1: R2011-00833 (CUP201100079, RZC201100005), North Lancaster Ranch
Project 2: R2011-00798 (CUP201100070), Western Antelope Blue Sky Ranch
Project 3: R2011-00799 (CUP201100071), American Solar Greenworks
Project 4: R2011-00807 (CUP201100076), Antelope Solar Greenworks
Project 5: R2011-00801 (CUP201100072), Silver Sun Greenworks
Project 6: R2011-00805 (CUP201100074), Lancaster WAD

Date: July 20, 2012

Cumulative Impacts to the
Western Antelope Valley Globally Important Bird Area

Worldwide, a coalition of organizations including the America Audubon Society has identified over 8,000 IBAs or Important Bird Areas. The purpose of the IBA Program is to set "science-based" priorities for habitat conservation to "promote positive action to safeguard vital bird habitats." According to the Audubon's IBA website, "IBA inventories provide a scientifically defensible method for prioritizing conservation activities and allocating limited conservation dollars to ensure the maximum benefit to birds." A subset of these 8,000 sites has been given the higher status of "Globally Important Bird Areas." These 424 worldwide sites have special status due to "global conservation concern." **(**http://web4.audubon.org/bird/iba/

One of these 424 areas is in Los Angeles County, in the Western Antelope Valley. This site, the **Antelope Valley Important Bird Area** provides breeding, foraging and nesting habitat for Swainson's Hawk, Golden and Bald Eagles, Northern Harriers, Burrowing Owls, Le Conte's Thrasher, Tricolored Blackbirds and other sensitive species including the California Condor.

Describing this IBA, the Audubon Society states that, "The grassland bird community is most impressive in winter, when large numbers of raptors concentrate in

the area. Large flocks of Vesper Sparrows, Horned Lark and Mountain Bluebirds also occur here, widely extirpated elsewhere in the Los Angeles area. The agricultural fields, especially alfalfa, are productive year round. Winter brings Mountain Plover, whose flocks are among the last in southern California. After wet winters, nesting grassland species like Northern Harrier linger well into spring, and occasionally even breed. Swainson's Hawk maintains its southernmost breeding outpost in the state here. As this IBA lies in the path of a major spring migrant route for songbirds, these windbreaks can host hundreds of vireos, thrushes and warblers during April and May."

Further, IBAs are indicators of wide biological value for many species of flora and fauna. Again quoting the Audubon society, "Our data demonstrates that IBAs are also excellent indicators of biodiversity richness and are therefore also important for a wide range of species."

This globally important IBA is now threatened by what has been called an "alternative energy gold rush." The Antelope Valley IBA, rimmed by the Angeles Forest, the Tehachapi Mountains and year-round wetlands along the San Andreas Fault, is already home to AV Solar Ranch I, projected to be one of the largest solar plants in the world. A number of other projects, both large and small are also proposed.

Without a comprehensive plan in place to provide adequate mitigation for the foraging areas that will be lost due to alternative energy development, this biologically important area will be obliterated piece by piece until a tipping point is reached and threatened species like Tricolored Blackbirds, Burrowing Owls and Swainson's Hawk disappear from this area forever.

The EIR for Silverado's Power West Los Angeles County project must address the cumulative impact of its six fragmented proposed projects and provide adequate mitigation measures that preserve large areas of habitat that are contiguous with existing protected open space.

AESTHETICS

Los Angeles County Preliminary Draft Antelope Valley Area Plan, **Goal COS 19 states that, "**New development meets open space objectives while maintaining rural character." Policies listed under this heading consistently emphasize that development incorporates strategies that "preserve rural character;" **"**are "consistent with a rural environment;**"** and "maximize protection of environmental and scenic resources."

The area proposed for Silverado's Power West project currently consists of farms, fallow agricultural fields, and protected open space including two state parks and areas

protected by three different conservancies. Residents live on large acreage and send their children to rural schools free of urban or industrial encroachment. Silverado's proposed Power West utility-scale energy installations **will exacerbate the electrical industrialization of this scenic area,** replacing wildlife habitat and unobstructed views with electrical substations, industrial maintenance yards, extensive security fencing, and vast expanses of solar voltaic panels. **These visual blights are not compatible with preserving the "rural character" of this area; are not "consistent with a rural environment;" and do not "maximize protection of environmental and scenic resources**."

AIR QUALITY

The Western Antelope Valley has already experienced the dust pollution caused by the wholesale transformation of desert land due to vegetation removal and grading required by utility-scale energy installations. AV Solar Ranch 1 construction has resulted in dramatic dust storms creating hazardous conditions for both people and automobiles, causing near zero visibility conditions on local roads including Highway 138. These dust storms are particularly disturbing considering the prevalence of Valley Fever spores in the local environment and the documented increase in cases of this life threatening disease when soil disturbance is combined with the high winds common in the Western Antelope Valley. How will the construction process for Silverado's 6 installations avoid these impacts?

Dust storms caused by both construction and operation of industrial scale solar development are also harmful to desert plants and animals. According to the article "**Wildlife Conservation and Solar Energy Development in the Desert Southwest, United States"** by Jeffrey e. Lovich and Joshua R. Ennen published in the journal BioScience, December 2011, published by the University of California Press on behalf of the American Institute of Biological Sciences:

> These construction activities produce dust emissions, especially in arid environments (Munson et al. 2011), which already have the potential for natural dust emission. Dust can have dramatic effects on ecological processes at all scales (reviewed by Field et al. 2010). At the smallest scale, wind erosion, which powers dust emission, can alter the fertility and water-retention capabilities of the soil. Physiologically, dust can adversely influence the gas exchange, photosynthesis, and water usage of Mojave Desert shrubs (Sharifi et al. 1997). Depending on particle size, wind speed, and other factors, dust emission can physically damage plant species through root exposure, burial, and abrasions to their leaves and stems. The physiological and physical damage to plant species inflicted by dust emissions could ultimately reduce the plants' primary production and could indirectly affect wildlife food plants and habitat quality.

Thus the dust produced by Silverado's 6 facilities will threaten not only the health of humans and safety of transportation corridors but also will have the potential to damage native plants throughout the Western Antelope Valley. With Silverado's proposed facility #5 located just 3 miles away from the Antelope Valley California Poppy Reserve, this dust pollution could have catastrophic effects on the world famous wildflower fields of the Reserve and adjacent areas.

For this and other reasons, we disagree with the assertion on page 15 of the project Initial Study that, " Projects 1 – 6 do not contain or conflict with any SEAs**, Wildflower Reserve Areas**.."

GEOLOGY AND SOILS

Dust suppressant measures used during both construction and operation of Silverado's proposed project also have the potential to negatively impact nearby areas. Again according to Lovich and Ennen (from the article previously quoted):

> During operation, to combat dust, solar energy facilities apply various dust suppressants to surfaces with exposed soil (e.g., graded areas, areas with vegetation removed, roads).... In a study conducted in the Mojave Desert in which the hydrological impacts of dust suppressants were compared, Singh and colleagues (2003) reported that changes did occur in the volume, rate, and timing of runoff when dust suppressants were used.

These changes included drastic alteration to area hydrology effecting timing and amount of runoff and well as the " increase in total suspended solid loads in runoff." Thus this proposed solar installation will not only destroy the desert habitat underneath its panels but has the potential of negatively impacting habitat for plants and animals in the surrounding area. As explained by Lovich and Ennen:

> Others have highlighted the fact that there is a dearth of scientific research and literature on the effects of dust suppressants on wildlife, including the most commonly used category of dust depressant: brines and salts (Piechota et al. 2004, Goodrich et al. 2008). However, the application of $MgCl_2$ to roads was correlated with a higher frequency of plant damage (Goodrich et al. 2008). Because chloride salts, including $MgCl_2$, are not confined to the point of application but have the ability to be transported in runoff (White and Broadly 2001), the potential exists for a loss of primary production associated with plant damage in the habitats surrounding a solar facility, which could directly affect wildlife habitat.

On the subject of soil erosions Lovich and Ennen state that:

> Any disturbance and alteration to the desert landscape, including the construction and decommissioning of utility-scale solar energy facilities, has the potential to increase soil erosion. Erosion can physically and physiologically affect plant species and can thus adversely influence primary production (Sharifi et al. 1997, Field et al. 2010) and food availability for wildlife.

> Solar energy facilities require substantial site preparation (including the removal of vegetation) that alters topography and, thus, drainage patterns to divert the surface flow associated with rainfall away from facility infrastructure (Abbasi and Abbasi 2000). Channeling runoff away from plant communities can have dramatic negative effects on water availability and habitat quality in the desert, as was shown by Schlesinger and colleagues (1989). Areas deprived of runoff from sheet flow support less biomass of perennial and annual plants relative to adjacent areas with uninterrupted water-flow patterns.

The extreme soil compaction required at utility-scale solar sites will drastically alter both drainage patterns and the ability of the land to absorb run-off. With area users already being subject to severe cutbacks, this is a serious concern. How will the cumulative effect of soil compactions at these 6 sites, in addition to the multiple facilities both existing and proposed for the Western Antelope Valley, increase evaporation and diminish the ability of the land to absorb rain and replenish the aquifer?

HAZARDS/HAZARDOUS MATERIALS

Area residents have described the dust blowing from the AV Solar Ranch 1 construction site sticking to their cars and clothes. A chilling thought is the fear of what this sticky dust does when inhaled by people and animals. It will inevitably also have negative effect on native plants when it coats their leaves and blooms. What dust suppressants, soil sealers, rust suppressants and other industrial chemicals will be used by Silverado's facilities? What studies document the safety of these products when used in the massive quantities demanded by a combined 700 plus acre installation? Will rodenticides, herbicides or soil conditioners be used during construction and/or operation and what will their effect be on people, plants and animals?

Electromagnetic Fields

Due to the threatened electrical industrialization of the Western Antelope Valley, an issue of increasing concern is the cumulative effects of electromagnetic field generation or EMFs. EMFs are created by electricity traveling through the buried and overhead cables of solar installation. According to Lovich and Ennen's EMFs are a concern "from the standpoint of both human and wildlife health, yet little information is available to assess the potential impact of the EMFs associated with USSED [utility-scale solar energy development] on wildlife." Further they state that:

> Concerns about EMFs have persisted for a long time, in part because of controversy over whether they're the actual cause of problems and disagreement about the underlying mechanisms for possible effects. For example, there is presently a lack of widely accepted agreement about the biological mechanisms that can explain the

> consistent associations between extremely low-frequency EMF exposure from overhead power lines and childhood leukemia, although there is no shortage of theories (Gee 2009).

The association of EMF exposure with childhood leukemia is particularly alarming due to an electrical substation already adjacent to Del Sur School and the proposals for solar installations that could eventually surround this rural K-8 school with electrical production and transmission installations. Silverado's proposed installations will be an added source of existing and proposed facilities exposing area residents and visitors to EMFs with unknown but potentially adverse health effects for people, plants and animals.

BIOLOGY

In addition to the biological concerns already addressed, invasion of non-native species including Russian thistle, European grasses and non-native species of mustard is a pressing concern for this area known for its native wildflower fields. These opportunistic species are among the first to sprout on cleared terrain. In Lancaster, growth of these invasive plants underneath and adjacent to solar panels is common. If this growth is not vigilantly eradicated among Silverado's solar arrays the threat of such species spreading onto the Poppy Reserve and other wildflower areas will lead to increased detrimental competition with native annuals, already a serious threat in the area.

How will the growth of these and other non-native species be prevented on the lands of these proposed energy plants? Will herbicides or soil sealers be used? What effect will these chemicals have on the native plants of the area? How will the destruction of existing native plants be mitigated?

If ground cover is used underneath the solar panels, will it spread to surrounding areas crowding out native wildflowers? How will planting and growth be managed?

Light Pollution

Light pollution created by solar installations is another example of the adverse effects that utility-scale solar installations have on the surrounding environment. Researchers describe two different types of light pollution that are created by solar facilities: ecological light pollution and polarized light pollution. Ecological light pollution has been shown to be a serious threat to both desert animals and insects. Concerning polarized light, quoting Lovich and Ennen, "Polarized is produced a high levels at facilities using photovoltaic panels, because dark surfaces polarize light." Regarding the negative

effect on insects and therefore all of the other life forms that depend on insects for food and pollination, these scientists state:

> Numerous anthropogenic products—usually those that are dark in color (e.g., oil spills, glass panes, automobiles, plastics, paints, asphalt roads)—can unnaturally polarize light, which can have adverse effects on wildlife (for a review, see Horváth et al. 2009). For example, numerous animal species use polarized light for orientation and navigation purposes (Horváth and Varjú 2004). Therefore, the potential exists for PLP to disrupt the orientation and migration abilities of desert wildlife, including those of sensitive species. In the review by Horváth and colleagues (2009), which was focused mostly on insects but included a few avian references, they highlighted the fact that anthropogenic products that produce PLP can appear to be water bodies to wildlife and can become ecological traps for insects and, to a lesser degree, avian species. Therefore utility-scale solar energy facilities at which photovoltaic technology is used in the desert Southwest could create a direct effect on insects (i.e., ecological trap), which could have profound but unquantified effects on the ecological community surrounding the solar facility. In addition, there may be indirect effects on wildlife through the limitation of plant food resources, especially if pollinators are negatively affected

With pollinators already in decline, the adverse effect of light pollution created by solar installations is a serious threat to native plants and both small and large-scale food production.

CONCLUSION

Home of the world famous Antelope Valley California Poppy Reserve and identified as a Globally Important Bird Area, the Western Antelope Valley provides a refuge from industrialization for both wildlife and people. When will the environmental impacts and visual blight of electrical substations, transmission towers, and vast security fenced and illuminated installations reach a “tipping point” that will destroy this refuge forever? The cumulative impacts of this and the many other electrical facilities existing and proposed for this rural area must be thoroughly addressed before this or any other utility-scale industrial energy installations are allowed to move forward.

APPENDIX A-5

TRANSCRIPT OF SCOPING MEETING

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LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING

SILVERADO POWER LLC

PUBLIC SCOPING MEETING

DRAFT ENVIRONMENTAL IMPACT REPORT

LANCASTER, CALIFORNIA

JULY 14, 2012

MR. SZALAY: All right. Well, good morning. My name is Kim Szalay. I'm a principle planner with the Special Projects Section of L.A. County Regional Planning, and my superior is Sam Dea, right over here. And right next to him is Carolina Blengini, who is the lead planner for the Silverado Project that's the subject of today's Scoping Meeting. The Scoping Meeting is to take public input as to what should be analyzed in the Environmental Impact Report. More explanation will be given in a moment.

Now, also attending is the Environmental Impact Report consultant, Mike Di Sano, and he works with the County and the applicant to put together some of the detailed studies for the Environmental Impact Report. And then Silverado Solar has three representatives here, Corina is in the back, and we have Logan right here and Chelsea -- where did she go? Chelsea is also with Silverado.

And then to actually run the meeting, the firm ESA will be a third party facilitator of the meeting, and that's Deanna.

And without further ado, I will turn it over to her.

MS. HANSEN: Good morning. I'd like to remind everybody that on the back of the Agenda are comment sheets, so feel free if you're feeling shy and you don't want to step in front of the microphone to provide written comments, and we'll take those today also.

So we're here to talk about Silverado Power. So a little bit about what a Scoping Meeting is. I'm sorry if I -- I'm not very (inaudible). Scoping Meeting is an opportunity for everybody who's interested in a project to provide input to the people preparing the EIR on what you want to see in the document, what issues are important to you. And this is going to be the first of many opportunities to comment on the project either in a public forum like this or provide written comments on the EIR.

So what a Scoping Meeting isn't. Scoping Meeting isn't -- you know, we appreciate the fact that you approve or don't approve of the Project, but that's not really the point of this meeting. The point of this meeting is to really talk about the environmental issues that you want to see analyzed in the EIR. And there will be opportunities to let the decision makers know whether or not you approve of the Project so that that can become part of their decision.

So background: L.A. County received applications for Conditional Use Permits for these six Projects. These

Conditional Use Permits required the County to consider taking discretionary actions, and that kicks in CEQA and requires the preparation of a CEQA document, so based on an initial study it was prepared for this Project. The County determined that there were potential significant impacts for this Project; therefore, an EIR needs to be prepared.

So an EIR is just a public disclosure document that talks about the physical changes to the environment, just the physical changes to the environment. It also provides mitigation measures and alternatives.

So, as I mentioned, the County prepared an initial study and issued a Notice of Preparation, which I assume that you received. If you didn't, there are copies available on the County's website that identifies all the potential issues that will be addressed in the EIR, and that's what we're going to talk about today.

The 30-day comment period for the NOP to provide comments ends on the 20th of July. Sorry if you can't see.

So once Tetra Tech prepares the Draft EIR it goes for a 45-day review.

UNIDENTIFIED MALE: What time is that on the 20th?

MS. HANSEN: 5:00 p.m.

UNIDENTIFIED MALE: And location, here?

MS. HANSEN: At the County, you can submit your comments via e-mail or via regular mail or Pony Express, fax, however

you want to do it.

So they're in the process now of preparing the Draft EIR and preparing the technical studies. Once that's completed, that will go out again to the public, and that goes out for a 45-day review. In that 45-day review period they collect comments, additional comments from individuals like yourselves or from agencies or any organizations that are interested in the Project.

After the 45-day comment period ends, we prepare a Final EIR which responds to all the comments that were received on the document. There's also Planning Commission hearings and Board of Supervisor hearings on this Project.

So as you may be aware and as the drawings on the wall show, this is six solar Projects in Antelope Valley. All the sites together would include 172 megawatts on approximately 747 acres. All six facilities will be similar. They're listed here and they're shown on the aerials on the wall. This obviously (inaudible) but this shows all the Projects that are also shown on the wall.

So there's a list of entitlements and discretionary permits that are required for the Project. The EIR needs to be certified by the Board of Supervisors.

MR. SZALAY: Again, you may want to clarify that it's just for one Project.

MS. HANSEN: Project 1 needs to be adopted by the Board of

Supervisors. Project 1 requires a Zone Change. The other ones will be approved by the Planning Commission.

Like I mentioned, there's six Conditional Use Permits, one per Project. There may be some additional permits or other governmental actions that might be required by the Project depending on some of the environmental effects of the Project.

So, issues to be addressed. So per the initial study that was completed where they went through every issue area under CEQA, these are the issue areas that they determined were potentially significant and needed to be addressed in the EIR. That includes potential impacts to scenic vistas, whether or not the Projects would be seen from regional trails, a change in visual character and potential to create light and glare.

Is there any other issue that you guys feel that should be also addressed in the EIR that we don't have included up here or that when you reviewed the initial study felt needed to be included? And there will be other times to talk about this, but we could take some -- go issue by issue.

Yes, ma'am.

UNIDENTIFIED FEMALE: What about blowing dust?

MS. HANSEN: Dust is usually covered under air quality, but we'll note that down.

UNIDENTIFIED FEMALE: And what about our roads out there? Our roads are in horrible condition as it is out there, and I

know this isn't so much environmental, but we have to drive those roads and when you start bringing all this heavy equipment and semi trucks and these roads are just going to crumble.

MS. HANSEN: Transportation impacts are also going to be addressed in the EIR. We're going to go issue by issue, so mainly what I'd like to focus on is aesthetics right now.

Yes, ma'am.

UNIDENTIFIED FEMALE: Who's going to enforce this after the fact when they say, oh yeah, we'll put up trees, we'll put up this, we'll put up that, and then a year and the project is totally wasted (inaudible) that they have a barbed wire fence and tumbleweeds against it. Who's going to enforce what they say that they're going to put in?

MS. HANSEN: The County is required to enforce all mitigation measures on the Project.

UNIDENTIFIED MALE: That ain't going to happen.

MS. HANSEN: Is there any other questions on aesthetics?

Yes, sir.

UNIDENTIFIED MALE: Not on aesthetics.

MS. HANSEN: Okay. Let's go to the next slide.

So Project 4 would convert private farmland, and all Projects have the potential to conflict with existing agricultural uses. This will also be addressed in the EIR.

Is there any other concerns besides these under Ag

that anybody feels should be addressed? Okay.

UNIDENTIFIED MALE: Wait a minute.

MS. HANSEN: Oh, sorry. Yes, sir.

UNIDENTIFIED MALE: They are going to be putting one of these right next to an alfalfa field. Is it going to affect that alfalfa field? Also, is there a lot of life in that area?

MS. HANSEN: We are going to discuss biology also and, yeah, the potential to conflict with adjacent agricultural uses will be discussed in the EIR.

So air quality is where dust will be discussed, the potential for fugitive dust emissions associated with grading and construction of the sites, of the Projects, mobile emissions from trucks and construction equipment, and then potential for the construction equipment to create odors.

Yes, sir.

UNIDENTIFIED MALE: We've already seen the dust projects at Solar 1, and they did grading. Sun Power claims they've got 4400 acres that they've already got a CUP for but they say they're not going to do grading, so then they're going to do it a way so that they don't create a lot of dust, that's what they claim.

MS. HANSEN: I believe this Project does include grading of some of the sites.

UNIDENTIFIED MALE: Well, could that be changed?

MS. HANSEN: We will, right, break that down.

MR. SZALAY: Yeah, basically, it'll be evaluated Project by Project and phase by phase as to where there's grading needed and when there isn't any grading needed. From the County's perspective, we want to see as little grading as possible.

MS. HANSEN: Yes.

UNIDENTIFIED MALE: What about the water usage to keep this down? I mean, they used -- they're using an enormous amount of water.

MS. HANSEN: We're going to discuss the impact of water usage in the EIR also.

Yes, sir.

UNIDENTIFIED MALE: Shouldn't these grading issues have already been addressed since they have the sites designated, why would you wait until maybe after the EIR is created? I'm not understanding.

MS. HANSEN: So in the EIR they're going to discuss the impacts of grading, so they're going to analyze how much grading has to be done and what those impacts are. That's what the EIR will do, it will go through a whole analysis of what the impacts of grading are on surrounding land uses or any other.

UNIDENTIFIED MALE: I thought I just heard that they don't know if they're going to grade or not.

MR. SZALAY: The Project hasn't been detailed that far

yet, so basically from the County's perspective we want to see as little grading as possible.

MS. HANSEN: Yes, sir.

UNIDENTIFIED MALE: Yeah, my question was on the air quality. I only see the air quality during construction, and when it's finished, if it is graded, the air quality is going to be a big problem for most of the people in this room, and I don't see anything about that. Is anything going to be put in at some point about after it's finished?

MS. HANSEN: So what you're asking is that the EIR should deal with the potential issues of dust once the construction is completed; correct?

UNIDENTIFIED MALE: Yes.

UNIDENTIFIED FEMALE: It's not only potential (inaudible).

UNIDENTIFIED MALE: Yeah, it's dust mitigation that's got to happen.

UNIDENTIFIED FEMALE: I don't know if it's already been covered in some of these conversations, but that's the problem with some of the solar places that already went in. They said they weren't going to do certain things to keep the dust down, and they did and there were some big dust storms this past season because of it. Several people I know said you these particular dust storms that you saw? That was from the solar places and they weren't supposed to do that. So how are you going to control it?

MS. HANSEN: Okay. That's a good comment. That will be addressed in the EIR.

UNIDENTIFIED FEMALE: It needs to be done before these places are put in and they need to follow through what they agree to, because these other places apparently have not done what they said they were going to do and it's caused dust problems.

MS. HANSEN: Okay.

UNIDENTIFIED MALE: Sun Power (inaudible) 400 acres, they're leaving their plants in place. They're going to try to work with everything that's still growing there as much as they can except for the bushes. They haven't decided yet how to deal with them. But that rooting system is still in the ground so it keeps the dust from blowing (inaudible).

MS. HANSEN: Okay. So one of the comments is to limit the grading to limit the impacts to vegetation to limit the potential impacts from dust, correct?

UNIDENTIFIED MALE: Exactly.

MS. HANSEN: Any other comments on air quality?

Yes, ma'am.

UNIDENTIFIED FEMALE: Yeah, I'm still kind of wondering how are you going to enforce this, because I see from my house -- I live up on a hill, and I can see First Solar and NRG and every single time that dust starts blowing and we get a wind storm, I call (inaudible), I make the County aware of this

blowing dust, yet time after time after time it happens again and again and again. So, I mean, there really has to be something --

UNIDENTIFIED MALE: Different.

UNIDENTIFIED FEMALE: -- different.

MS. HANSEN: Okay. So what you would like to see in the EIR is mitigation, some enforceable mitigation with regard to dust, something that is different than maybe what was done before.

UNIDENTIFIED FEMALE: And we've been hearing cases of people coming down with Valley Fever more so than usual in the Valley. We realize dust does blow out here. And, you know, when people are coming down with Valley Fever more so than usual, you're hearing more cases of it, that's kind of frightening.

MS. HANSEN: Okay. So Valley Fever should also be in.

Yes, ma'am.

UNIDENTIFIED FEMALE: Why can't projects of buildings, new buildings that are going up, be designed with solar features so you don't have to rip up the land? There are beautiful solar buildings that, if they're designed correctly, they can be built from the ground up and in just a matter of a short time they will pay for themselves and provide the solar energy that way rather than denuding the land.

MS. HANSEN: Okay. So that would be an alternative to

this Project, an alternative that you would like addressed.

UNIDENTIFIED FEMALE: (Inaudible.)

MS. HANSEN: An alternative that you would like to see is rooftop solar as opposed --

UNIDENTIFIED FEMALE: No, not necessarily rooftop solar; having a built-in design to accommodate solar energy. I'm not just talking about putting panels up but just to have a complete building designed from the ground floor up designed for solar.

I had an aunt and uncle that built a beautiful solar home in New Mexico and she did a whole project around Santa Fe area of buildings that had solar designs and they paid for themselves in no time at all.

MS. HANSEN: Okay. So you're not --

UNIDENTIFIED FEMALE: And they're beautifully designed. I mean, encourage these young engineers and architects to build the features into the building. I mean, some of the older buildings could probably be retrofitted, but I'm talking about completely designing a building, and start to encourage that with these architects and engineers.

MS. HANSEN: Okay. Any other comments on air?

Yes, sir.

UNIDENTIFIED MALE: I think, you know, what she's talking about is residential.

UNIDENTIFIED FEMALE: It could also be done for

commercial.

UNIDENTIFIED MALE: Okay. I've never heard that as residential. Matter of fact, now they have roof tiles to make houses more efficient. What you're talking about is relevant, it's there, but they're dealing more on a commercial aspect.

UNIDENTIFIED FEMALE: Do it with a commercial buildings.

UNIDENTIFIED MALE: I think I can sum up the two areas that you're going to have problems with, being a former employee of ABSR-1 of seven months. Dust and water. If you can conquer those two, you will satisfy most of the people in this audience right now.

MS. HANSEN: Okay. Dust and water will be addressed.

UNIDENTIFIED MALE: Dust and water. I'm sure there will be some underlying things that come up, but those are the two main things that have plagued the employees working on the job and the residents of the area.

MS. HANSEN: Okay.

UNIDENTIFIED MALE: And I told that to (inaudible).

MS. HANSEN: Okay. Yes, sir.

UNIDENTIFIED MALE: This one's on air quality again also. We have heard stories, most of the people in here, don't know if they're true, but some of these panels are made with some type of cadmium and when these things catch on fire it emits something that even firemen are afraid to be around. And we don't ever hear of those things being mentioned. Is there

anything getting mentioned in the EIR about that and the possibility of a fire and people downwind being poisoned by this stuff?

MS. HANSEN: I believe that issue will be handled under hazards.

UNIDENTIFIED MALE: Okay.

UNIDENTIFIED MALE: Under what?

MS. HANSEN: Hazards. Any other questions on air quality? Yes, sir.

UNIDENTIFIED MALE: Question. Are you using or is Silverado going to use the thin film with the cadmium (inaudible) or is it using silicone?

MS. HANSEN: They haven't determined their technology yet.

UNIDENTIFIED MALE: I see. They must not have talked to the solar (inaudible). Sorry.

MS. HANSEN: That's okay.

UNIDENTIFIED MALE: (Inaudible) going to throw all this money into it?

MS. HANSEN: Is this about air quality?

UNIDENTIFIED FEMALE: Well, it's dealing with the water issue.

MS. HANSEN: Okay. Well, we're going to talk about water also. Any more on air quality? Yes, sir.

UNIDENTIFIED MALE: Since she brought up putting these

things on buildings, I'm looking at parking lots (inaudible) how big is their parking lot, how many acres? All these parking lots around town, acres and acres and acres. I've seen -- I go down to the VA sometimes down below and they've already put up solar panels over all their parking lots.

MS. HANSEN: Okay. Again, so that would be an alternative to this Project is providing solar on parking or existing buildings or creating --

UNIDENTIFIED FEMALE: Yeah, and some of the high schools -- most of the high schools here have already put up those parking, the solar, but I've heard they've been having -- they haven't been working out the way they were supposed to.

MS. HANSEN: Okay.

UNIDENTIFIED FEMALE: Things have not been coming around like they were supposed to.

MS. HANSEN: Any more comments on air quality?

Okay. Biological resources. So the EIR will discuss the potential impacts to existing vegetation from Projects 1 through 6.

And just to clarify, I should have done this in the beginning. We listed the Projects where these issues will be discussed, the Projects that may result from impacts with these issues, so if it's Projects 1 through 6, that means in the EIR all the Projects will be analyzed for potential to impact existing vegetation. If it says Projects 1, 2 and 4, that

means only those Projects have those issues onsite.

So there's also potential to impact sensitive species, potential to impact jurisdictional features on Projects 2 through 6, and the potential to impact migratory or ground nesting birds.

Are there any other concerns about -- yes, sir.

UNIDENTIFIED MALE: Please explain what potential impacts to jurisdictional features means and why Project 1 is not on that.

MS. HANSEN: Projects 2 through 6 have jurisdictional features, so waters of the U.S. or waters of the state potentially on the site that would have to be mitigated for.

UNIDENTIFIED MALE: Please be more specific.

UNIDENTIFIED MALE: Waters of the state.

MS. HANSEN: Waters of the state. I'm not a biologist, but --

MR. SZALAY: For example, (inaudible) drainage corridors or dry where it gets, you know, obviously there's no -- a lot of these sites (inaudible).

UNIDENTIFIED MALE: Why don't you stand up so we can hear you.

MR. SZALAY: A lot of those features, like drainage features, a lot of them may fall under, you know, jurisdictional protection other than the County like state and federal, so those are the sites that have those features and

one of them doesn't because of topography, so we were able to rule out that one particular site as not having any of these jurisdictional features.

MS. HANSEN: So Project 1 does not have any of the jurisdictional features that he mentioned.

Yes, sir.

UNIDENTIFIED MALE: And are these features shown on the maps are they (inaudible) areas?

MS. HANSEN: That will all be discussed in the EIR.

UNIDENTIFIED MALE: So the EIR will go through how it's mapped, where it's located on each property and what the impact of the Project would be to those features, and that's what the EIR will do is give you more information (inaudible) able to analyze (inaudible) what the impacts are and how we can mitigate it (inaudible)?

MS. HANSEN: Technical studies are being completed now for all of it, so all that information will be included in the EIR, but if there are other issues besides these that you think, because your knowledge of the sites or you knowledge of the area that you think should be in the EIR, this is your opportunity to let us know.

Yes, sir.

UNIDENTIFIED MALE: I hope this question is cogent, but is there going to be a list of the organization and the qualifications of the biologists who are doing this?

MR. SZALAY: Yes.

MS. HANSEN: Yes.

UNIDENTIFIED MALE: Yes. Okay. That's a one-word answer. Can we elaborate just a little bit?

MR. SZALAY: Well, I can elaborate. Typically, that's information contained in the EIR, and part of the EIR will contain what we call an appendix of basically information that we relied on to make those conclusions, and as part of that appendix it will have lists and the names of the firm, the people who worked on the (inaudible) firms who prepared the document, what they call (inaudible). Those type of things are available in the EIR or available in the County's administrative record.

So if someone wanted to find out who is this person that prepared this document and that document will have the name of the firm that prepared it and the qualifications of them.

UNIDENTIFIED MALE: What about techniques used, sir, in this biological survey?

MS. HANSEN: Methodology will be discussed in the EIR and will be -- what he's talking about is in the appendix will be technical studies for each of these issue areas.

UNIDENTIFIED MALE: I got that.

MS. HANSEN: Right. And so in those technical studies they'll discuss their methodology, what they did, how they came

up with these conclusions. Did that answer your question?

UNIDENTIFIED MALE: Yes. I've just been concerned when all that's done and who will review this. Thank you.

MS. HANSEN: Okay. Yes, ma'am.

UNIDENTIFIED FEMALE: You list the Projects like in reference 1 through 6. Is there any cumulative impact report going to be done? I mean, Project 1 is going to be little and it may be over here in comparison to 2 it may be a little larger individually they may not make that big of an impact, but totally that's a lot of property they're going to destroy putting in their solar panels, so is there a cumulative impact report that's going to be done on that?

MS. HANSEN: Cumulative analysis will be done for each issue area. It will not only include Projects 1 through 6 but will also include other projects in the vicinity that may contribute cumulatively to any of these impacts that we're talking about.

Yes, sir.

UNIDENTIFIED MALE: Silverado has more projects coming up. Some of them are larger. They're concentrated in an area (inaudible), so those are coming up later sometime after this, so if you're going to do a cumulative, how are you going to do it with all these various projects? That's my first question.

The second one is, Silverado has two projects that are going through the City of Lancaster, and they did a very --

they did a biological study. (Inaudible.) I managed to come up with a whole lot more birds in the area than they did. I managed to come up with birds that are of concern closer to the area than they did, so it makes me wonder a little bit about it. I'm just one person out there.

MS. HANSEN: Okay. On your question No. 2, it would be helpful, then, for you to provide written comments of what wildlife that you have seen out there that you want to have made sure that it's addressed in the EIR. That's a very helpful comment.

Comment No. 1 was --

UNIDENTIFIED MALE: What was comment No. 1?

UNIDENTIFIED MALE: Other projects.

MS. HANSEN: Other projects. The other Silverado -- the cumulative projects are projects that are known at the time. We don't go into speculation on what could be cumulative projects, so I'm not sure exactly how the County puts together the list, but the list is usually put together by applications that they have received for projects in the area. If they haven't received an application for a project, it's not usually included in the list of cumulative projects.

MR. SZALAY: The law requires that you include related projects, typically (inaudible) the issue in the Notice of Preparation, which is what we're doing right now (inaudible), telling people we're doing an EIR. Here's what we're going to

look at. And if you know of any projects that we may have missed or we're not aware of, please let us know.

And, obviously, if someone's building a house down the street, I don't know if it would rise to the scope and scale that it should be included. We're looking at, you know, projects that have potential significant impacts. So if you know of any that we have not included, please let us know.

MS. HANSEN: Yes, sir.

UNIDENTIFIED MALE: So what you're saying is that you really don't know how many projects there is coming in? Because I remember the story a year ago that you had 32, then it went to 33 potential projects, but you're not counting all those projects?

MR. SZALAY: No, those are included in all the applications we have received, so what we have so far to date is, you know --

UNIDENTIFIED MALE: How many projects do we have now?

MR. SZALAY: We've got probably in the neighborhood 33 to 35, so we can't anticipate.

MS. HANSEN: Right, and it's only projects that they have applications in that they know about, real projects.

Yes, ma'am.

UNIDENTIFIED FEMALE: Do they include the ones that are in the city areas for your cumulative report?

MS. HANSEN: Yes, they do.

MR. SZALAY: Keep in mind that the projects (inaudible) is not just solar property. Include building subdivisions, you know, building commercial development, for example, that requires some things that have potential impacts. For example, air quality, biology. So it's not strictly limited to just solar or renewable or (inaudible).

MS. HANSEN: Yes, ma'am.

UNIDENTIFIED FEMALE: What is the total acreage of all the Projects combined?

MS. HANSEN: Seven hundred and forty-seven. Seven hundred and forty-seven acres.

UNIDENTIFIED FEMALE: Seven hundred and forty-seven for all of the total Projects.

MS. HANSEN: For all, for Projects 1 through 6, approximately.

UNIDENTIFIED MALE: And 427 of them (inaudible).

MS. HANSEN: I don't have that information at this time, but that information will be provided in the EIR. Usually when there's a list of cumulative projects, it lists the type of project it is, the size and the acreage.

MR. SZALAY: And where they're located.

MS. HANSEN: Yeah, and there's a map that includes where they're all located.

Yes, ma'am.

UNIDENTIFIED FEMALE: Is there going to be a PCA in your

EIR?

MS. HANSEN: Yes.

UNIDENTIFIED FEMALE: Okay. I have another question, especially it concerns for Project 2 and 5. They are right next to an SEA, and has the County, will they be looking into the biological studies already done by the (inaudible) Project and (inaudible) Project, because that -- the (inaudible) ridge in that area surrounding the poppy reserve is now, they're SEAs, Significant Ecological Areas, and that whole area considering the (inaudible) and stuff have a range of a hundred miles or more. You're right next to an area that is deemed by the Audubon Society to be a world-renowned environmental importance for birds and they're taking away habitat.

MS. HANSEN: As I mentioned, the potential impacts to migratory birds will be discussed in the EIR.

UNIDENTIFIED FEMALE: So but will the next era element EIRs be looked at within your (inaudible) Project?

MS. HANSEN: I believe that separate biological studies are being done for these particular Projects, but my understanding of what biologists do is they take the information that's already learned and use that and apply that to their report.

UNIDENTIFIED FEMALE: And another thing as well, I think something should be looked into concerning Project 2 and 5, the closeness to the poppy reserve. I think it needs to be looked

at that both of these sites are heavy wildflower areas, and when tourism comes every spring for the wildflowers that's a big viewing area, and to me this is going to be a loss of revenue in that the tourism is going to die out.

MS. HANSEN: Okay. Well, the impacts to wildflowers and wildlife will be discussed. The impacts to tourism, that's not an environmental impact, that's an economical impact and it will not be addressed. However, your comment is valid and it would be helpful if you wrote that comment down and brought that in front of the decision-makers so that they would have that.

Yes, sir.

UNIDENTIFIED MALE: Will culture alliance be discussed?

MS. HANSEN: That's coming up.

UNIDENTIFIED MALE: And so why isn't -- why did you just tell her that the economic effects won't be part of the EIR, because those are cultural. Yes? No?

MS. HANSEN: No, no. Cultural from the standpoint of paleontological or archeological or historic resources will be discussed in the EIR.

UNIDENTIFIED MALE: So there's no place in the EIR for economic effects on the populace; is that what you just said?

MS. HANSEN: No.

MR. SZALAY: Yeah, that's pretty clear (inaudible) that certain things you (inaudible) economic impact. I mean, the

only way you could tie economic impact is if you could tie that impact to a physical impact.

So for example, if Walmart comes to downtown Lancaster. I don't know if there's a -- I think there's a Walmart in Palmdale but I don't know if there's a Walmart in Lancaster.

UNIDENTIFIED MALE: Jesus, yes.

MR. SZALAY: You open a Walmart in your little town and then it creates -- shuts down all the small stores, you could say it creates blight and then --

MS. HANSEN: Physical impacts to the environment.

MR. SZALAY: That's how we would tie it. But as far as just losing tourism or less people visiting an area, you're going to have to make that connection or correlation to the area.

MS. HANSEN: Yes, ma'am.

UNIDENTIFIED FEMALE: How about (inaudible) the land surrounding it, is it going to lose all the values that are there?

MS. HANSEN: That won't be discussed in the EIR, but that's a valid comment. Again, if you would write that down and submit that.

Yes, sir.

UNIDENTIFIED MALE: The Project that's at I and 120th Street, that route's kind of a (inaudible) route right out

here, it goes right to the poppies and there's people that are going to be driving right past that all the time and that's got to have an impact.

MS. HANSEN: We'll be talking about the impact to scenic vistas under aesthetics. Anything else on biology?

Yes, ma'am.

UNIDENTIFIED FEMALE: People come from all over the world come to see our wild flowers, all over the world. I don't have the statistics with me, but I am on the Board with the Poppy Reserve and we do keep that every year, how many visitors we get, where they're from. And I've answered the phone and they're saying "I have a relative coming from some other County; will you have flowers," you know, da, da, da.

So people come from all over the world to see our beautiful wild flowers. And you never know from year to year where they're going to grow because they are wildflowers, they're not cultivated. So I think this is a major issue and the economics should pay a part in that.

And when that lady spoke up it brought up a second point. I have a friend that had to sell her property because she was not going to get what the solar companies were -- you know, the value. They came in underrated, all the residents in her area.

MS. HANSEN: Okay. Anything else on biology?

Yes?

UNIDENTIFIED MALE: Under biological resources, because of some or all of these Projects are going to destroy habitat, I'd like to see suitable mitigation property areas identified in advance so we aren't struggling with that down the road.

MS. HANSEN: So you would like the habitat mitigation clearly defined in the EIR.

UNIDENTIFIED MALE: Areas that are suitable as mitigation land.

MS. HANSEN: Okay.

UNIDENTIFIED MALE: In advance.

MS. HANSEN: Okay. Biology?

UNIDENTIFIED MALE: Yes, biology.

MS. HANSEN: Okay.

UNIDENTIFIED MALE: Requiring every one of these to have some kind of ground cover, are they required to have a ground cover?

MR. SZALAY: Yeah, we're actually going to provide a ground cover. There's an agency that we're going to be consulting, a local agency, that will let us know what kind of ground cover may be preferred, so that we are, you know, taking your guys' thoughts into consideration.

UNIDENTIFIED FEMALE: Which agency?

UNIDENTIFIED MALE: Wait a minute, wait a minute. Is it going to be indigenous grasses and so on?

MR. SZALAY: Yes, indigenous.

UNIDENTIFIED MALE: Where are the seeds coming from?

MR. SZALAY: That I don't know (inaudible).

MS. HANSEN: It hasn't been determined yet.

UNIDENTIFIED MALE: It's not determined because there aren't any available. I mean, if you're going to require them to do stuff, and then where are they supposed to get the seeds? Right now First Solar is facing this problem.

MS. HANSEN: Okay. Good to know.

UNIDENTIFIED MALE: But it should be brought into the planning meeting so that the Planning Department is aware of it.

UNIDENTIFIED MALE: (Inaudible) signed the letter.

MS. HANSEN: Biology?

UNIDENTIFIED MALE: Yeah, I think.

MS. HANSEN: Okay.

UNIDENTIFIED MALE: Well, because it has to do with what they're going to plant to possibly hide this thing. To most of us it's going to be white, just plain and simple. And I know they can't have anything too high or there goes your solar, right? And so I don't know if that's in biology or somewhere else, but that might be something you can ask about.

MS. HANSEN: So exactly what's going to be planted.

UNIDENTIFIED MALE: And how much to hide it from us.

MS. HANSEN: Okay. Yes, sir.

UNIDENTIFIED MALE: There are reports that the solar

Projects will resemble a body of water when they're complete, and we're wondering what effect will that have on water fowl.

MS. HANSEN: Okay.

UNIDENTIFIED MALE: Attempting to land on the solar panels.

MS. HANSEN: Okay. That will be addressed in the EIR.

MR. SZALAY: It's called polarizing light.

MS. HANSEN: Okay. Any more comments on biology?

Yes, ma'am.

UNIDENTIFIED FEMALE: I don't know if it has to do with biology, but the setbacks of the solar panels from specific areas would be sensitive such as the parks. There's quite a few parks out in the west side of Antelope Valley. The setbacks of the Project from the property line, is that --

MS. HANSEN: I think setbacks will be discussed in aesthetics.

UNIDENTIFIED FEMALE: Oh, okay.

MS. HANSEN: And possibly land use.

UNIDENTIFIED FEMALE: Okay.

MS. HANSEN: Biology? Yes, ma'am.

UNIDENTIFIED FEMALE: What other potential ground cover have you considered other than bringing in potentially other seeds that might unfortunately impact (inaudible)?

MS. HANSEN: I don't know that that's been determined at this time.

UNIDENTIFIED FEMALE: (Inaudible.)

MS. HANSEN: But if you have suggestions, that would be a good comment.

UNIDENTIFIED FEMALE: Yeah, I can provide it.

MS. HANSEN: Any more on biology?

Yes, sir.

UNIDENTIFIED MALE: Is Silverado at any time considering in any of the 33 to 35 or 36 projects on the books, considering wind power at all, or is it all solar?

MS. HANSEN: I don't know. I don't believe that that is relevant to this Project. It's a good question, but I don't know.

UNIDENTIFIED FEMALE: Maybe I could help answer that. We just bought a wind farm, and Mr. Antonovich (phonetic) has come out and said he does not want wind turbines in his County. So hopefully we can avoid the wind farms completely.

MS. HANSEN: Any more comments on biology?

All right, next slide.

Cultural resources. We've touched on this a little bit. So the potential to impact cultural resources will be discussed specifically for Project 4, and the potential impacts are archaeological and paleontological resources due to grading activities will be discussed for all Projects.

Any other concerns on cultural resources?

Yes, sir.

UNIDENTIFIED MALE: I'm just curious how is the public kept abreast of this, because my understanding is, for instance, ancient Indian artifact sites are protected from discovery by the public. Are we kept informed of any of this at all?

MS. HANSEN: The cultural resources will be discussed in the EIR, but you're correct that any sensitive sites are kept from the public record. We don't want people to go and find them and destroy them. But all cultural resources will be discussed and potential impacts and mitigation if there are impacts.

Yes, sir.

UNIDENTIFIED MALE: I'd like to clarify his comment. At ABSR-1, yes, if there's a sensitive site, the only information that is disclosed is what was found. As far as the area that it was found in, that's confidential information.

MS. HANSEN: Correct.

UNIDENTIFIED FEMALE: It's my understanding also that the tribes are notified of these types of finds in their (inaudible).

MS. HANSEN: The tribes are notified not only of the finds but just the entire process.

MR. SZALAY: They're on site.

MS. HANSEN: Any other comments on cultural resources?

Yes, ma'am.

UNIDENTIFIED FEMALE: If something is found and we aren't informed about it per se, what then? Are they just allowed to go ahead and --

MS. HANSEN: No. If something is found, then it has to be mitigated for. It's not like it goes into a black hole and nobody discusses it. It's just we don't -- the location of the find isn't disclosed. Okay.

UNIDENTIFIED MALE: I have one more comment.

MS. HANSEN: Sir, yeah, sorry.

UNIDENTIFIED MALE: You say potential impacts to historic resource is Project 4. Which Project is 4?

MS. HANSEN: Project 4 is --

UNIDENTIFIED FEMALE: Antelope Solar Greenworks. (Inaudible.)

UNIDENTIFIED MALE: And so (inaudible) resources (inaudible).

MS. HANSEN: That will be disclosed in the EIR. They're still working on the study.

UNIDENTIFIED MALE: There's aesthetical impacts that also would interrelate to the effects of historical resources; is that correct?

MS. HANSEN: Aesthetic impacts will also be addressed in the EIR.

UNIDENTIFIED MALE: But I mean, if they're kind of interrelated to historical resources as well?

MS. HANSEN: They're not really discussed that way in an EIR, but the importance of the historic resource is discussed, but it's not discussed on an aesthetic point necessarily. But if there's something in particular that you think should be, then please provide a written comment.

Next slide.

Okay. Energy. The Project as we discussed will use drought tolerant landscaping. So they're doing this to comply with the County's drought tolerant landscape ordinance, so obviously this will be discussed in the EIR.

Yes, sir.

UNIDENTIFIED MALE: What does that have to do with energy?

MS. HANSEN: Well, it just falls under that section in the initial study for the County. Energy, reducing energy consumption, reducing impacts to water, it falls under energy. That's why I had to look it up.

UNIDENTIFIED FEMALE: So basically you're saying that that also is the water impact, too?

MS. HANSEN: Water is discussed under --

UNIDENTIFIED FEMALE: Well, you just said it, so that's (inaudible). You did say water.

MS. HANSEN: My point is is under energy in the initial study, part of the County's (inaudible) building standards to reduce energy consumption and water consumption. But water is discussed in a separate section of the EIR. It will be

discussed.

UNIDENTIFIED MALE: What section is that?

MS. HANSEN: It will be discussed in utilities. Water supply, we'll get to that one. Water will also be discussed under hydrology; we'll get to that one, too.

MR. SZALAY: Deanna, let me just add a comment as far as understanding. One of the biggest users of electricity in the State of California is the movement of water, you know, of whatever use, and that's (inaudible).

MS. HANSEN: Geology and soil. So the EIR will also discuss the potential impacts on facilities from seismic events. Slope stability and landslides, there's the potential for Project 2 to have that impact. And then potential for water and wind erosion impacts on all Projects will be discussed.

Any other comments on geology and soils or any other issues that you think should be addressed in the EIR?

Yes, sir.

UNIDENTIFIED MALE: Are they going to, because this is a flash flood area (inaudible) are they going to be studying that?

MS. HANSEN: They are. That goes under hydrology.

UNIDENTIFIED FEMALE: Could you repeat the question? Couldn't hear.

MS. HANSEN: He asked if floods is going to be discussed,

and that's our next upcoming section.

Yes, sir.

UNIDENTIFIED MALE: Well, we've got the potential for water and wind erosion, and we had already spoken of the air resource, and so it looks like some of that criss-crosses possibly?

MS. HANSEN: There are. Many sections will have sort of similar things and will discuss.

UNIDENTIFIED MALE: So do we need to get on record in this just like we did? In other words, I've already spoken what I wanted to about it, but do I need to ask the same things again for this?

MS. HANSEN: No, you do not, unless you want to.

UNIDENTIFIED MALE: Not necessarily, no.

MS. HANSEN: Yes, sir.

UNIDENTIFIED MALE: Will the upcoming water communication be used in the EIR?

MS. HANSEN: Water -- groundwater will be used for the Projects and that will be discussed in the EIR.

UNIDENTIFIED MALE: But is it going to -- there's a huge adjudication going on, and so when that adjudication happens, 20 percent of the water will go away for most farmers, which means 20 percent of the farmland communication will go away. So something to be considered.

MS. HANSEN: Okay.

UNIDENTIFIED MALE: Are you unaware of the adjudication that's happening?

MS. HANSEN: I am personally unaware of the adjudication that's happening.

MR. SZALAY: But the County is aware of it.

MS. HANSEN: But the County is.

UNIDENTIFIED MALE: (Inaudible.)

MR. SZALAY: That's going to be discussed, and obviously we're limited to what we could discuss because the County is also part of the adjudication, so there's certain things that's only that's legally required for the EIR as far as the Project's impact, whether or not it has impact to groundwater (inaudible).

MS. HANSEN: Any other geology?

Yes, ma'am.

UNIDENTIFIED FEMALE: Could it be possible to have the solar farms used to reclaim the water instead of groundwater?

MS. HANSEN: Okay. We'll discuss the potential. The comment was to use reclaimed water instead of groundwater.

Yes, sir.

UNIDENTIFIED MALE: (Inaudible) are you going to use palliatives to try and keep the dust from blowing?

MS. HANSEN: I don't know that dust control measures have been determined yet, but we'll note that.

UNIDENTIFIED MALE: Okay. So there's been a report came

out from the American Institute of Biological Sciences saying that the use of palliatives affects the soil, affects runoff, and that adversely. So that's something that needs to be also discussed.

MS. HANSEN: Any other comments on geology? Yes.

UNIDENTIFIED FEMALE: Could I just ask him to repeat the source he had (inaudible). You said the American Institute of, what's the rest?

MS. HANSEN: She asked if you could repeat the source of the study.

UNIDENTIFIED MALE: American Institute of Biological Sciences put out by the University of California Press. It's a thing that covers renewable energy and (inaudible).

MS. HANSEN: Any other comments on geology?

Greenhouse gas emissions. Even though this is a solar Project, there will be greenhouse gas emissions associated with the construction equipment and construction onsite. That will be discussed in the EIR.

Any other concerns about greenhouse gas emissions for this Project that you want discussed in the EIR?

Yes, ma'am.

UNIDENTIFIED FEMALE: Kind of from what I've read and what the studies show in Europe that it takes the lifetime of the Project to offset the CO2s created by construction, so they're kind of a wash.

MS. HANSEN: It will be discussed.

Yes, sir.

UNIDENTIFIED MALE: One of the ways this could be mitigated is if they would put up some kind of wind breaks that would help with dust also and with -- they could put in some trees like pine trees. That would help to sequester CO2s.

MS. HANSEN: Okay. Yes, sir.

UNIDENTIFIED MALE: Who is receiving the carbon credits off of your Projects?

UNIDENTIFIED MALE: There you go.

MS. HANSEN: That isn't part of the discussion in the EIR, but it is noted. Any other questions on GHG?

UNIDENTIFIED FEMALE: Seems like we have a right to know if we ask.

MS. HANSEN: Okay.

UNIDENTIFIED FEMALE: (Inaudible.) I guess this would bring up the roads. We have to drive on these roads, and there are some of them, I mean, on Avenue I between 70th and 90th you start running the heavy equipment down that road and it'll be done within a month. That road is in horrible condition.

MS. HANSEN: Okay. Impacts to roads will be discussed in the EIR under traffic, and we'll get to that, but we'll note what you said.

Okay. So hazards will also be discussed in the EIR. When you are constructing Projects you have potential to

release hazards from equipment, from any tools you use onsite. That will be discussed in the EIR. Potential impacts associated with Projects 1, 3 and 4 located to underground storage tanks will be discussed in the EIR. Potential impacts associated with Projects 1, 3 and 4 near private or public airstrips will also be discussed in the EIR. I'm sorry if you can't see the bottom. And the potential to interfere with emergency access. Obviously, we want to keep emergency access open during construction and during Project operation, and will also be discussed in the EIR.

Yes, sir.

UNIDENTIFIED MALE: Is this the section where they would discuss the potential hazard of cadmium release?

MS. HANSEN: Yes. And questions on hazards?

Yes, ma'am.

UNIDENTIFIED FEMALE: Has there been any studies on electromagnetic fields coming from these panels; have any readings been taken off of them?

MS. HANSEN: I don't know if a study has been done particularly for this Project or if that's going to be discussed in hazards, but we'll note that.

UNIDENTIFIED FEMALE: This is going to surround the school and there's talk of dirty energy and straining powers from these electrical Projects. And there's going to be children at risk and teachers also in the school area.

MS. HANSEN: Okay.

UNIDENTIFIED FEMALE: And the impacts of the rest of us that have to live next these farms. I mean, I think that really, really needs to be looked at. And to be quite honest with you, these Projects are destroying people's rural way of life, and I think they should have to buy people out at above market value.

MS. HANSEN: I appreciate your comment. Let's try to stick with comments on what we need on the EIR.

Yes, ma'am.

UNIDENTIFIED FEMALE: Hazards. Let's see, Avenue D and 35th Street West, Project 6, and also specifically Avenue I and 120th Street West, which is 5, both of those. Well, let's take them on Avenue D.

When something happens on Interstate 5, when there's major closure, Avenue D Highway 138 is a major truck route. Major. I used to live on the north side and there were times when it was closed off. I had to wait and wait for just bumper to bumper of truck traffic before I could get across, because when 5 is closed, it is rerouted. It's major. So if there's construction going on, it's going to be a major hazard.

MS. HANSEN: Okay.

UNIDENTIFIED FEMALE: And then also on Avenue I and 120th Street West going out to the poppy reserve. In good flower years, even along Avenue D, there's people that will just pull

off the side of the roads and cross them, especially Highway 138. They don't think this is a highway. And they're walking across taking pictures on both sides. Then we've got this construction going on and we've got all the just normal traffic of people coming out to see the wild flowers.

MS. HANSEN: Okay. So those are traffic impacts, and they'll be discussed in the --

UNIDENTIFIED FEMALE: And they will fit under emergency access, because if something happens, it's going to be major out there.

MS. HANSEN: Okay. Hazards.

UNIDENTIFIED FEMALE: Well, again, with the roads and I would think it would be hazardous even to close down 110th Street West when people that live in Lake Elizabeth and Lake Hughes, this is their only route into town. And sometimes, you know, emergency vehicles, trying to get them back over the hill or, you know what I mean, I don't think like 110th Street West, some of these roads just can't ever be closed down for construction like they've done with 170th.

MS. HANSEN: Okay. Comments noted.

Yes, sir.

UNIDENTIFIED MALE: Question on hazards. Northrop was out here and tried to -- they used to have a site out here. They've moved off it now. And they claimed that they couldn't do their work because the solar fields are going in out here

right now. So my question is: As these things go in is this going to cause a problem with the air traffic around here? We get so much of this in, with radar, I guess, is the question.

MS. HANSEN: I've seen that issue come up before with Northrop on some projects in Kern County, and it has been discussed in EIRs.

UNIDENTIFIED MALE: Okay. So it will be in there at some point?

MS. HANSEN: It will.

MR. SZALAY: If I could make an additional comment on that in that Northrop has moved their facility and will no longer be there.

UNIDENTIFIED MALE: Yeah, I'm not concerned about that. I'm concerned about the air traffic in the area.

MR. SZALAY: In general. Okay.

UNIDENTIFIED FEMALE: So we lost a big job producer for a minor job producer.

UNIDENTIFIED MALE: They might have moved it elsewhere.

UNIDENTIFIED FEMALE: Yeah. Well, our area. What about are you consulting with China Lake and Edwards Air Force Base and flight plans and stuff like that? Because to be quite honest with you, Edwards Air Force Base is a big employer to the Antelope Valley and for them not to be able to do their jobs out here because of these solar farms is, you know, you've really got to stop and think and consult with these people as

to where is the actual appropriate place so it doesn't interfere with their radar and their test flights.

MS. HANSEN: As mentioned, Projects 1, 3 and 4 near an airport or private air strips and that will be discussed.

Any other questions on hazards?

UNIDENTIFIED FEMALE: Near or within their flight zones?

MS. HANSEN: I don't know exactly where, but it will be discussed at in EIR.

UNIDENTIFIED FEMALE: Because their flight zones need to be considered because they're probably taking them (inaudible).

MR. SZALAY: Well, let me touch on that. With a lot of these Projects, not just solar Projects, I mean, as far as like building small, wireless telecommunications facility, the County does consult with Caltrans, which has jurisdiction on basically the state agency for air traffic, and then the federal agency and also in this case, the Department of Defense who has bases in this area, so that will be included in the EIR and those agencies will be consulted.

MS. HANSEN: Anything else on hazards?

Next slide. Hydrology and water quality. This section of the EIR will talk about potential impacts from all Projects to water quality standards. Groundwater extraction will occur on Projects 1, 3 and 4, and that groundwater will supply the water needed for all the Projects.

Potential to alter existing drainage patterns. The

potential to impede or redirect flood flows, I think, was a comment that was brought up earlier, and the potential that structures or the panels may be located in an area subject to mud floods will also be discussed.

Anything else with regard to hydrology and water quality?

Yes, sir.

UNIDENTIFIED MALE: Just curious how the groundwater extraction -- you said Projects 1, 3 and 4 will provide water to all Projects?

MS. HANSEN: Correct.

UNIDENTIFIED MALE: How do they get that water to be in the Projects?

MS. HANSEN: It will be discussed in the EIR.

Yes, sir.

UNIDENTIFIED MALE: So basically they're going to drill a well on 1, 3 and 4 to provide water for the other Projects; is that what I'm understanding?

MS. HANSEN: Yes.

UNIDENTIFIED FEMALE: So that --

MS. HANSEN: No, that's okay. Go ahead.

UNIDENTIFIED FEMALE: So basically you're taking the little amount of water that we do have right now and putting it towards this. That's going to affect the residents that are there, it's going to drop their -- they're eventually going to

have to go deeper in order to tap into their own groundwater.

MS. HANSEN: The water supply through this groundwater extraction will be discussed in the EIR. I don't have --

UNIDENTIFIED FEMALE: So that's all private. I mean, they all have their own well so, I mean, it's definitely going to impact them.

MS. HANSEN: So you want to make sure that the EIR discusses the potential impact of the groundwater withdrawal on the surrounding residents. Okay?

UNIDENTIFIED FEMALE: And the financial costs it's going to be for them to get the water.

UNIDENTIFIED FEMALE: Well, not only that but I also have deep concerns about the contamination of the groundwater.

UNIDENTIFIED FEMALE: Yes.

UNIDENTIFIED FEMALE: Because we already know how much the solar area, how much water it takes just to control the dust. I mean, it's a huge amount of water for even just a small area. And then the runoff from that going down into our water table, I think you have potential for serious contamination of the water.

MS. HANSEN: And that will be discussed.

UNIDENTIFIED MALE: You know, the overall development description that's on the County website, see, there's no mention of groundwater. And so when it talks about the height of the Project in descriptions like that --

MS. HANSEN: Right, a full Project description will have a lot more detail and will be included in the EIR.

UNIDENTIFIED MALE: Oh, so this is just the overall --

UNIDENTIFIED FEMALE: Scope meeting.

MS. HANSEN: Correct.

MR. SZALAY: Yeah. What you're going to see in the EIR hydro description is very lengthy. I mean, it's not --

UNIDENTIFIED MALE: Yeah, but when you talk 87 or, what is it, 87 inches tall is the highest structure on some of these, and yet there's no mention of a well.

UNIDENTIFIED FEMALE: Yes.

UNIDENTIFIED MALE: So you're sinking a tank --

MS. HANSEN: Well, there is a discussion in the initial study of where they're going to extract the groundwater. But this is just the preliminary stage of preparing the document. The document hasn't been finalized, hasn't been prepared. That will go out for public review and you'll get a chance to look at it and comment on that.

Yes, ma'am.

UNIDENTIFIED FEMALE: Where does reclaimed water come in? Is this a good place for it or is it a bit later on?

MS. HANSEN: We'll note your comment. You would like them to discuss the use of reclaimed water?

UNIDENTIFIED FEMALE: I worked at a place that converted over to reclaimed water. It stunk of chemicals, there was just

trash that came through, and many days it just smelled of chemicals. People are trying to go to reclaimed water. I think it's a good idea, but the chemical smell was terrible. And went and visited the water place down, I think in the Sepulveda area where they have the Japanese gardens, because they did use reclaimed water for that, and it just had the chemical smell everywhere I walked from the water. It stinks. So for the residents who live anywhere downwind it's going to stink.

MS. HANSEN: Okay.

Yes, sir.

UNIDENTIFIED MALE: Will the EIR identify how many acre feet of water will be allowed to be used by the Projects and if that amount will be used during a calendar year, or from the start of construction to the end of the year, whether that's a month or two months?

MS. HANSEN: Yeah, we'll talk about the amount of water usage for construction and the amount of water usage that will be required for operation.

UNIDENTIFIED FEMALE: Do you know what those numbers are?

UNIDENTIFIED FEMALE: And who's going to monitor it?

MS. HANSEN: I do not know what those numbers are, no. It will be in the EIR.

Yes, ma'am.

UNIDENTIFIED FEMALE: Who's going to monitor the usage?

MS. HANSEN: Of the water?

UNIDENTIFIED FEMALE: Yes.

MR. SZALAY: The County mitigation monitor it.

UNIDENTIFIED FEMALE: They didn't last time for First Solar. We had to get up at the County to get them to monitor it.

MS. HANSEN: Okay.

Yes, sir.

UNIDENTIFIED MALE: I think I can sum this up in a few words. What took place at AVSR-1 was they got their allotment for the year. They sucked it out of the ground within three months. They took the water table and devastated it. People were sucking sand and flushing it down their toilets. This is what they're afraid of might happen here. And correct me if I'm wrong, but I think this is identifying a problem that could take place if it's not dealt with properly.

MS. HANSEN: So the concern is that we discuss that the potential for usage of groundwater impact the other users in the area?

UNIDENTIFIED MALE: Correct. Absolutely.

MS. HANSEN: That will be discussed at the EIR.

UNIDENTIFIED MALE: But if sucked out of the ground at one time, if it's used over the duration of the allotment time the impact is minimal. But if it's sucked out within three months, it's going to have devastating effects just like it did out

there. And then the County is going to be called in, they're going to want it monitored and they took -- and I saw them put the gauges on there and monitor how many gallons they pumped out after that to make sure they were abiding by what the County's rules were laid down.

MS. HANSEN: Okay.

Yes, ma'am.

UNIDENTIFIED FEMALE: Yes, I'd like to just make sure that since, especially 3 and 4 sites for the groundwater extraction, it directly comes out of that Project's need for water and spend it on mutual water ground table area where it serves all the people that aren't on wells and on the west side, and that that is specifically looked at, not only just the impact on the ground wells individually.

MS. HANSEN: Okay.

UNIDENTIFIED FEMALE: Because they have their own wells and, you know, use a lot of water and I'm concerned about contamination as well as the impact in this economy (inaudible) potential (inaudible) looked at.

MS. HANSEN: Okay.

Yes, ma'am.

UNIDENTIFIED FEMALE: Both Palmdale and Lancaster are part of the integrated water management that's going on right now in the Antelope Valley. Perhaps you should check with the County as to the recyclable waters. They're already using them in

their parks, both in Lancaster and in Palmdale. I don't see a reason why you folks can't be involved (inaudible).

MS. HANSEN: Okay. So another comment on the use of recycled water?

UNIDENTIFIED FEMALE: Yes, please.

MS. HANSEN: Okay. Anything else on hydrology and water quality?

Next slide. Land use. Okay.

UNIDENTIFIED FEMALE: One more on the water. What about of any potential chemicals they might use that would bleach into our groundwater? Or say, you know, not a lot is known about this cadmium telluride stuff. It starts leaking, what is that going to do to our water supply?

MS. HANSEN: That's going to be discussed in hazards.

Yes, ma'am.

UNIDENTIFIED FEMALE: I just want a clarification about your new slide. It said Altering the Existing Drainage Patterns.

MS. HANSEN: Uh-huh.

UNIDENTIFIED FEMALE: Does that refer to the natural arroyos that come off the hillsides that wind through the west Valley that take that water and channelize it so it doesn't -- so we know where the waters goes? That's 36 foot deep channels, et cetera. Are they going to identify all those and determine which ones are going to be covered or redirected?

Will we know where this water will end up if it's redirected; will all that addressed in there?

MS. HANSEN: Yes, that will be addressed in hydrology. Any other on hydrology or are we on land use?

UNIDENTIFIED FEMALE: Water issue.

MS. HANSEN: Yes, ma'am.

UNIDENTIFIED FEMALE: You said they're going to check the quality of water. How far are they going to check that water quality area around? Like they're putting it in over here, but I live five miles away. Are they going to check my water to see if it seeped into my water supply also? Because they're all the same water table under there.

MS. HANSEN: The idea would be to mitigate the impact so that there would be no impact from runoff on the site to water quality, so that's what will be addressed. So what you're saying is you want addressed the potential impacts to other off site areas, water quality to other off site areas around the Project sites?

UNIDENTIFIED FEMALE: Yes, because the water seeps into the ground --

MR. SZALAY: Their operation is given surveys. If they're operating -- whether or not the operation of these sites will have impact on your water quality. I believe that's your question.

UNIDENTIFIED FEMALE: Yeah, because if they're putting

something in the water that's going in the ground over there, it's definitely going to come into my water over here, because it's all the same water table mostly under Antelope Valley. It's one water table as far as I understand.

MR. SZALAY: That's a very good question and that's an issue the EIR will typically look at, the impact of the Project during construction, the impact of the Project during operation.

MS. HANSEN: Land use?

UNIDENTIFIED MALE: Land use.

MS. HANSEN: Go ahead. Yes, sir.

UNIDENTIFIED MALE: Land use?

MS. HANSEN: Yes, sir.

UNIDENTIFIED MALE: I'm just wanting to see how these various Projects conflict with the draft of (inaudible) report which will possibly be in effect by the time these Projects are in construction. Especially how it negatively impacts our open spaces.

MR. SZALAY: Excellent comment.

MS. HANSEN: So the potential for the Projects to conflict with surrounding land uses?

UNIDENTIFIED MALE: No.

MR. SZALAY: Surrounding all (inaudible) use.

UNIDENTIFIED MALE: No. There's a Town and Country draft plan out, and I'd like to know how it stays within the

constraints of that plan. Because even though it's a draft, it may be actually enforced by the time these Projects are in construction. I just don't want to see it being blown off because it's not in effect right now but it will be possibly in effect when they're under construction, and especially how these Projects are going to negatively impact our open spaces, our preservation of open spaces.

MS. HANSEN: Okay.

MR. SZALAY: Just to let you know, I mean, we could take a look at those, but what we could use is what's in effect now in terms of analyzing the land use.

UNIDENTIFIED MALE: We hear that over and over, and --

MR. SZALAY: We certainly could look at it, and just to let you know, none of these sites are in the proposed SEA expansion. So if the concern is don't lose space, that was one of the --

UNIDENTIFIED MALE: Not just the SEA. Open spaces are not just SEA, and we hear over and over from the County they can only address issues that are actually covered by ordinances that are in effect now.

MR. SZALAY: Existing plans and ordinance, that's correct.

UNIDENTIFIED MALE: And so how frustrating is it for us to find out that, you know, if these Projects happen six months later, a year later, that they would be under a different set of constraints. Just a comment, thank you.

MR. SZALAY: That's an area we'll discuss.

MS. HANSEN: Okay. Yes, sir.

UNIDENTIFIED MALE: Mine's on the people that are living there right now. They bought their places to have little two and a half acre ranchos, kind of be out for life different than being in the city. And they have every right to feel like when they bought their place that this is what if they were going to have any growth, there's going to be similar growth, the same type of thing they're going to have around them instead of an industrial project.

I just wanted to get it on the record that I think somehow these things are going to be put right on top of them. Something has to be done to help mitigate them. I'm not talking about just birdies and rabbits and stuff, I'm talking about what's going to happen to these people. And I think that happens under this land use thing.

MS. HANSEN: Under land use, also maybe under aesthetics.

Yes, ma'am.

UNIDENTIFIED FEMALE: Just a thought, maybe it's potential mitigation. I know that when Disneyland was being built they had built a big power plant for that. The people still to this day, you know, 55, I guess, early 50s, those people in the immediate area did not have to pay for utilities all those years, free electricity.

So I know it's not something that you can flat out

ask for them to supply everyone, but people that are so approximate to it that they have a significant impact to their quality of life or the value of their property, perhaps something as simple as that would be an olive branch or helpful assist.

MS. HANSEN: That's not an environmental issue, but obviously representatives from the applicant are here.

UNIDENTIFIED FEMALE: Just a thought as we talked about, make their life miserable for them, maybe a way to make it nicer.

MS. HANSEN: Okay.

Yes, sir.

UNIDENTIFIED MALE: Yes, ma'am. I came from San Diego. I'm one of the owners that's going to be affected by Project No. 4. We learned last month that such a Project has been going on. We never heard anything about why Silverado Power were able to get the rights to use all that land without us being notified. Would that be addressed in another meeting, or --

MS. HANSEN: Well, you were notified of this meeting?

UNIDENTIFIED MALE: Well, we got the meeting, yeah.

MS. HANSEN: Okay. And if you signed in we'll make sure that you're notified of future meetings about this Project for the environmental process. That's the best way to get notified of what's going on with this Project. If you make sure you

sign in and we have your information, you'll get future notification of meetings and opportunities to comment.

UNIDENTIFIED MALE: While I'm (inaudible) will the issue of the lot owners there, will that be -- we're really behind the (inaudible) of this thing. We were just known about the Project last month. And we haven't had anything from the City of Los Angeles or the City of Lancaster to make us aware of this plan or these Projects.

MS. HANSEN: This is County of Los Angeles land and, like I said, notification of this Project, the best way to be notified is to sign in and then you'll be notified of future concerns, or future --

UNIDENTIFIED FEMALE: Everybody got it at the same time. We all found out at the same time you did.

UNIDENTIFIED MALE: When did this Project actually start?

MR. SZALAY: No.

MS. HANSEN: No, this is the beginning of the process. This is the beginning of the process.

UNIDENTIFIED MALE: Oh, okay.

MS. HANSEN: Yes, sir.

UNIDENTIFIED MALE: Does the applicant have the (inaudible) rights to the properties?

MS. HANSEN: (Inaudible) stuff in the EIR, and I don't know.

Yes, ma'am.

UNIDENTIFIED FEMALE: This goes to the notification of people that own property in the area and live out of the area. And this is something that we've been trying to get the County to do something about is notifying owners wherever they're changing their zoning, wherever they're changing anything, wherever these Projects are going to be. They have some sort of a very short limit of space, and it affects way more people than what are being notified.

And I really think that what they ought to change to, if nothing else, is to go out from the Project until they get at least one house where somebody lives. And if it's not within two miles then go out to three miles, whatever it takes to notify these people. Of course, these people living in a totally different County have absolutely no way of finding this out unless the County notifies them.

MS. HANSEN: What's the County standard for (inaudible)?

MR. SZALAY: Yeah. We have a process with our GIS (phonetic) information system division of our agency where the latest information on ownership, mailing is done to the owners including absentee owners. And so it's based on the latest available assessor information and so those are where the notices go.

UNIDENTIFIED FEMALE: And how far from the Project do you go?

MR. SZALAY: Well, it depends on the location. In the

case of the valley, there's a thousand foot radius.

UNIDENTIFIED FEMALE: That's not far enough.

MR. SZALAY: That's the standard that it's legally established.

UNIDENTIFIED FEMALE: They need to change the standard. I don't have any neighbors for two miles.

MR. SZALAY: Yeah, that's a comment we'll consider, but keep in mind what we are required to do by law. By state law it's 300 feet, and the County had always, particularly in Antelope Valley, acknowledging the distance and the size of the property. And, you know, Silverado and Tetra Tech requested us to use the (inaudible) that they list. And that's what we used that for, I think, to buy some time. And I think it's evident based on all you folks that got those.

UNIDENTIFIED MALE: I found out from a neighbor.

UNIDENTIFIED FEMALE: Yeah.

UNIDENTIFIED MALE: I'm a quarter a mile away from 3 and I didn't get a notice.

UNIDENTIFIED FEMALE: Yeah, the Antelope Valley is not downtown closely inhabited Los Angeles where 300 feet, 500 feet is going to make a difference out here. It is like two miles, three miles, half a mile. It's much greater out here.

MR. SZALAY: And if you folks wanted to be notified of any future hearings on the Antelope Valley area and what the County has, this is a side issue, but I want you to know that if you

want to be notified of any of the hearings, not just scope meetings but other hearings, now all you have to do is send us a letter saying that you want to be notified of all future hearings in a particular area. We'll add you to the courtesy notification list and you'll get the hearing date the County sets up.

So it's not impossible to be notified, but obviously, you know, we do what we can based on the constraints we have. But if any of you folks want to be notified and somehow we miss you on this particular process, let us know, we'll add you to future notifications.

MS. HANSEN: You could even include that in your comment card. You have a written comment card. Say, please also add me to the list for any Projects that occur in the Antelope Valley.

UNIDENTIFIED MALE: Which helps us, but it doesn't help people in San Diego.

MR. SZALAY: Also, San Diego, if you live out of the county, send us a letter, tell us where to send those notices.

MS. HANSEN: Yes, ma'am.

UNIDENTIFIED FEMALE: Thank you. I've been waiting forever. This is the problem. There's so many wide open spaces around here. To build on top of houses is beyond ridiculous, the impact, the water, everything else. But the biggest thing is, is that everybody can love the fact that

we're going green and that this valley has become the green capital of all the states. The fact is, we get no energy from it. You guys keep building this, putting out people, putting out, you know, the environment changes how we live, and ruining people.

Like they just bought their house a year ago, and if this goes in their backyard their resale is zero. No one is going to live there. The impact is huge on our part, animals, our farm life, our agricultural, everything. For what? We get no benefits. We get zero benefits.

UNIDENTIFIED MALE: Where does this electricity go?

UNIDENTIFIED FEMALE: It goes everywhere but to us.

MS. HANSEN: The electricity gets --

UNIDENTIFIED FEMALE: I believe it's pledged to the --

MS. HANSEN: The grid.

UNIDENTIFIED MALE: Shot down to L.A.?

MS. HANSEN: It goes to the state. It goes to the grid and then gets distributed from there.

UNIDENTIFIED MALE: How long has this Project been in the works?

MS. HANSEN: I don't know. I'm sorry.

UNIDENTIFIED MALE: Like years ago did they start thinking about it and buying land and all this? Or was it just --

MS. HANSEN: I don't know that information, but after the meeting you're welcome to talk to the applicant's

representatives with those questions.

UNIDENTIFIED FEMALE: Is this the final stage --

MS. HANSEN: Yes.

UNIDENTIFIED FEMALE: It's just (inaudible) this land use. According to the land use, our land use, the people that are living there currently are going to be affected by this. And there's nothing in the provisions at all that's going to take care of them. Why can't they go into areas that are not -- we live there. There's nothing. This whole valley is full of empty land and they're going to put it right on top of people's property. I would really like somebody to explain that to me.

UNIDENTIFIED FEMALE: (Inaudible) its transmission.

MS. HANSEN: Okay. And it's not an issue in the EIR. An alternative that may be discussed is alternative sites for some of these Projects as alternative --

UNIDENTIFIED FEMALE: How do we get our Planning Commission to listen to the fact that we don't want this on top of our schools?

MR. SZALAY: Folks.

UNIDENTIFIED FEMALE: We don't want it on top of our properties.

MR. SZALAY: I'll answer that question. As you know, the County is in the process of doing the General Plan update that includes the Antelope Valley and the rest of the County. So I think -- and there's some of my colleagues that have been going

out for community meetings, and I think these are the concerns that you have and I think it's a valid concern whether or not Antelope Valley is the appropriate sites for renewable energy, for any type of renewable energies. That could be addressed as part of the General Plan. This a regional or sub regional issue, so it's not where one Project applicant or one particular Project could be dealt with.

UNIDENTIFIED FEMALE: So how do we stop it?

UNIDENTIFIED MALE: We're talking about one.

UNIDENTIFIED FEMALE: Yeah. I mean, we're talking about what surrounds it. Where we live, it's surrounding us. You guys invade our area, our valley, Antelope, (inaudible), Lancaster. That's fine.

MR. SZALAY: There are community interests. You have people in communities that have a lot of different type of land use. As far as the -- please participate. If you need contact information, I'll be glad to point you out --

UNIDENTIFIED MALE: Please, we have to participate in Antelope Valley town council all the time. I've been on the Antelope (inaudible) town council for years. I have participated in conversations about this.

UNIDENTIFIED FEMALE: You all know how we feel about this.

UNIDENTIFIED MALE: We're getting rolled over.

UNIDENTIFIED FEMALE: Yeah.

UNIDENTIFIED MALE: We don't have the money to fight it.

MS. HANSEN: Land use?

UNIDENTIFIED FEMALE: I think it's all land use.

UNIDENTIFIED MALE: Under land use, would the EIR please address whether this Project will be held to the standards that will be in the Los Angeles County Renewable Energy Policy, also known as the Renewable Energy Ordinance that is being developed now and may be in effect while this is in construction? It is not in effect now, but it may be in effect when it is under construction.

MR. SZALAY: You know, I could address that. You know, again, legally we are obligated to what's adopted and currently in process, but that doesn't mean we won't look at the current proposal. Proposals change because they're not adopted, and we can't rely on trying to comply with something that may change and not be the actual ordinance. We are obligated to the existing ordinances we have and then to do the best we can to accommodate the discussion of what's proposed, but the ruling authority will be whatever the current adopted ordinances are.

UNIDENTIFIED MALE: And by current adopted ordinance, do you mean whatever is --

MR. SZALAY: Whatever is in our code, throughout the entire code.

UNIDENTIFIED MALE: At the time they submit an application for a CUP?

MR. SZALAY: At the time the notice of preparation that's

issued, which is when in the notice of (inaudible) for this process. This particular portion of the process which is the, yeah, the legal reference point is that notice of participation that you all got.

MS. HANSEN: Land use?

UNIDENTIFIED FEMALE: I've got a question I wanted to address. All solar fields are going into what is called previously used agriculture land. Okay. So say the farmers want to come back and start to grow corps again. Where are they going to go? It's all going to be under solar fields.

MS. HANSEN: The impact to agricultural lands will be discussed in the EIR.

Yes, sir.

UNIDENTIFIED MALE: We at Antelope Acres, we're being unfairly targeted. We have such a concentration (inaudible) projects all around us and it's affecting us. And I see never anything mentioned about the tower lines.

And I've taken some photographs all around the tower lines. That whole area where the tower lines go for the most part (inaudible) bear. It's Deadville. There's hardly anything living there. They use sheep to graze the European grasses that grow there. There's hardly anything else up there. It's never discussed. It's not brought in as being the part of the problem that we face in the Antelope Acres.

And the reason why we're having so many (inaudible),

we've got those power lines going through our area. So everybody wants to hook up to the power lines in our area. So we're being inundated with these things.

MS. HANSEN: Okay.

Yes, sir.

UNIDENTIFIED MALE: Will Projects 1 through 6 be completed regardless of what is mentioned in the EIR?

MS. HANSEN: I'm sorry, could you say that one more time?

UNIDENTIFIED MALE: Will the Projects 1 through 6 be constructed regardless of what being mentioned in that EIR report?

MS. HANSEN: The Projects will have to be approved by the Planning Commission and/or the Board of Supervisors. This isn't --

UNIDENTIFIED FEMALE: So they have not been approved?

MS. HANSEN: They have not been approved.

UNIDENTIFIED MALE: So it's the L.A. Board's decision?

MR. SZALAY: We are not the decision makers here.

MS. HANSEN: The L.A. Board of Supervisors. So this whole process -- what this whole process does is to give the decision makers, the Planning Commissioner and the Board, all this information. These are the environmental impacts. These are the concerns of the residents. And then it's up to them to decide whether or not to approve the Project.

UNIDENTIFIED FEMALE: How long does it usually take to get

these reports done? I mean, it sounds to me like you've already gotten a lot of it done.

MS. HANSEN: It can take anywhere from -- I've seen EIRs processed in eight months, and I've seen EIRs processed in five years.

UNIDENTIFIED FEMALE: And then do they review it afterwards?

MS. HANSEN: I don't know what the schedule is on this.

UNIDENTIFIED FEMALE: No, but I mean once the report is out, let's say it's eight months from now. Then how long does the Project have to do these reports and then have meetings in regards to what the reports have published?

MS. HANSEN: Okay. That's a good question.

UNIDENTIFIED FEMALE: I'm sure it's later on.

MS. HANSEN: It is, but that's okay.

UNIDENTIFIED FEMALE: We're talking about, I just --

MS. HANSEN: So once the EIR goes out, the draft EIR goes out, there's 45 days for public comments. So you have 45 days to review the --

UNIDENTIFIED FEMALE: But will we be notified (inaudible)?

MS. HANSEN: Yes. Anybody who signs up, who hasn't already got notified, will get notified of the availability. The EIR will be available on the County's website. You'll have 45 days to comment. In that 45 day review period, I believe there's a hearing officer.

MR. SZALAY: Hearing examiner.

MS. HANSEN: Hearing examiner.

MR. SZALAY: Once (inaudible) the hearing of when the draft EIR is ready to go out. Once it goes out they'll do another hearing, maybe we'll do it here, then we'll take your comments on the draft EIR. And then we'll respond to those comments, either verbal comments or written comments. Then they'll be (inaudible) responds to comments in the EIR before it gets released or being provided to you in the decision making, whether or not based on these comments, based on the response, and based on the disclosure of the impact, whether or not they want to approve these Projects.

MS. HANSEN: Right. So if you comment on the draft EIR, that comment will be responded to. Every comment will be responded to. Then all that information is gathered and given to the Planning Commissioner and/or the Board of Supervisors to help them make their decision.

Yes, ma'am.

UNIDENTIFIED FEMALE: I'd like to just to make a comment about the EIR, but just to this -- or the notification when the draft EIR comes out for comment, that perhaps there's some way the County can change the notification because there will be people who will be buying property, moving in, who won't know anything about this.

There are people who, again, change it to say

something that if you just take the west Antelope Valley and just send it to each and every property. Just get ahold of the property, give a little tap with a postcard, say the date, the time and what it will be about and just notify everybody on that regardless of what the date is in order so that you don't have people coming in saying I didn't know about it. I wouldn't have bought this property if I had known, all of this, just to really be fair to let everybody know. Just to the resident community.

MR. SZALAY: Your comment is noted.

MS. HANSEN: Thank you.

Yes, ma'am.

UNIDENTIFIED FEMALE: Thank you.

UNIDENTIFIED FEMALE: Why aren't these being more developed on like large buildings? We have like the Antelope Valley Mall that has a parking lot that's big. Why aren't they using those kinds of areas? Then we won't have this negative impact on the rural areas. We won't have to worry about the dust and all that. Put them in places that are already established. Downtown L.A. has plenty of rooftops that can be used. There are rooftops here that can be used.

MS. HANSEN: Okay. The comment is noted and that may be an alternative that's discussed in the EIR.

UNIDENTIFIED FEMALE: And someone in another meeting suggested put them out by the dump out here rather than around

people's homes, you know.

MS. HANSEN: Land use?

UNIDENTIFIED MALE: Yes. Will these Projects, the six, be going through a review by C Tech?

MS. HANSEN: I don't believe so.

MR. SZALAY: I can tell you (inaudible) a question, not an answer. The answer is no, because they're not in (inaudible) to be able to consider and view (inaudible) by C Tech. It has to be in the (inaudible).

UNIDENTIFIED MALE: Okay. Thank you.

UNIDENTIFIED FEMALE: But at a (inaudible)?

MS. HANSEN: Yes, sir.

MR. CRAIG: I want to add something to this gentleman's comment back here and speaking for on behalf of Silverado. Unlike First Solar Company that came into the valley that are running the trunk lines miles to hook up to the grid, Silverado is trying not to disturb as much ground and air as possible. And most of their -- I'd say all their sites that I know of, that I'm aware of, are being built so the trunk lines going to the grid is very minimal per disruption to air and ground and environmental. Am I correct?

UNIDENTIFIED FEMALE: Yes, sir.

MS. HANSEN: Land use? Okay.

UNIDENTIFIED FEMALE: With regard to the transmission lines, is it a given that they're going to be above ground or

is it possible that they will be on the ground?

MS. HANSEN: The transmission lines I believe are going to be above ground.

MR. SZALAY: No.

MS. HANSEN: No?

MR. SZALAY: L.A. County land will be underground.

UNIDENTIFIED FEMALE: Great.

UNIDENTIFIED MALE: Well, okay, so the overall description for Project 3 says will use existing above ground transmission lines.

MR. SZALAY: From the County's perspective, we are requiring undergrounding. The Project, electrical, but the hook up, if there's an existing above, you know, major transmission line, it will run there underground and then hook up to the above ground.

UNIDENTIFIED MALE: Okay, good.

UNIDENTIFIED FEMALE: Good.

MS. HANSEN: Land use.

UNIDENTIFIED MALE: You hear her; she's had her hand up before me.

MS. HANSEN: Okay.

UNIDENTIFIED FEMALE: I would like to see if it would be possible for areas within the Projects that for whatever reason cannot be used such as is it the (inaudible) area or whatever, to be left undisturbed.

MS. HANSEN: Okay. Land use.

Yes, sir.

UNIDENTIFIED MALE: My question is, where did all these properties come from? Why do we have six Projects instead of one combined? And where did the property come from? Is it County property?

MR. SZALAY: No.

MS. HANSEN: No.

UNIDENTIFIED MALE: Is that where it came from?

MS. HANSEN: No.

MR. SZALAY: It's private land, sir.

UNIDENTIFIED MALE: And did you all buy the land?

MS. HANSEN: Yes.

MR. SZALAY: Just to distinguish the term, that unincorporated area would be County jurisdiction from a governmental standpoint. The lands are private.

UNIDENTIFIED MALE: Okay. So one last question to Silverado. Why six Projects centered out rather than one big one in an area --

UNIDENTIFIED FEMALE: Unincorporated (inaudible).

MR. SZALAY: The reason for six Projects instead of just one will be addressed in the EIR.

UNIDENTIFIED FEMALE: Well, if you know can't you just answer?

MS. HANSEN: Can we keep focusing on the scoping and

(inaudible).

MR. SZALAY: (Inaudible.) There's not a whole lot of big pieces of land for sale. If it's for sale, you know, obviously if it meets their price they'll buy it. So it's not like, you know, ownership of land in Antelope Valley (inaudible) not all of them are owned by the same people (inaudible) willing to sell it at the same time when it's available. So I think that's -- hopefully that answers your question.

MS. HANSEN: Land use?

UNIDENTIFIED FEMALE: Yes. I'm sure it is. (Inaudible) moved out of the area because the solar power -- solar panel place gravely undervalued the property and she could not afford to sell it. The property was gravely undervalued and she said the same thing's happening to her other neighbors, and this is one thing that people do not realize, that yes, you are using private lands, but the owners of it cannot pay -- what they get paid is gravely below standards.

MS. HANSEN: Okay. Any more land use?

Yes, ma'am.

UNIDENTIFIED FEMALE: I'm not sure if this is -- it says hillside management (inaudible) talk about grading for the hillside (inaudible) panels where the dirt will go, cubic footage, where it would be trucked to or be used for, are you going to resolve under hillside management; is that what that means?

MS. HANSEN: As mentioned before, Project No. 2 has some hilly areas and we'll be required to meet the requirements of the ordinance.

UNIDENTIFIED FEMALE: But in the County General Plan as it stands now, not the proposed --

MS. HANSEN: In the County as it stands now, correct.

UNIDENTIFIED FEMALE: Okay. So if it says okay for grading and for flattening, removing --

MS. HANSEN: Correct. Go to the next slide. Next slide.

Noise. The EIR will discuss the potential for noise from construction and operation impacts. Operation to impact adjacent residents, potential exposure of adjacent residents to vibration, and the potential to expose people working on the Projects to noise from local airports or private airstrips.

Is there anything with regard to noise that anybody would like us to address in the EIR that isn't already covered?

Yes, ma'am.

UNIDENTIFIED FEMALE: Adjacent is like right next-door. Some of that, will that affect areas that are not adjacent? Can that be enlarged to encompass maybe like ten miles or 15 miles?

MS. HANSEN: Noise doesn't travel that far.

UNIDENTIFIED MALE: In the Valley, yeah, it does.

UNIDENTIFIED MALE: (Inaudible) if you're downwind.

UNIDENTIFIED FEMALE: If you're downwind it does.

(Multiple speakers speaking simultaneously.)

UNIDENTIFIED FEMALE: (Inaudible) Sierra Highway.

UNIDENTIFIED MALE: Well, the construction equipment traveling to the Projects going through an area to the Projects, that's noise, you know, truck after truck after truck.

MR. SZALAY: And that's analyzed.

MS. HANSEN: That will be analyzed.

Yes. Yes, sir.

UNIDENTIFIED MALE: I don't understand the bottom one, the noise from airports and private airstrips. What do they have to do with this Project?

MS. HANSEN: So people working on the Project, we want to make sure that people working on the Project who are in the vicinity of an airport or a private airstrip aren't impacted by noise of planes flying over the sites.

UNIDENTIFIED FEMALE: Then don't put any there.

MR. SZALAY: Really, actually we're worried about the people that are going to be working on the site.

MS. HANSEN: Correct. Anything else on noise?

Next slide. Fire services. So the EIR will also discuss the potential effects of Projects 1 through 6 on staffing and response times for fire services.

Yes, sir.

UNIDENTIFIED MALE: I would like to know -- I would like

the EIR to address what we have heard is the reluctance of fire fighters to fight fires on solar fields that are the thin film cadmium telluride technology. In other words, they just let it burn.

MS. HANSEN: Okay. Anybody else?

Yes, sir.

UNIDENTIFIED MALE: There's a volunteer fire station; that's it. So maybe we need to address the fact that it is a volunteer fire station near, I think they cover probably three or four of the Projects, and the nearest one from there would be 130, which is ten miles away (inaudible). Or 78 out of Leone Valley (phonetic), yeah.

MS. HANSEN: Okay. Yes, sir.

UNIDENTIFIED MALE: I would like the EIR to analyze Silverado's site specific fire fighting plans.

MS. HANSEN: Okay. Anything else on fire?

Yes, ma'am.

UNIDENTIFIED FEMALE: Would the potential of this large Project or these large Projects going in, we may need to put in more fire departments to cover that. Who's going to pay for that? Do we have to pay for that with our taxes, or do they have to pay for that?

MS. HANSEN: Mitigation for staffing will be discussed in the EIR.

Yes, sir.

UNIDENTIFIED MALE: I'm still confused on what I asked about earlier about the airports. Do we have some private airstrips in the area; is that why that's in there, that we don't --

MS. HANSEN: Yes.

UNIDENTIFIED MALE: Oh, we do.

MS. HANSEN: Yes, yes.

UNIDENTIFIED MALE: I know about Fox Field; I'm talking about private airstrips.

MR. SZALAY: There are some smaller ones that are in there that will be addressed (inaudible). From our records, they're very minimally used. We still want to address it and (inaudible).

UNIDENTIFIED MALE: Is there a possibility that they're going to put those guys out of business because of this? The airstrips, I'm asking. They've been there since like -- I don't know, as far back as -- I've lived here 50 -- I was born here. (Inaudible) as far back as I can remember.

MR. SZALAY: Yeah, that's why we want to analyze it (inaudible).

UNIDENTIFIED MALE: And that's not -- this isn't going to force them out to go away?

MR. SZALAY: To my understanding at this point, no.

MS. HANSEN: Fire. Next slide.

Traffic. We've discussed traffic a little bit, but

is there any other questions or any other concerns for traffic that you want discussed in the EIR?

Yes, sir.

UNIDENTIFIED MALE: I would like the EIR to address our scenic highway portion of the current County plan dating back to 1984, because some of these roadways are or are leading to scenic roadways.

MS. HANSEN: That would be discussed under aesthetics, but thank you.

Anything else on traffic?

Yes, sir.

UNIDENTIFIED MALE: Oh, traffic. Well, it says potential impacts on all roadways. How about the maintenance of roadways? Nobody's discussed the impact of the maintenance, you know, after the trucks beat the hell out of it, is it going to be repaved, redone, or is it going to be pothole patched?

MS. HANSEN: Okay. That will be discussed in the EIR.

Yes, ma'am.

UNIDENTIFIED FEMALE: My concern is the fact that every way in and out (inaudible), the two-lane highway, even 138 is only a two-lane highway, and the impacts on the residents in these areas, again, will be significant because we have, I mean, we have school kids that walk to school, get on and off the bus. Bus stops that we all wait, you know, and stop for.

But in these areas when we constantly have traffic, I

mean, our animals, you know, horseback riding, kids going to school, everything, because it's only a two-lane highway it's all going to be impacted by the construction crews and the maintenance crews and everything else going out there, so you really need to look at -- I don't know if we're going to have to expand it, but we have to have a safe area for our livestock, our wildlife, our horses and our kids in these areas so that they have a place to get off the side of the road.

MS. HANSEN: Okay. Thank you.

Yes, ma'am.

UNIDENTIFIED FEMALE: Are they going to specifically delineate exactly how many batch trucks of concrete and how many semi trucks will be carrying equipment out there to construct all the various things that are needed, besides just the panels?

As well as the trucks, are they going to talk about the roads? Are they going to talk about how many new roads they're going to put in to where they'll be turning off to go to this?

MS. HANSEN: This will talk about access, the number of vehicles and the impacts to local roadways.

UNIDENTIFIED FEMALE: (Inaudible) new roads are going to be created (inaudible) turn-offs?

MS. HANSEN: Yes.

UNIDENTIFIED FEMALE: Okay. Also, I would like to have

them take a look at the County adopted (inaudible) trails that went through the area there and that they not impact any of those, they go around them (inaudible).

MS. HANSEN: Okay. We talked about trails under aesthetics but I think this is a little bit different. It sounds like you don't want any of the Projects to physically impact any of the local trails.

UNIDENTIFIED FEMALE: Not just to physically impact it but to keep people from gaining access to them at least for a long period of time or something like that where people can't get access.

MS. HANSEN: So access. Okay.

Yes, sir.

UNIDENTIFIED MALE: Okay. Realistically, we know that all this construction, and it's already been mentioned, is going to be very hard on the current roads. Who picks up the tab for their repairs? Is it going to be we taxpayers or is Silverado going to do that? Good question.

MS. HANSEN: Good question, and that will be discussed in mitigation for any impacts regarding traffic in the area.

UNIDENTIFIED MALE: At this point you don't know.

MS. HANSEN: I don't know. I do not know.

UNIDENTIFIED MALE: Does anybody know? How about the Silverado people over there, do they know?

MS. HANSEN: But County knows.

MR. SZALAY: I'll answer that question. Typically, damages done by the applicant is required by the applicant to repair.

PROJECT REPRESENTATIVE: If I might add, in some of our other previous projects, Public Works, our County Department of Public Works, they're going to require that that's taken care of.

MS. HANSEN: Traffic? Yes, sir.

UNIDENTIFIED MALE: I would like for the EIR to include on any and all maps that are part of the EIR a clear identification of the public street names or numbers. That's been a huge problem for us because most of the renewable energy developers send out maps that do not show or identify streets so we have great difficulty placing the projects in relation to our areas.

MS. HANSEN: Okay. Yes, ma'am.

UNIDENTIFIED FEMALE: Just a positive comment, perhaps. Maybe an idea on like the Poppy Festival that's been going on out there 16, 17 years now, (inaudible) pretty defined amount of time. Maybe the Project construction might happen outside that small poppy window.

MS. BLENGINI: The Poppy Festival is different than the poppy reserve.

UNIDENTIFIED FEMALE: Understood. I'm talking about the poppy reserve.

MS. BLENGINI: Okay. You said the Poppy Festival, and that's the Lancaster City Park.

UNIDENTIFIED FEMALE: Great. Then I'm sure I misspoke, but (inaudible) when I park along the side of the road I probably wouldn't want a million 18-wheelers going by more than what's usually out there, so it might be possible when they plan the construction, you know, whatever their timing is, that they avoid that peak period for that wonderful resource that we have in the community.

MS. HANSEN: Okay. Yes, sir.

UNIDENTIFIED MALE: In retrospect of her question, a person in charge of logistics, logistics referring to the season of the year, what activities are at peak time, depending on what the roads are with the heavy equipment uses to come in and out of those different sites, would definitely reduce the possibility of, say, someone being hit, because as we've seen in the valley, depending on what the poppy fields look like, it's a complete zoo out there. I don't even go out there because it's crazy.

People stop in the middle of the road, their kids get out, their animals get out, they're all over. No, it would be so much safer for you to consider putting someone in charge of logistics depending on the season of the year to avoid situations like that, because it would limit your liability drastically.

MS. HANSEN: Okay. Yes, ma'am.

UNIDENTIFIED FEMALE: What about turn-off lanes from particularly the major highways? Like First Solar finally put in, after being out there for a year, they finally decided to put those in, at least for the westbound people on Highway 138.

MS. HANSEN: Potential improvements to roadways will be included in the EIR.

Yes, ma'am.

UNIDENTIFIED FEMALE: Yeah, I was going to comment on that, because I am a commercial driver and I have driven out that way plenty in the commercial aspect. I'm a school bus driver and I know what it's like to stop along Avenue D. It's a state highway, 55 miles an hour, and you know people drive a lot faster than that and I've had to turn on my red light, you know, stop when there's a semi coming.

And there's a lot of tragic accidents that people don't hear about because the -- Highway 138 is an east/west road. There's a lot of north/south roads where people will run stop signs. Tragic accidents. Or just turn because they're not looking carefully. They pull out in front of a semi that cannot stop on a dime.

So if you put in -- it's going to have to be more than adequate access lanes. Longer turn lanes, because you're dealing with 55 miles or greater and they need more space to get off to make their turns.

MS. HANSEN: Okay. Yes, ma'am.

UNIDENTIFIED FEMALE: What are you doing about traffic access on all the others? This is going to be one thing when we were talking about the cumulative (inaudible) any one day, for instance, there will be 5,000 trucks and batch trucks on all the sites at any one time. Or maybe three, I mean, whatever number, are you going to in each one, this one will make ten, this one will take -- are you going to look at the whole thing (inaudible).

MS. HANSEN: Yes, cumulative traffic impacts will be discussed, not only for all six of these Projects but for other Projects in the area that may have a potential cumulative traffic impact, so that will be discussed.

Traffic.

UNIDENTIFIED MALE: But it won't be separated like she was asking. Site 1 is going to take ten trucks of concrete and maybe heavy equipment hauls.

MS. HANSEN: That will be part of it, but I mean, that all goes into the analysis.

Any other comments on traffic?

Next Slide. Utilities. So this is where we talk about water supply to ensure that there's enough water to supply the Projects, and then also the potential impacts on the existing storm water facilities.

Any other things under utilities that you guys think

should be addressed in the EIR?

UNIDENTIFIED FEMALE: Do we have any existing storm water facilities? I didn't know we had any.

MS. HANSEN: It will be -- any impacts to existing facilities will be discussed, or any improvements that are needed will be discussed.

UNIDENTIFIED FEMALE: Well, no, what I'm saying is I didn't know we had any. And if we do, where are they and why don't we have more of them?

MS. HANSEN: Okay. Yes, sir.

UNIDENTIFIED MALE: Are we going to notify all the existing mutual water companies and/or water agencies the impact of what you're going to take; are you going to notify those people? I know you're going to put it in your EIR, but are they going to get a copy of the EIR of what your potential impact to their water system is?

MS. HANSEN: State, federal, local agencies all get notified of this potential project.

UNIDENTIFIED FEMALE: These are private.

UNIDENTIFIED MALE: These are private mutual water companies. I happen to be an ex-member of one, and they need to know that you're going to drill a well and tap into their water supply, and/or this gentleman here who has his own private well right there. They all need to be notified.

MS. HANSEN: Okay. So what you're asking is that the

local water agencies be notified of the Project.

UNIDENTIFIED FEMALE: And included in the reports that have to be made by all the state agencies and give it equal weight.

UNIDENTIFIED FEMALE: Yeah, but you also need to notify everybody that -- this isn't city. We don't get our water pumped through and, you know. We have wells out there, and every single use is all well water, whether it's mutual owned by, you know, all of the land owners from one company or it's private wells. Everybody is going to be impacted by what they do because you're surrounding us, so I would like notification to everybody that lives in all the areas that are going to be affected by the withdrawal of the water (inaudible).

UNIDENTIFIED MALE: Yeah, because I mean, you figure if you all tap a well here, you're drawing from a water aquifer that may hit somebody ten miles away, you know.

So, you know, that's part of what this adjudication is about is the cities and the counties are taking so much water, and so us little guys (inaudible) that we're just hanging in there, you know.

Now our water table is dropping tremendously because people are dragging out of it, you know, so it impacts, it truthfully impacts everybody in this valley that uses water. Farmers to whoever. I mean, they all need to be notified what you all are going to do.

UNIDENTIFIED FEMALE: Because it is a huge impact. Huge.

UNIDENTIFIED MALE: That's a huge loss and it's happening and the County knows it.

MS. HANSEN: Okay. Any other comments on utilities?

Yes, sir.

UNIDENTIFIED MALE: Just to add to that, Antelope Acres, our water company has had to dig deeper and deeper to get to water, so that's an ongoing problem, and it's part of the adjudication.

MS. HANSEN: Okay.

UNIDENTIFIED FEMALE: And the fact that we are a desert just explains that we are short on the water just because we're desert, so that, I think, makes it even more extreme to (inaudible).

UNIDENTIFIED FEMALE: Impacts need to really be studied in the water table. I mean, I think this is what worries so many people and residents is the impact on water that we don't have. I mean, this isn't a small -- the solar company is part of it. They're going to draw a huge amount of water that we don't have.

UNIDENTIFIED MALE: (Inaudible.)

UNIDENTIFIED FEMALE: Well, it's not only the desert, but (inaudible).

UNIDENTIFIED MALE: Well, if you'd like to have these facilities for 35 years, when you build it, you use the water

to do construction and grading (inaudible) dust control for those 35 years they're constantly going to be drawing out of the water table.

MS. HANSEN: Okay. Yes, sir.

UNIDENTIFIED MALE: Just a thought. Suggestion, maybe. I don't know whether it's cost effective, but you're a lot closer to the aqueduct than what ABSR-1 was, and with their water problem I suggested you have a straight shot to get the Owens Valley River travels at 70 miles an hour underneath there. There's tons of water to hit there, and you'll avoid all this type of litigation.

They didn't do that, they drilled a well instead. They've run into problems. I know it cost quite a bit of money to drill a commercial well, and you are a lot closer to the aqueduct. Purchase water from them. You would avoid any of these problems and save yourself a lot of grief, if the money would offset itself.

MS. HANSEN: Okay. Yes, sir.

UNIDENTIFIED MALE: I request that the EIR address the options that are available to residents of the western Antelope Valley if the water table indeed should drop so that their wells are no longer effective. For example, will they be required to truck in water to their homes, or is that -- you know, what are the other options? Yeah, who's going to pay for the --

MS. HANSEN: Yes, ma'am.

UNIDENTIFIED FEMALE: (Inaudible) into the aquifer. I know that in some of the other areas that are using a lot of water for the solar projects or other projects (inaudible) made sure you have (inaudible) for the purchase from the aquifer water and then place it so that they can pipe it to a location where (inaudible) make sure it would replenish the water, you know, acre foot by acre foot, to the same aquifer or well resource that they're drawing from.

Therefore, that the impact of the withdrawal for the Project is completely mitigated, but just through another process and that therefore the people would have no negative impact. But it would take land for that, but good land and waters (inaudible).

MS. HANSEN: Okay. Yes, ma'am.

UNIDENTIFIED FEMALE: Will these companies establish storm water facilities so that they can bank the storm waters that we do get and they can use those for their projects, to lessen our impact on their water?

MS. HANSEN: I don't believe that's part of the Project, but the comment's noted.

UNIDENTIFIED FEMALE: I think it would be a good thing for them to consider.

MS. HANSEN: Okay. Yes, sir.

UNIDENTIFIED MALE: One question and it has probably not a

thing to do with the EIR and/or the utilities.

MS. HANSEN: Okay.

UNIDENTIFIED MALE: What is the life expectancy of these solar panels?

MS. HANSEN: Thirty years?

PROJECT REPRESENTATIVE: Thirty, 35 years.

UNIDENTIFIED MALE: What quality are you putting in?

PROJECT REPRESENTATIVE: What quality?

UNIDENTIFIED MALE: Yeah, because there's all kinds of levels there. First Solar said they were doing 30 years and we find out they're not.

PROJECT REPRESENTATIVE: Our (inaudible) is yet to determined. We're (inaudible) technology for a particular site.

MS. HANSEN: Utilities?

UNIDENTIFIED MALE: Thank you.

UNIDENTIFIED FEMALE: I know there are records, but the decommissioning accounts being put into place that when these things are done, worn out, done, and really there's not a whole lot of more use for these kind of farms, will the decommissioning account be put into place so that they can be restored to their natural state, the land?

MS. HANSEN: Decommissioning of these facilities is usually discussed in the EIR.

Yes, ma'am.

MR. SZALAY: It's in the overview, too.

UNIDENTIFIED FEMALE: Yeah. Earlier I mentioned this, but I've heard some of these projects that we already have are not working out the way that people were told that they were supposed to work out. I'd like to find out what is not working the way they were told and what we need to do to remedy it so that it will not be a problem for this, because people have been unhappy and things aren't going the way they were supposed to go, so how can we address those issues of the ones that we already have and make sure that it doesn't happen with these?

MS. HANSEN: That's not necessarily an EIR issue, but I do know that the applicant and the consultant have visited other sites and looked at what's gone right and what's gone wrong.

UNIDENTIFIED FEMALE: Okay. Well, I think it fits under the utilities because it's an impact, it was a negative impact. It wasn't supposed to do what it was supposed to do and it's not living up to what it was designed to do.

MS. HANSEN: Okay. Yes, sir.

UNIDENTIFIED MALE: I request that under the utilities section the EIR include and address lessons learned by the solar projects that are in progress now. And many of those are already public record. It's not a big witch hunt.

MS. HANSEN: Comment's noted. Any other comments on utilities?

Okay. Next slide. We've already talked about some

of this. The EIR will also include alternatives to the proposed Project. The new project alternative is required under CEQA. Other project alternatives have been discussed here, and if you have any other suggestions, please provide some written comments of other alternatives you might like to see.

We discussed cumulative effects of the Projects. That will be discussed for every issue area in the Draft EIR. And then any potential growth inducing impacts of this Project.

Is there anything else -- Yes, sir.

UNIDENTIFIED MALE: I'd like to know how and when the public will learn of the issues that were brought up today to be included in the EIR so that we aren't left wondering for eight months if these issues we brought are going to be in the EIR. I see the gentleman taking notes. I'm guessing we could get an e-mail so we're sure things haven't fallen through the cracks.

MS. HANSEN: That will all be discussed in the Draft EIR. The results of this meeting and the comments that were brought up in this meeting will be discussed in the Draft EIR. I don't believe that there's a process prior to the Draft going public that these comments are discussed or made available.

UNIDENTIFIED MALE: How about a simple e-mail? Or let me ask this: By a show of hands, is there anyone in this audience that would like to know if our comments today are actually all

noted, that some of them haven't been discarded? Maybe by a simple e-mail.

MS. HANSEN: Also, this meeting is being recorded.

UNIDENTIFIED MALE: Well, great.

(Multiple speakers speaking simultaneously.)

PROJECT REPRESENTATIVE: The meeting notes we have taken. Also, the reason we recorded it. We typically provide a transcript of the proceeding that gets included in the Draft EIR, basically saying here's what was discussed at the Scoping Meeting. These are the issues that were raised. Here's what gets included or what's to be, what got included in the EIR, why we included it here in the issues that -- or the impacts that's been discussed and what's been analyzed and what's been included. So, yes --

UNIDENTIFIED MALE: How do we access that?

PROJECT REPRESENTATIVE: So it's not being discarded (inaudible).

MS. HANSEN: It's usually a section in the EIR.

UNIDENTIFIED MALE: How do we access the transcript and/or recording?

PROJECT REPRESENTATIVE: The Draft EIR is released for public review.

UNIDENTIFIED MALE: How do we access --

UNIDENTIFIED MALE: Is there a list we can get on so that we know that it's now available and then we can --

MS. HANSEN: Yes. If you sign up --

UNIDENTIFIED MALE: It's on the back? Okay.

MS. HANSEN: Yes, you'll know about the Draft EIR. At that time, this information will be available.

Yes, sir.

UNIDENTIFIED MALE: I'm just unclear on this issue. There's a transcript of this meeting; is that correct?

PROJECT REPRESENTATIVE: We'll prepare a transcript of the meeting just to make sure it gets included in the Draft EIR.

UNIDENTIFIED MALE: And there is a recording of this meeting?

PROJECT REPRESENTATIVE: Yes.

UNIDENTIFIED MALE: And how does the public access those?

MS. HANSEN: You'll get access to those when the Draft EIR is released for public review. This transcript will be an appendix to the Draft EIR. In addition, most EIRs include a summary of comments that were received on the NOP or the initial study and a directory of where those comments can be found -- or where those responses can be found within the analysis in the EIR.

UNIDENTIFIED MALE: And is the recording on the Regional Planning website or somewhere? I'm not sure how we access that.

PROJECT REPRESENTATIVE: We wouldn't put the recording on the website. We'll just put it in our case file. If you

wanted to see the transcript before the Draft EIR, we could make arrangement where you come in and view it. I mean, that's something (inaudible).

UNIDENTIFIED MALE: So it's all public record; I'm just curious.

PROJECT REPRESENTATIVE: Yes, it's all part of the public record, it's in our case file. If you want to see it, call us up, we'll make the file available, certain portions of the file, obviously, but that's available and if for whatever reason you wanted to see that transcript before it goes out, I mean, that certainly could be available.

Obviously, since it's a recording we will have a transcript made. It's not going to tell your name who is speaking, but it's basically commenter said XYZ, and that's what the transcript will show.

MR. DEA: I would like to add something on behalf of the County. You know, as lead agency, we're ultimately responsible for the production of this document, and as you look at the Draft EIR, our recommendation to you is that your specific questions that you had, keep track of them yourselves so that when you look at the document you can not be overwhelmed by this huge document but you can just focus in on what your particular questions were, and look and see if it's there, and that is the intent of the Draft EIR so that you can just tell us that if that's adequately addressing your question.

MS. HANSEN: Yes, ma'am.

FEMALE VOICE: Of all the things I haven't heard discussed is the heat level from all of these Projects. There's supposed to be like 33 projects on the books on the west side, which we figured it out roughly would be covering 51 square miles. So is this going to raise the heat level at ground level for our desert area; has that ever been talked about or figured out?

MS. HANSEN: It has been discussed at other solar EIRs. The comment's noted.

Yes, ma'am.

FEMALE VOICE: The comment about growth inducing effects. While looking here at the Silverado Power page, okay, 500 jobs in the Antelope Valley, 85 from the local workforce, 300 construction workers for one year. That's all short-term to me. That's not growth inducing, that's just maintaining what we've already lost to bring it back up to maybe a level that we had before, but it's not growth inducing.

And then how many people after all these jobs are finished will actually be working? I've heard rumors it's going to be just a small handful compared to what is needed and that they won't need a lot once the Projects are finished. Then it won't be bringing in that many jobs when it needs to just be maintained.

MS. HANSEN: Okay. Yes, ma'am.

UNIDENTIFIED FEMALE: Could you explain, please, what

recourse individuals in this room have if the questions they are asking or each, you know, individual asked, is not addressed, in their opinion, as they intended the question to be asked in the EIR; what recourse do the citizens have?

MS. HANSEN: So once the Draft EIR goes out for public review, then the citizens who commented on the Scoping Meeting, if they felt that their comments weren't adequately addressed in the EIR, could write a comment letter that would be submitted and then would be responded to in the response to comments.

UNIDENTIFIED FEMALE: My question is trying to be sensitive to the fact that it could take you eight months to do your original research, and what is the responsibility of the County to go back and actually do the research necessary to do a full and appropriate research on that question?

MS. HANSEN: It's the responsibility of the County to respond to comments on the EIR that are provided in the Scoping Meeting. It's the responsibility of the County and the County's consultant who's preparing the EIR to respond to these comments and address them adequately in the EIR, those that are environmental comments, those that apply to the EIR.

UNIDENTIFIED FEMALE: And then if within the scoping that is not -- if the question has been brought up in this meeting and the citizens feel that it is not adequately addressed in the Draft EIR, is that then the basis for challenging adequacy

of the CEQA certification at a later date?

MS. HANSEN: They can use that. All the letters, all this information will be going to the Planning Commission and the Board of Supervisors that will help them make their decisions about the Projects.

UNIDENTIFIED FEMALE: Well, the answer is -- I mean, the question that I'm asking has to do with legal challenge to the adequacy of certification if it takes place without fully answering one of the questions that the people here are asking. Is that --

PROJECT REPRESENTATIVE: That question may be a little premature.

MS. HANSEN: Yeah, I'm not qualified --

PROJECT REPRESENTATIVE: When the Draft EIR is released, you folks take a look at it, see if it adequately addressed your concerns and analyzed the impacts of this Project. And if it's not, you know, you write us a comment letter that says on section, on the air quality section you did not address XYZ. We'll look at it, whether or not that comment's legitimate, and if it is, we may make some changes to the Draft EIR as well.

So see the book when it comes out. And I do mean a book, because it's going to be pretty in-depth. It's a large document, they're usually not small documents, so hopefully it would address all if not most of your concerns that's raised today in that document.

Obviously, some of you have concerns that are not related to the EIR, so that could be addressed in the public hearing when it goes before the Planning Commission or the Board of Supervisors.

MS. HANSEN: Yes.

UNIDENTIFIED MALE: My question is directed towards the County. I mean, why isn't the most important issue here, which is economics of how it's going to affect homeowners and residential properties and the actual city, why isn't that taken into consideration?

MS. HANSEN: That is taken into consideration by the decision makers; that's just not an issue that's discussed in the EIR. So the Planning Commission and the Board, that's part of their decision making process.

UNIDENTIFIED MALE: Most of the people here, that's the biggest problem with this whole issue. Where do we discuss our concerns with that; that is the main issue.

MS. HANSEN: You can submit those comments. You want to submit those written comments, they will be part of the record and the decision makers will take that into account when they (inaudible).

UNIDENTIFIED FEMALE: But there's no hearing about it.

MS. HANSEN: There is hearings for it. There are hearings. There's going to be a hearing during the Draft EIR comment period, there's a hearing in front of the --

MR. SZALAY: The hearing examiner, Planning Commission and Board of Supervisors.

MS. HANSEN: Hearing examiner -- correct.

UNIDENTIFIED FEMALE: That addresses the impact of the -- how much the land is worth, et cetera? That's what he's talking about.

PROJECT REPRESENTATIVE: Can I clarify it a little bit?

UNIDENTIFIED FEMALE: That's not in the EIR.

PROJECT REPRESENTATIVE: The way the County looks at it is the California Environmental Quality Act, also commonly known as CEQA, does not require that an Environmental Impact Report do economic analysis unless there's some real specific physical nuance of how that changes something physically in the environment, and generally speaking, economics are not in that category.

So that's the overall basis. But when you go to the Commission and the hearing is taking place, they're not looking only at CEQA and the Environmental Impact Report. They will hear all the other comments you have and address them. You know, they'll make a decision whether they agree or not.

MS. HANSEN: Yes, sir.

UNIDENTIFIED MALE: Bear with me. I was real late, so if I'm asking the same repetitive question please just stop me.

My property happens to be extremely close to one of these sites. One of my concerns is, with the cleaning of these

panels, we have no background, we have no history to look at to see what the damage is going to be to the land, to the groundwater, to the environment as a whole. This is where I'm going to be retiring, so while it may impact my property value, it is more impacting my life as opposed to that.

So that's what I want to make sure the County's looking at in considering that. I'm not worried about not in my backyard; we just don't have much to compare this to and we need the County to be looking out for our best interests.

MR. SZALAY: Okay. Sounds good.

MS. HANSEN: Yes, ma'am.

UNIDENTIFIED FEMALE: I was thinking if Silverado Power is successful with these six Projects, they going to in no time double or triple their investment or build more of these, so the whole town is going to be Silverado Power.

MS. HANSEN: Thank you. Yes, ma'am.

UNIDENTIFIED FEMALE: I just have a question. Looking through the packet that Silverado sent out, it states in here basically that they plan on being on our electrical grid in late 2013. Okay. In order to achieve that kind of statement, there has to be a whole lot more already going on, because we have several people that work for the solar companies; we know how long it takes to get them up and running, and there's no way unless something was already in the works for them to meet this deadline, I mean, to have this date of, you know, late

next year.

I mean, if you're talking about the study and all these meetings and, you know, a minimum of eight months to a maximum of five years, where do they come up with, you know, I'd like Silverado to say how -- because this is what really concerns people. Everybody's talking about they'll have time to do this, that and the other and have their feelings expressed, when according to their own pamphlets that they put out, that's not it. I mean, we're talking about a year from now.

MS. HANSEN: The construction schedule, it's -- when construction schedules are put together, it's just --

UNIDENTIFIED FEMALE: I understand that.

MS. HANSEN: But they will not be building anything until we finish this process, so if this process goes on as long as some have gone on in the County for five years, they won't be constructing until this process is complete.

UNIDENTIFIED FEMALE: Well, I agree, but I'm just saying, it's just kind of funny to me they wouldn't be coming up with an arbitrary number of late next year if they didn't have a plan that was already started somewhere else or they've already got some sort of approval.

UNIDENTIFIED MALE: (Inaudible) have that technology.

UNIDENTIFIED FEMALE: I mean, we're talking about a years' time and we're not even talking about the report maybe being

done for eight months, and we know how long it takes for the solar plants to go up, especially this size. Where do they get -- I just would like to know from them where they're getting this late next year.

UNIDENTIFIED MALE: Well, that's my question to those guys, two guys over there, I guess. When did this, you know, become a dream? When did they say -- is it five years ago? They just didn't say this like two months ago, hey, let's build there, there and there. You got to buy the property and all this other stuff, and that was --

MS. HANSEN: Maybe we could just focus on the EIR and, like I said, he's going to be here after we --

UNIDENTIFIED FEMALE: Well, I asked you about the time (inaudible). The reason why I brought it back up is because this is how you stated that this was going to go and for me to (inaudible).

MS. HANSEN: We don't have a -- I don't believe we have a set schedule yet of when the Draft EIR is going to go out, when the Planning Commission, when the Board of Supervisors, when they need those hearings.

UNIDENTIFIED FEMALE: Well, if they want it by 2013 --

UNIDENTIFIED FEMALE: That's why I asked you (inaudible) --

MR. DEA: I think --

UNIDENTIFIED FEMALE: -- you said (inaudible).

MR. DEA: I'm sorry, I didn't want to interrupt you, but let's go through the process and then we can answer these general questions. I think if that works for you folks, because I think, you know, (inaudible).

MR. SZALAY: Sam, I could just say one thing on the Planning Department's side, and that's that planning is a process that takes a long, long time, and there's risk involved from the developer's end and on the County's end when reviewing it. They can plan all they want and anticipate whatever they want, but there's no project until it's approved by the Planning Commission, and so whatever planning they do they can plan public proposed timelines, whatever, but there's no project until it goes through this whole process and goes to the Commission.

MS. HANSEN: Yes, sir.

UNIDENTIFIED MALE: When you're done with your presentation, will the Silverado representative be available to take questions from the group as a whole?

MR. CRAIG: Yeah, we can do that.

MS. HANSEN: Okay. Yes, sir.

UNIDENTIFIED MALE: This might be for afterwards. I would like to know the process from here, where it goes.

MS. HANSEN: Next slide.

MR. SZALAY: Next slide.

MS. HANSEN: Thank you. We still have opportunities for

public input, so as we talked about, you can provide -- these comments will be -- are being recorded, will be in a transcript. You can provide written comments, which I highly recommend. The close of the NOP review period is July 20th.

As we talked about before, once the Draft EIR goes out for public review you'll have 45 days to review the document and provide comments. During that period it will go to the hearing examiner, another public meeting where you can provide comments.

Then the Planning Commission hearing, there's a 30-day public review of the response to comments. There will be other opportunities in front of the Planning Commission and in front of the Board of Supervisors for Project 1 for you to provide public comment.

UNIDENTIFIED FEMALE: I just had a real quick question.

MS. HANSEN: Sure.

UNIDENTIFIED FEMALE: If something in -- okay, in the Draft EIR for 45-day public review, we obviously conduct a draft, if we don't get a copy or we get to review the whole document before it goes to the Commission. My question is this. Once you have a final and then it goes before the Planning Commission, is that the time to, for example, like let's say we didn't like their bird study -- (inaudible) I'm just using that.

MS. HANSEN: If you didn't like their bird study I think

you should put it --

UNIDENTIFIED FEMALE: (Inaudible.) You know, from the Draft EIR, is that who we take it to? Because you're not going to go back and if I don't like their bird study, I don't think it's extensive enough, you're not going to go back to whoever did the bird study and say you need to redo this because she said she didn't like it.

MS. HANSEN: If what you said about the bird study, if we missed a species or something was missed, yes, we would go back to the biologists who prepared that and they would have to make changes to the study, or at least look into that.

MR. SZALAY: So make a comment. Use the 45-day Draft EIR review period.

MS. HANSEN: That's when you should make that comment.

UNIDENTIFIED FEMALE: Okay. But how are we going to know if it's fully readdressed; that's what I'm (inaudible).

MS. HANSEN: The Final EIR which includes all the responses to comments, we will respond to your comment about the bird study.

UNIDENTIFIED FEMALE: Okay. That's what I wanted to know.

MS. HANSEN: The bad bird study.

UNIDENTIFIED FEMALE: I just went about it the wrong way.

MS. HANSEN: No, I get it.

Yes, ma'am.

UNIDENTIFIED FEMALE: This is addressed to the County, the

lead agency. When people are writing up their comments if they find something that they are disagreeing with or feel is erroneous, how does the County want and what is the best way to actually write that? Because I have read many EIRs. When you're looking at the Final EIR and the comment from the County says, "Well, that's just your opinion so we didn't (inaudible), or you didn't back that up and how do you know that?" So we're not going into that, and on and on and on where (inaudible). So how does it get to you (inaudible) so that you would have to say we will go back and look at that? What is the County's (inaudible), how do we write that?

MR. SZALAY: Let's take, for example, the bird study. Tell us why you don't like it and what is it in it that you don't like about it and how should we have done it otherwise. So keep it what, why and how.

MS. HANSEN: And specific information.

MR. SZALAY: So don't tell us -- if you tell us, well, I don't like it, it just doesn't look good, well, I mean, there's not much we could respond to that (inaudible) here's the study. There's all these data, all these information in there. What is it that we have not addressed fully? So tell us.

And that is sort of the process relying on not just the County but all the other state agencies, federal agencies that look at these, these information as well. Fish and Game, Fish and Wildlife, and also the people who live there who know

the area best.

And if we miss a species, miss a bird, took the survey inappropriately, didn't, you know, did it in the middle of summer -- hopefully we won't put that out like that -- but tell us.

MS. HANSEN: Yes, sir.

UNIDENTIFIED MALE: For the County. At what point in the process shown on that slide would an individual or a group file a formal objection to granting the Conditional Use Permit and when would that objection be heard?

MR. SZALAY: Well, you could do that today, if you want. You could do it up to the hearing where the Commission is making its decision, so you could do it on the day of the hearing, you could do it any time before the hearing. Obviously, what you'd want to do is weigh the document objectively when you look at the Draft EIR whether or not is that document adequate. Have we addressed your concerns regarding environmental impacts.

Now, then let's go to the decision makers. That's when you bring in the issue of economic impact or, you know, whether or not this is a nuisance land use, other issues that you have a concern that could not be addressed in the EIR.

UNIDENTIFIED MALE: Is the Planning Commission meeting on the Final EIR approval a separate meeting from granting the Conditional Use Permit?

MR. SZALAY: It's the same hearing process, so they'll look at these six Projects. Before they take action on these six Projects they have to determine that the EIR is adequate and they will certify the EIR before they take action on the individual Projects or all of them together.

UNIDENTIFIED MALE: So the meeting where the Planning Commission might approve the Final EIR, during that same meeting they could approve granting the CUP to the Projects?

MR. SZALAY: They can.

UNIDENTIFIED MALE: Okay.

UNIDENTIFIED MALE: Where are those meetings usually held, around here?

MR. SZALAY: That's typically held in downtown. Also the same thing with the Board of Supervisors, that's held downtown as well. Which is why we do the Scoping Meeting out here, do the hearing examiner hearing out here, so whatever concerns you have we can try to address as much as we can. Obviously, we can't address all of them through these proceedings, but we hope that we do part of it in the EIR and through the examiner hearing as well.

So I think -- is that the last one?

MS. HANSEN: That's the last slide.

MR. SZALAY: That's the last slide.

MS. HANSEN: So are there any more comments or questions about the EIR or are these comments for the County or the

applicant? EIR? Okay.

UNIDENTIFIED MALE: Yes, to the EIR first.

MS. HANSEN: Yes, sir.

UNIDENTIFIED MALE: As I recall, some of the things that go on down below, we have closed circuit here, of course, so (inaudible) could be involved in by closed circuit.

MR. SZALAY: That's available at the Board hearing, but the Commission hearing is broadcast. We do webcasting. Obviously you can view it, but it's not two-way where you can speak onto it like what the Board has. So far we have done that just for the Board. The other way is more expensive for us.

UNIDENTIFIED MALE: The last comment was what?

MR. SZALAY: The webcast. The proceeding is broadcast on our website for the public hearing on these Projects when we go before the Commission.

UNIDENTIFIED MALE: Did you mean to say that people who want to come to this library to participate in the Planning Commissioning hearing will not be able to?

MR. SZALAY: That's true, because we do not have that capability for the Planning Commission. That's available for the Board of Supervisors, I understand, but it's not available for the Planning Commission.

UNIDENTIFIED MALE: And so it's a money thing; is that what you're saying?

MR. SZALAY: Well, to boil it down to basically, yeah, it's a money thing. It's expensive.

UNIDENTIFIED FEMALE: What if the library just doesn't have that system anywhere?

UNIDENTIFIED MALE: Yes, they do.

MR. SZALAY: I don't know if this library is equipped. Some of the libraries --

UNIDENTIFIED MALE: Yes, we are. Yes.

MR. SZALAY: Okay.

MS. HANSEN: We're saying that the Planning Commission chambers is not equipped with (inaudible).

UNIDENTIFIED MALE: This is separate from --

UNIDENTIFIED MALE: Yes, they are equipped with it.

UNIDENTIFIED MALE: Are they?

UNIDENTIFIED MALE: Yeah, they used the same chamber --

MS. HANSEN: On the web, but you can't participate.

Yes, sir.

UNIDENTIFIED MALE: Question was asked about the birds, and I'm trying to understand this too and you're saying it's (inaudible). We just lost 16 eagles over here in Kern County. Now this is a good valid question and we're concerned about our environment. Now, would you explain to me again how we protect these birds, because these people are getting away with killing them, 16 now.

MR. SZALAY: Well, I think this is why we're doing an EIR,

because the County is concerned and the EIR is not a simple document to prepare and it contains a lot of informations and I think hopefully that will be addressed in the EIR in the biology section.

UNIDENTIFIED MALE: Hopefully.

MS. HANSEN: It will be addressed.

MR. SZALAY: It will be addressed.

MS. HANSEN: Like we said in the slide, impacts to migrating birds will be addressed in the EIR.

Yes, ma'am.

UNIDENTIFIED FEMALE: Does the County has any concern about these Projects? We heard about County concerns. How about you as a government agency protecting (inaudible).

MR. SZALAY: We are concerned with the potential impacts, which is why we're doing an EIR.

UNIDENTIFIED FEMALE: What do you mean you're concerned?

MR. SZALAY: Major concerns will take an EIR to address, that's our major concern (inaudible) we felt that there are potential concerns that we need an EIR to adequately address those concerns.

PROJECT REPRESENTATIVE: And I might add that the 30-day public review period, you will have opportunity to see the staff recommendation at that point, because we wait until all the information is gathered before we actually make a recommendation for or against the project, whatever the case

may be.

MS. HANSEN: Yes, sir.

UNIDENTIFIED MALE: Can we request to have these meetings locally since it has to do with our locals? I mean, we have to go all the way down there, which is a burden to take off work, versus them coming to us since it deals with us personally (inaudible) so easily readily available for us to come and say our opinion?

PROJECT REPRESENTATIVE: The response that I would have would be to repeat what Sam said earlier, is the hearing examiner public hearing, that's where we will take your comments on the Draft EIR before a hearing examiner, and that will be down here.

UNIDENTIFIED FEMALE: Down here, where's down here?

PROJECT REPRESENTATIVE: Down here meaning probably this building where we are right now. You know, that could possibly change, but likely this building.

MS. HANSEN: But the Planning Commission will most likely stay in downtown.

PROJECT REPRESENTATIVE: Yeah, most likely stay down there.

UNIDENTIFIED MALE: Have they ever gone --

UNIDENTIFIED FEMALE: But we can request to this site that they come?

(Multiple speakers speaking simultaneously.)

UNIDENTIFIED FEMALE: You know, we've got all this stuff and the TV.

MR. SZALAY: Well, if the Commission decides they want to do a site visit, they could. If they wanted to do an offsite meeting, that's --

MS. HANSEN: That is also something you could put in your comment letter on the NOP, you could request that the --

UNIDENTIFIED FEMALE: Could you take that as a comment, that (inaudible).

MS. HANSEN: You could write it down right now and submit it.

MR. SZALAY: I think there was somebody who signed up to speak, so I don't know, hopefully we answer all your questions.

PROJECT REPRESENTATIVE: Read the list off in case you didn't get a chance. These people had a speaker request.

MS. HANSEN: James Taylor?

MR. TAYLOR: I'm sorry, I (inaudible) of what that actually meant. I thought it was like speaking (inaudible).

MS. HANSEN: Okay. And I apologize if I ruin the last name. Cindy Bornanno?

MS. BORNANNO: Yeah, I think we pretty much said what we said.

MS. HANSEN: Okay. Plumlee Quip? And I apologize if I got the name wrong.

Helen Henry?

MS. HENRY: I'd just like to cover a little bit of the mitigation property, is Silverado is purchasing any, which I believe they should. I think it should be more than a one-to-one ratio. It should be maybe like more of like a one-to-hundred ratio to replace. That could be a little bit out of the ballpark, but the birds that we are trying to protect and open space, they fly more (inaudible) they go quite a ways.

Oh, and the property did they purchase for mitigation, if they (inaudible) feel that it should be in the Antelope Valley.

MS. HANSEN: Okay. Jerry Henry?

MR. HENRY: I think I covered pretty much everything (inaudible) that I could think of.

MS. HANSEN: Okay. Betsy Haslett?

MS. HASLETT: I have nothing else to be covered.

MS. HANSEN: Okay. Curtis Moran?

MR. MORAN: My questions are for Silverado Solar. Is it appropriate to ask those now?

MS. HANSEN: Why don't we finish going through the process and then. Robert Kerekes?

MR. KEREKES: Are they required to do mitigation (inaudible)?

MS. HANSEN: Pardon?

MR. KEREKES: Are they required to do mitigation

(inaudible)?

MS. HANSEN: They are required to mitigate significant impacts, yes.

MR. KEREKES: Do they have to purchase property for mitigation?

MS. HANSEN: I don't think that's been determined. I don't think the mitigation regarding bio has been determined yet.

MR. SZALAY: And the impacts haven't been determined yet either.

MS. HANSEN: Not that I'm aware of yet.

So does anybody else have any comments on the EIR?

EIR, yes? No?

UNIDENTIFIED MALE: I want to go back to this other slide first.

MS. HANSEN: Okay. Can we go back a slide. This one?

UNIDENTIFIED MALE: Growth inducing effects.

MS. HANSEN: Yes, sir.

UNIDENTIFIED MALE: Employment, in answer to this lady's question. (Inaudible) worth working out at AVSR-1 for seven months, I can say it has a large impact on my life and my family, and during the two months that they were (inaudible) with the County, it was devastating to most all of us that worked out there.

And being that my knee gave out, I was unable to go

back to work. And the tools that they had taught us and the capabilities that AVSR-1 has given the people of the valley for employment is tremendous, because they've made themselves more sellable for other solar companies and other places besides here to ascertain work. And I'm looking forward to hopefully being employed with Silverado, being that I was unable to continue working with AVSR-1 on account of my knee, but it will soon be healed.

MS. HANSEN: Okay. Any other comments on the EIR, any other issues that you think should be addressed in the EIR?

Okay. So the applicant and County --

UNIDENTIFIED MALE: I do.

MS. HANSEN: Yes, sir.

UNIDENTIFIED MALE: Concern with fire down in our part of the valley, which is the west end, is the response time. These solar companies, are they going to provide their own medical response, or fire or police? I know they have their security. But we are already pushed to 45 minutes for a call out where I live for the County to show up or the fire department. Now, you know, normal circumstances, house can burn down quite quickly.

And our sheriff out there, we have -- I understand we have three now that are local, but they only work so many hours a day and they only cover so much ground. I mean, what's the situation for the protection of the community?

We pay our taxes, and you're going to -- we already don't get very good -- what we do have is excellent, it's just not very much. So I guess what I'm trying to say is, these people are (inaudible) you're going to depend on (inaudible) to keep these people from stealing your panels and putting them on eBay? You know, these guys -- this is an impact back on us when they're stealing from you and now we've got our stuff being stolen.

I just had all my corals stolen off my ranch. All right, that's a lot of money. Now, I grant you they only got scrap price out of it, but it cost me a lot to not only to have the steel and put it up, but now I got to go back and put it up again, and I'm afraid to because it's going to get stolen.

MS. HANSEN: Okay. So your concern is that the impact to fire and police.

UNIDENTIFIED MALE: Fire and police. And ours are working out of their cars or down at the local gas station down in Gorman. They have a table set up for them so they can do their paperwork.

MS. HANSEN: Okay. Any other comments on the EIR, any other issues you'd like us to address?

Yes, ma'am.

UNIDENTIFIED FEMALE: On mitigation (inaudible).

MS. HANSEN: I'm sorry, could you repeat it? I didn't hear.

UNIDENTIFIED FEMALE: On mitigation, do we have any comments that we could make once we see the EIR, Draft EIR, on mitigation that we feel should be done, we feel that's inadequate?

MS. HANSEN: Yes.

UNIDENTIFIED FEMALE: Or we feel you need to address (inaudible)?

MS. HANSEN: Yes, absolutely.

UNIDENTIFIED FEMALE: How?

MS. HANSEN: You'll write a comment letter. You write a comment letter and you have some suggestions for mitigation, if it makes sense or if it's something that would be helpful through the process that that mitigation would be augmented, revised, added, to mitigate the impacts. So just because what it says in the Draft EIR doesn't mean that there can't be some additional changes or revisions to mitigation that's presented.

Any other questions on the EIR?

Okay. I think what would be best is if you have comments or questions for the applicant or the applicant's representatives or the County staff, everybody will be here for a while and feel free to ask them.

(Conclusion of Recorded Material.)

-o0o-

APPENDIX B-1

AESTHETIC IMPACTS REPORT

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APPENDIX B-1.1

PROJECT 1 NORTH LANCASTER RANCH
AESTHETIC IMPACTS REPORT

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

NORTH LANCASTER RANCH
(CUP GROUP 6)
AESTHETIC IMPACTS REPORT

Prepared for:

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1.0 INTRODUCTION

This Aesthetic Impacts Report has been prepared for the proposed North Lancaster Ranch Solar Generation Facility Project (Project) to assess the potential visual impacts resulting from the construction and operation of the Project. The Project is proposed by Silverado Power, LLC, for a 240-acre site approximately 12 miles northwest of Lancaster, California. The Project is located in unincorporated northern Los Angeles County (Figure 1).

For the purposes of this visual assessment, "Project site" refers to the area within the delineated boundary for the Project components, and "Project area" refers to those landscapes within 15 miles of the Project site.

2.0 PROJECT DESCRIPTION

The proposed Project would have a generating capacity of 20 megawatts alternating current and be located on 240 acres of primarily unproductive agricultural land (Figure 2). The Project site is located approximately 12 miles northwest of the city of Lancaster, California in unincorporated northern Los Angeles County. The Project site is bounded by West Avenue B to the south, and 110th Street West to the west. The northern and eastern boundaries of the site are formed by field lines.

The Project will employ a series of photovoltaic (PV) module arrays to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system. The PV modules convert sunlight into low-voltage direct current (DC) power, which is subsequently transformed into alternating current (AC) power through an inverter.

The Project will consist of construction and operation of a solar generation facility that will utilize PV technology on fixed-tilt or tracker mounting supports. The Project will be constructed in phases and operated for a period of 35 years, and will consist of the following elements:

- PV modules
- PV module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing.

It is anticipated that the Project will require a Conditional Use Permit from Los Angeles County for construction and operation of this facility.

The following sections detail the visual characteristics of major project components.

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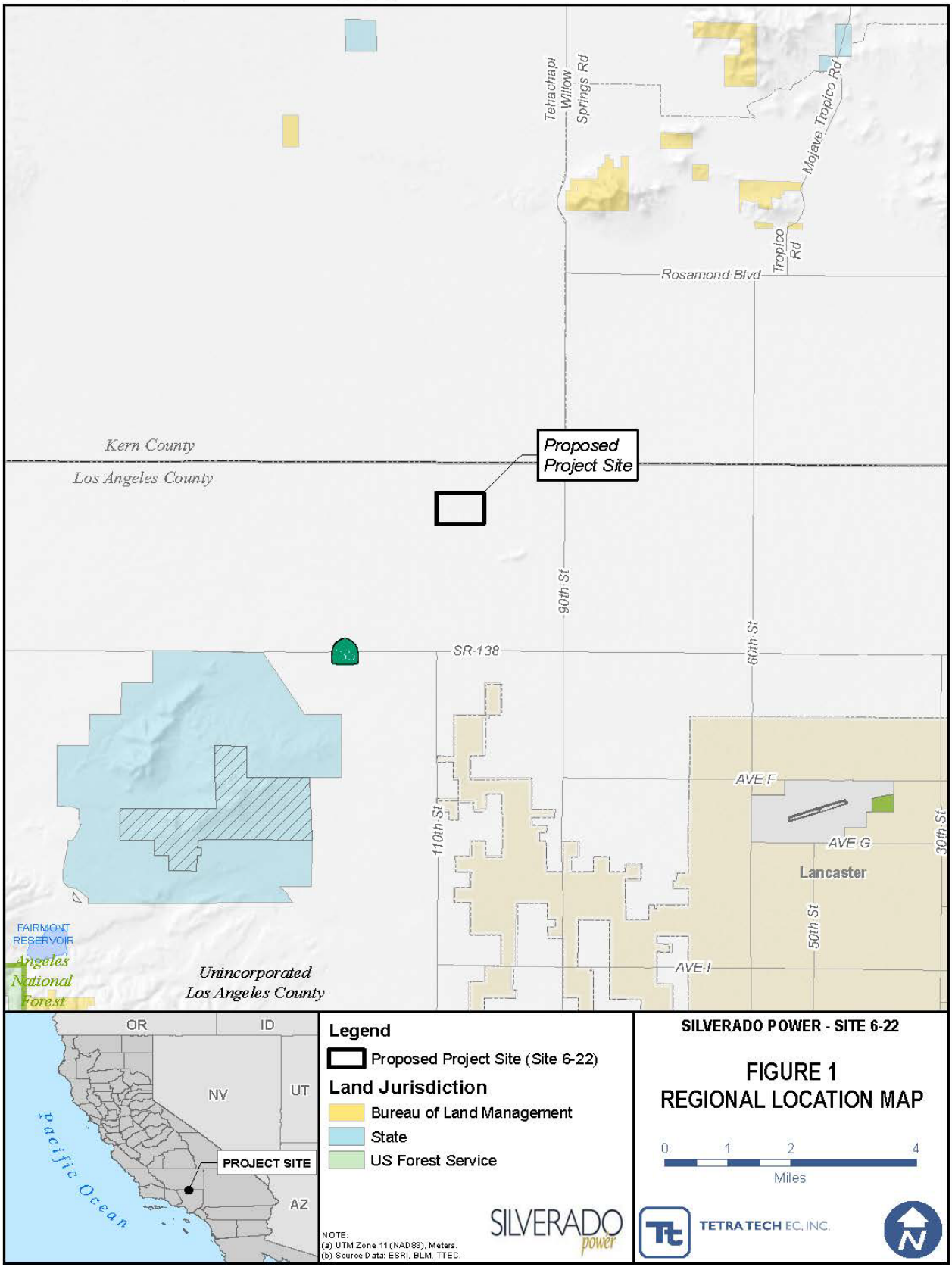

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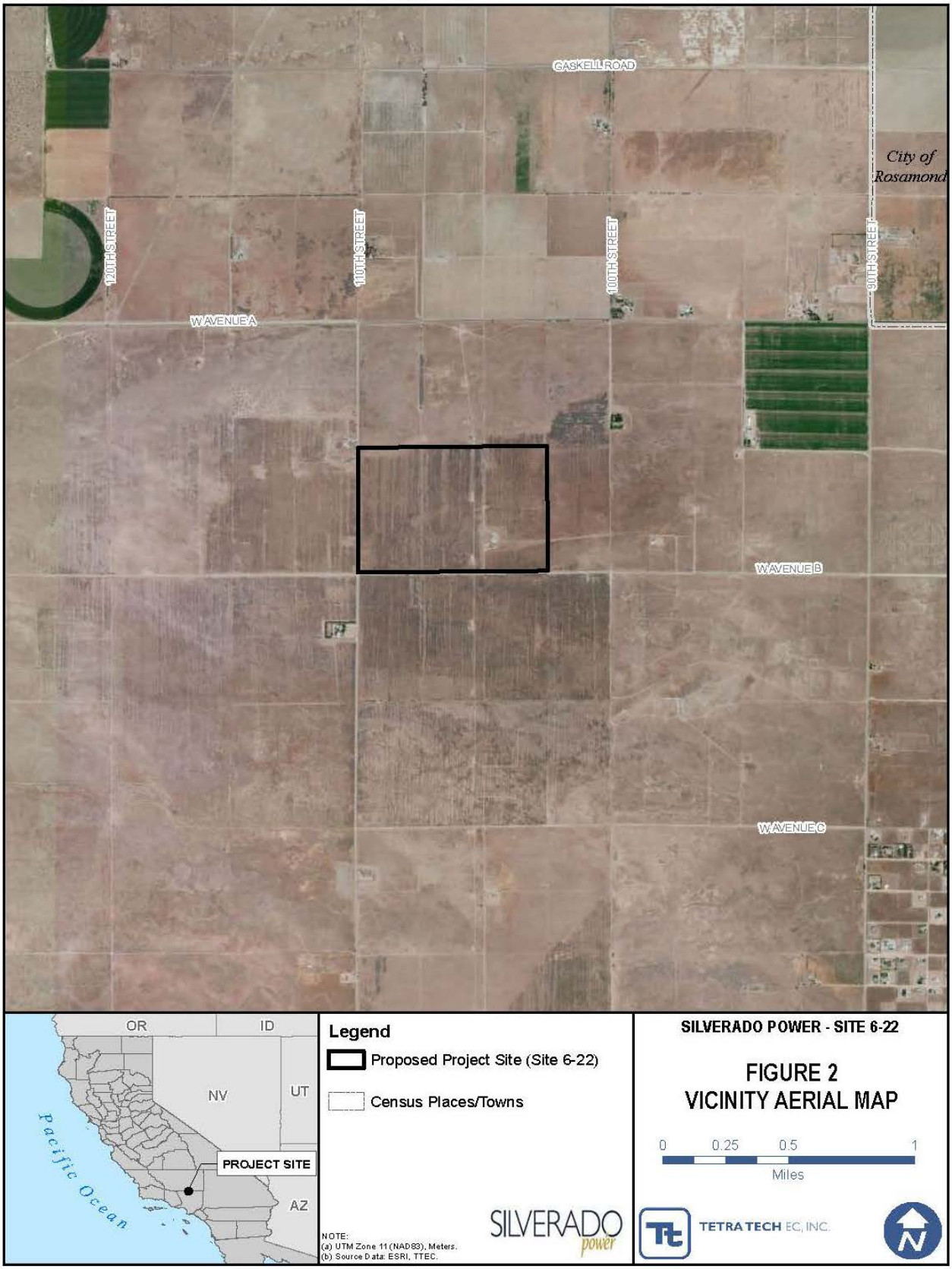

2.1 Photovoltaic Modules

The solar generation facility will require installation of PV modules. The total number of PV modules required will depend on the technology selected, optimization evaluation, and detailed design. The market conditions, economic considerations, and the environmental factors will be taken into account during the detail design process. The following PV module technologies or equivalent are being considered for incorporation into the Project:

- PV thin-film technology
- PV crystalline silicon technology
- Fixed-tilt configuration

The modules configured with a fixed tilt will be oriented toward the south and angled at a degree that will optimize solar resource efficiency. Modules will be non-reflective and highly absorptive.

The PV modules will be thin rectangular blocks, mounted in multiple rows aligned from east to west. The front of each module will appear in varying shades of dark blue and purple, depending on the angle of the sun and brightness of the sky. The backs of the modules will be colored either white or a very light gray. The modules will be mounted on light gray steel support structures. The modules will be arranged at a fixed angle (i.e., tilted) of 45 degrees towards the sun. Depending on the final design, the assembled PV modules will have a typical height of approximately 6.5 feet above the ground, based on the orientation of the racks.

A site plan is provided in Appendix A to show the arrangement and detailed dimensions of the PV arrays. The Project will consist of PV array blocks measuring approximately 559 feet by 337 feet (covering approximately 4.3 acres each). Each block will contain rows of PV arrays and an inverter/electrical equipment pad, which will consist of equipment enclosed in a gray-colored box approximately 9-feet tall, and a small parking area.

During construction of each of the PV facilities, the proposed Project site will be cleared of vegetation, graded to remove localized mounds or valleys, and internal roads finished with a layer of aggregate to allow for various construction activities to take place. These activities will include trenching for installation of gathering lines, pouring of the support structure foundations, delivery of the PV module components, and PV module installation. Disturbance areas will appear as large patches of fine, buff-colored rock and soil. Construction activities may produce visible dust but impacts will be mitigated to less than significant with implementation of the fugitive dust plan.

2.2 Generation Tie-Line

The power generated by the Project will be connected to Southern California Edison's existing transmission network with the voltage transformation equipment and system safety equipment constructed on the site. Electricity will be delivered to an existing Southern California Edison 66 kilovolt transmission line via an undergrounded 0.5 mile generation tie originating at the DC collection system within the facility. The 66 kilovolt transmission line is 0.5 mile west of the Project site.

2.3 Other Infrastructure Elements

A series of internal access roads and driveways will extend throughout the proposed Project site between the PV arrays and will be characterized by approximately 20-foot-wide bands of light tan and buff-colored aggregate. The proposed Project site will have one access point along West Avenue B and one along 110th Street West.

The Project site perimeter will be enclosed by a galvanized chain link fence topped with a three-strand barbed wire section. The total height of the fence will be 8 feet. The light gray fence posts will be spaced at approximately 10-foot intervals. The 40-foot driveway from West Avenue B to the gate will be 24 feet wide. A 10,000 gallon fire water tank will be located at the gate. Portable toilets will be provided during construction, but no permanent sanitary facilities will remain onsite. Lighting at specific locations for nighttime security purposes will be fence or structure-mounted and will be directed downwards.

3.0 REGULATORY SETTING

3.1 CEQA Compliance

A Conditional Use Application was filed with Los Angeles County in June 2011 for construction and operation of the Project. Los Angeles County is responsible for implementing the requirements of the California Environmental Quality Act (CEQA) for projects proposed for unincorporated Los Angeles County, in accordance with the California Public Resources Code, Section 21000 et. seq. (CEQA). Appendix G of the 2012 State CEQA guidelines (Association of Environmental Professionals 2012) contains four questions relating to visual resources and aesthetics. These questions are as follows:

a) Would the project have a substantial adverse effect on a scenic vista?

b) Would the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

c) Would the proposed project substantially degrade the existing visual character or quality of the site and its surroundings?

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

In addition, Los Angeles County currently utilizes the Environmental Checklist Form (Initial Study) to provide thresholds of significance for potential impacts to resources including aesthetics (correspondence with Los Angeles County and Environmental Checklist Form provided in Appendix B). The following five questions relating to visual resources and aesthetics are provided;

a) Would the project have a substantial adverse effect on a scenic vista?

According to the Environmental Checklist Form, a scenic vista may include designated scenic highways, scenic highways or resources designated by local land use plans, scenic highways or corridors designated by cities adjacent to or near the project site, or significant ridgelines. If the proposed project is not sited near any designated scenic highways, significant ridgelines, or

other identified scenic resources, it is unlikely to result in impacts related to having as substantial adverse effect on a scenic vista.

b) Would the project be visible from or obstruct views from a regional riding or hiking trail?

Impacts may arise from the vacation of a portion of a trail, degradation of the scenic character in and around the trail, and obstruction of expansive views visible from the trail's course but not compromising the trail itself.

c) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

According to the Environmental Checklist Form, this question is concerned with not only trees, rock outcroppings, and historic buildings, but also undisturbed areas and hillside management areas. The question required identification of "undeveloped" or "undisturbed" areas either on the project site or in the vicinity of the project site. According to the form, development of on-site, greenfield conditions is likely to result in a significant impact given the previously undisturbed nature of the land.

d) Would the project substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?

This checklist question evaluates how well the design of the proposed project would integrate with the visual character of its surroundings and the project's level of visual integration from the perspective of height, bulk, pattern, scale, character, or other features. According to the checklist, the height/bulk of a proposed project could negatively impact the surrounding area. Ultimately, the final impact determination will have to do with how well the proposed project integrates with the surrounding neighborhood.

e) Would the project create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area?

Whether a project will produce a substantial amount of shadows is dependent upon a combination of factors including height of the project, width, setbacks, and the length of shadows cast upon potentially sensitive uses. Light or glare is dependent on a project's surface materials, lighting program, and signage. Projects involving large expanses of reflective surfaces may potentially result in a significant impact if reflected light (glare) may impede views in and around the project site. The checklist states that projects must comply with Los Angeles County's Dark Skies Ordinance, however at the time of this report, the Dark Skies Ordinance had not been officially adopted.

The County's checklist questions are largely based on the state checklist, with some questions on the County's checklist requiring additional detail. This Aesthetics Impacts Study therefore uses the County's checklist and associated guidance to determine if the Project will potentially impact visual resources, and whether those impacts are less than significant, less than significant with mitigation, or significant.

3.2 Local Land Use Plans and Guidance

Development in the Project area is guided by county and local land use plans. Land use plans reviewed for relevant guidelines and policies include the Los Angeles County General Plan, the Antelope Valley Area Plan, and the City of Lancaster General Plan.

3.2.1 Los Angeles County General Plan

The Los Angeles County General Plan (Los Angeles County 1980) included the following policy relevant to visual resources:

- *General Goals and Policies, Goal 15:* Protect areas that have significant natural resources and scenic values, including significant ecological areas, the coastal zone, and prime agricultural lands.
- *Conservation and Open Space Goals and Policies, Policy 15:* Protect the visual quality of scenic areas including ridgelines and scenic views from public roads, trails, and key vantage points.

The Los Angeles County General Plan also identifies officially designated scenic highways, and divides proposed scenic highways into first- and second-priority proposed scenic highways. First priority routes recommended for further study include the Antelope Valley Freeway, located approximately 1 mile east of the Project site. There are no second-priority routes in the vicinity of the proposed Project site.

3.2.2 Antelope Valley Area Plan

The Project site is located within the boundaries of the planning area for the Antelope Valley Areawide General Plan (Los Angeles County 1986). The areawide plan contains the following policy relevant to visual resources:

- *Policy 22:* Minimize environmental degradation by enforcing controls on sources of pollutants (including visual pollution) and noise.

Visual pollution is not defined by the general plan, but typically includes dust, smog, trash, or visual clutter.

3.2.3 Los Angeles County Hillside Management Ordinance

The Hillside Management Ordinance (Los Angeles County Code Title 22, Section 22.56.215) designates hillside management areas in urban and non-urban areas that have hillsides with a 25 percent grade or greater. The ordinance requires development on properties covered by the hillside management ordinance to obtain a conditional use permit with the intent of preserving remaining natural topography.

4.0 METHODOLOGY

4.1 Identification of Potential Scenic Areas

Potential scenic areas were identified prior to the field visit so they could be evaluated and photographed. Potential scenic areas were identified from review of maps, local land use plans, county land use plans, and relevant guidance as described in Section 3.0.

As detailed in Section 3.1, the Los Angeles County Environmental Checklist Form (Appendix B) identifies other aesthetic considerations and categories of scenic resources that must be addressed. The following categories of scenic resources are addressed in this report:

- Scenic highways
- Scenic highways or resources designated by local land use plans
- Scenic highways or corridors designated by cities adjacent to or near the Project site
- Significant Ridgelines
- Hillside Management Areas
- Riding and Hiking Trails
- Trees, Rock Outcroppings, and historic buildings within a state scenic highway
- Undisturbed land on the Project site or in the vicinity of the Project site

Guidance contained in question (a) in the Aesthetics Section of the Environmental Checklist requires consideration of scenic resources designated by local land use plans or by cities adjacent to or near the project site. The City of Lancaster's Master Environmental Assessment (MEA) (2009a) and the City of Lancaster's General Plan (2009b) were used to identify specific scenic resources in the area. Although the Project is located in unincorporated Los Angeles County outside municipal boundaries, it is inside the "Sphere of Influence" identified in the MEA. Scenic resources are defined by the MEA as "those unique visual features that provide attractive views either into or from the study area" (City of Lancaster 2009a). Five scenic areas were identified in the Sphere of Influence identified in the MEA, which included areas beyond the city of Lancaster's municipal boundaries: the Foothills Area, Little Buttes, Quartz Hill, Piute Ponds, and Little Rock Wash:

- The Foothills Area is the northern edge of the San Gabriel Mountains. The area between the Angeles National Forest and the Antelope Valley provides many trails for hiking and biking. Trails along the California Aqueduct provide access for hiking, biking, and fishing. These trails provide visitors with expansive views of the surrounding mountains and Antelope Valley. The MEA identifies a visual buffer area extending from the foothills area into the valley, but does not provide specific direction for management of the visual buffer area.
- Little Buttes is located approximately 7.5 miles west of the Antelope Valley Freeway, and 1.5 miles north of West Avenue D. Little Buttes is a butte (hill) rising from the flat desert landscape, and is crossed by a number of hiking trails that are not formally marked.
- Quartz Hill is a hill surrounded by residential development within the unincorporated community of Quartz Hill immediately south of the City of Lancaster. Quartz Hill rises

over 200 feet above the surrounding community and is located approximately 2.7 miles west of the Antelope Valley Freeway along West Avenue M/Columbia Way.

- The Piute Ponds area is located on Edwards Air Force Base east of the Antelope Valley Freeway. Access is restricted, and special permission is required to enter the area. The Piute Ponds consist of several shallow amorphous ponds on the southern edge of Rosamond Dry Lake. These ponds form a series of interconnected impoundments that receive wastewater from the Lancaster Water Reclamation Plant as well as seasonal runoff from washes that cross the valley floor (University of California, Santa Barbara 2009). Recreational activities in the Piute Ponds area include hiking and wildlife watching.
- Little Rock Wash, located approximately 20 miles southeast of the proposed Project site and one of the larger washes in the Project area, is dry most of the year. According to the MEA (City of Lancaster 2009a), Little Rock Wash is the most significant natural desert wash within the study area in terms of plant diversity and biological value. Little Rock Wash is considered a Significant Ecological Area. Trails and proposed trails exist in the area of Little Rock Wash. The MEA identifies a visual buffer area surrounding the wash, but does not provide specific direction for management of the visual buffer area.

The MEA also mentions the scenic value of the Antelope Valley California Poppy Reserve, a state natural reserve, located west of the Sphere of Influence. The Poppy Reserve receives the majority of its visitors during the spring and early summer months when the poppy flowers that are common to the area are in bloom.

The MEA mentions the Joshua tree as the most well-known desert plant in the Antelope Valley, with desert and desert woodland plant communities being of significant local and regional value. The Lancaster General Plan identifies local views of the surrounding buttes, Quartz Hill, and long distance panoramas of the San Gabriel Mountains and desert expanses as visual/scenic resources.

The MEA also identifies several roadways that could potentially serve as scenic routes in the future, but currently have no formal designation. These include the following:

- Antelope Valley Freeway, for long-range views of the San Gabriel Mountains to the southwest, south, and southeast, and far-off views of the San Bernardino Mountains to the southeast and the Tehachapi Mountains to the northwest. To the north this route provides close-in views of open desert lands.
- Avenue K between 110th Street West and 90th Street West, for views of the San Gabriel Mountains to the south and of the Portal Ridge foothills to the southwest.
- Avenue M between the Antelope Valley Freeway and 60th Street West, for views of the San Gabriel Mountains to the south and Quartz Hill.
- 60th Street West between Avenues K and M, for views of Portal Ridge to the west and the San Gabriel foothills to the south.
- 90th Street West, for long-range views of the San Gabriel Mountains to the south and southwest, close-in views of the open desert in the northern portion of the valley and of the Tehachapi Mountains to the northwest.

The proposed Project is located approximately 0.5 mile south of the Los Angeles/Kern County border. The Kern County General Plan was reviewed for identification of any scenic areas in the

vicinity of the Project area, but none were identified. The Pacific Crest Trail (PCT), a long-distance regional trail, traverses the foothills of the Tehachapi Mountains approximately 8.5 miles northwest of the Project site at its closest point.

4.2 Field Visit

To properly assess the existing visual character of the landscapes in the Project area, a site visit to the proposed Project site and the surrounding Project area was conducted on April 6, 2012 by Tetra Tech environmental planner Michael DiSano. On Wednesday, January 25, 2012, photos were taken near the Project site around 1:00 PM. The weather was clear and sunny.

A Nikon D90 digital single lens reflex camera (dSLR) equipped with a 35-millimeter (mm) lens was used to take the photographs. When used with a 1.5x cropped-sensor camera such as the D90, a 35-mm lens is considered a “52-mm equivalent lens.” A 52-mm equivalent lens is considered a “normal lens” that closely approximates the field of vision of the human eye. In photos taken using the combination of the D90 and a 35-mm lens, the size and scale objects in the background and foreground are depicted realistically, and are not distorted.

The Nikon D90 dSLR was also equipped with a Global Positioning System (GPS) device manufactured by Promote Systems. This GPS device records the latitude, longitude, and elevation of each photograph as it is taken and embeds this information in the .jpg itself. This feature allows one to upload the Project area photos to a Google Earth .kmz, which displays both the photos themselves and the locations where each photo was taken on an interactive representation of the earth. Other relevant project information, such as Project boundaries, existing transmission infrastructure, and jurisdiction boundaries can be displayed simultaneously in the .kmz along with the photo locations.

Each location where photographs were taken is referred to as a "photo point" in this report. At each photo point, a panorama, or an overlapping series of photos, was captured. After the conclusion of the field visit, each of these panoramas was created using a program called PTGui. These panoramas were then added to a Google Earth .kmz file, where the locations of each panorama were displayed on an interactive representation of the earth. A map showing the locations of photo points visited during the field visit can be seen in Figure 3. Panoramic photos taken during the field visit relevant to the Project site and this analysis are provided in Appendix C.

Photo points were captured at the proposed Project site from locations along adjacent roads and intersections near the Project site (Figure 3). During this site visit, the following locations were visited and photographed:

- The proposed Project site, and other sites proposed for solar development in separate permitting processes
- Locations in representative landscapes in the Project area where the Project may be seen
- Potentially sensitive viewing areas where the Project may be seen, which can include residential areas, community facilities such as parks, open space areas, fairgrounds, or playgrounds, or highways or well-travelled roads

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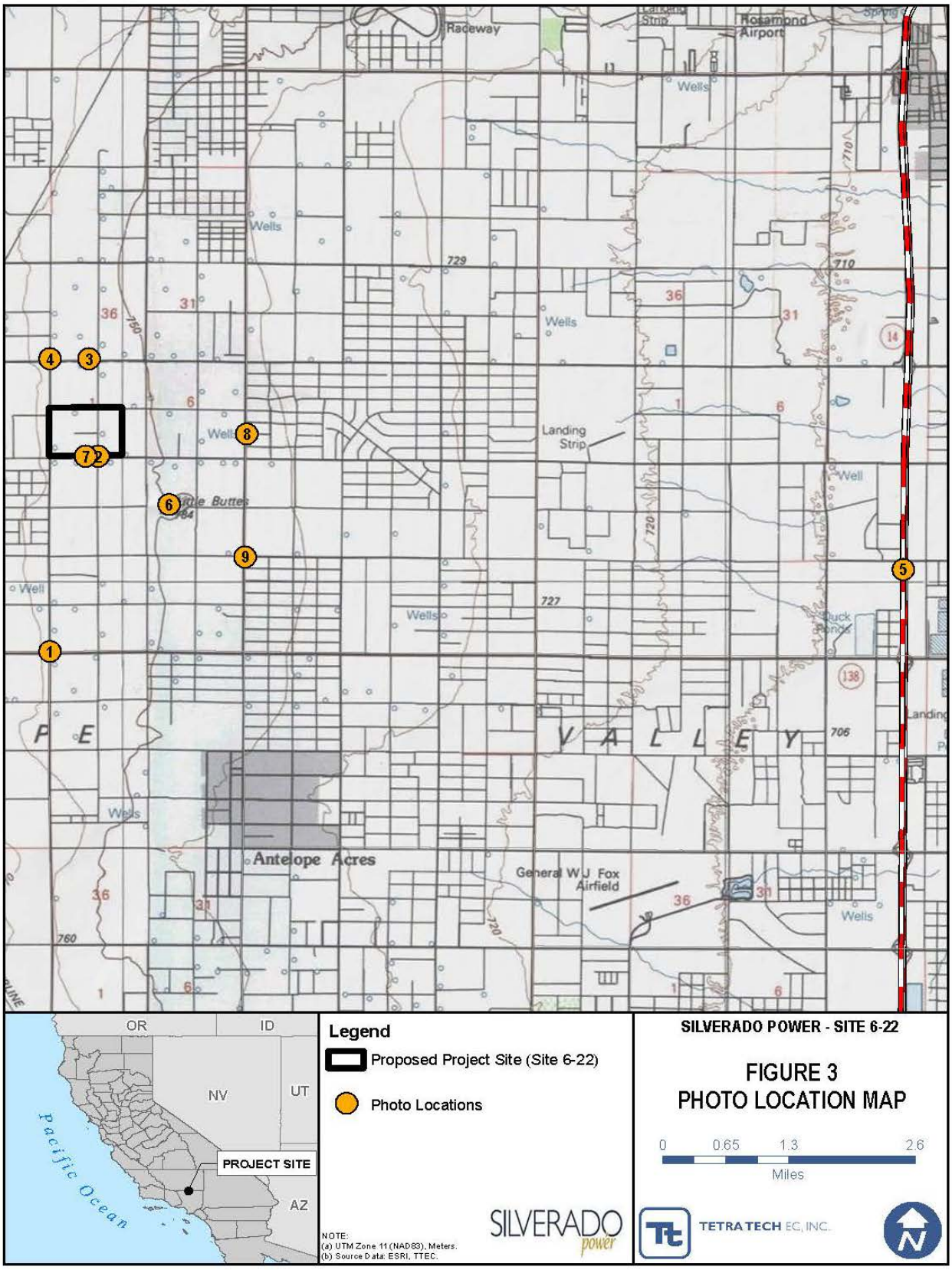


- Scenic areas identified in the City of Lancaster's Master Environmental Assessment, including the Poppy Reserve, Foothills Area, Little Buttes, and Quartz Hill.

Photos were not taken from Piute Ponds and Little Rock Wash, both located east of the Antelope Valley Freeway for the purpose of this visual assessment. The Piute Ponds area is located on Edwards Air Force Base approximately 10 miles east of the Project site, and special permission is required to enter the area. The Project site will not be visible from Piute Ponds or Little Rock Wash due to distance and screening by terrain, infrastructure and vegetation. The visual resource specialist drove around the Little Rock Wash area, located approximately 20 miles southeast of the Project site, to observe the regional setting. The Project site is not visible from the Little Rock Wash area due to distance.

4.3 Photographic Simulations and Contrast Ratings

When assessing the potential visual impacts of the proposed Project, it is important to compare the visual characteristics of existing landscapes in the Project area with the visual characteristics of specific Project components that will be visible in those landscapes. The BLM's visual contrast rating process (*Handbook 8431-1 Visual Resource Contrast Rating*) was used as the basis for reviewing potential impacts to visual resources. Because the proposed Project is on private land and not subject to BLM regulations, a form adapted from the BLM's Visual Contrast Rating Worksheet (BLM Form 8400-4) was used to assess the degree of contrast the proposed project will introduce to the existing landscape.

The visual contrast rating worksheet uses landscape character elements and distance zones to describe the landforms (including water), vegetation, and man-made features (structures) that currently exist in the landscape using the basic landscape character elements of form, line, color, and texture:

- Form—The shape and mass of landforms or structures
- Line—The edge of shapes or masses, silhouettes, or bands
- Color—The property of reflecting light of a particular intensity of wavelength that the eye can see
- Texture—The nature of the surface of landforms, vegetation, or structures

When the visual resources in an area are described, the distance between objects or landforms and any potential viewer has a direct influence on that description. Objects or features that are closer to a viewer's location will appear more detailed and more dominant than those that are further away. The following distance zones are used in landscape descriptions:

- Foreground/Middleground—Areas immediately in front of to 5 miles away from an observer
- Background—Areas from 5 to 15 miles away from an observer
- Seldom Seen—Beyond background or can't see

Descriptions of the existing landscape and of the landscape after a proposed project is implemented are compared to identify the level of contrast a project's components may

introduce. Photographic simulations are often created to help visualize the impacts to the existing landscape and to aid in the description of the proposed Project components. These simulations are created using a combination of Geographic Information Systems (GIS) and current 3D software to ensure accuracy in the locations of the proposed Project components.

5.0 AFFECTED ENVIRONMENT

5.1 Regional Landscapes

The proposed Project site is located in the west/central portion of the Antelope Valley, which is part of the Mojave Desert basin. The Antelope Valley is broad and relatively flat, with little variation in topography. The valley is shaped like a sideways letter "V," sloping northward toward the Tehachapi Mountains and southward toward the San Gabriel Mountains. The western portion of the valley slopes upward toward the point where these two mountain ranges come together at the junction of the San Andreas and the Garlock faults. In the Project area, these mountain ranges are characterized by many complex and well-eroded hills rising approximately 2,000 to 7,000 feet above the valley floor. Many small valleys and drainage complexes are visible in the foothills that border the valley.

Surface water is rarely observed in the Antelope Valley. There are many washes that meander across the valley; however, these streams are dry for the majority of the year and only fill with water during the spring snow melt originating from the nearby mountains and after major rain events. Concrete-lined aqueducts, which include the California Aqueduct and the Los Angeles Aqueduct, parallel the natural contours of the foothills of the San Gabriel and Tehachapi Mountains. Recreational trails line the California Aqueduct, which is located approximately nine miles south of the Project site.

Desert woodland vegetation native to the Mojave Desert includes tall, irregular Joshua trees, and round juniper shrubs ranging from 4 to 10 feet tall (City of Lancaster 2009a). In most of the Project area, the native woodland vegetation has been cleared for agricultural use. Irrigated agricultural areas appear as square, rectangular, or circular green shapes on the brown-toned desert landscape. Root vegetables and fruit trees, as well as alfalfa, hay, and grapes are grown in the valley. In portions of the Project area where agriculture has yet to be developed or has been abandoned, a mixture of short grasses, wildflowers, and low desert scrub bushes are common. During the spring bloom, wildflowers cover the valley in brilliant displays of orange, yellow, and purple wildflowers (City of Lancaster 2009a). On the slopes of the foothills to the north and south, low woody vegetation is common, and includes scrub oak, sagebrush, creosote, and juniper bushes. During the spring and early summer, this vegetation appears in varying shades of dark and light green. During the fall and winter, patches of dark brown and grayish red hues are visible.

There are several well-developed cities in the Project area. The Project site is situated approximately 0.5 mile south of the boundary between Los Angeles and Kern counties. The Project site is located approximately 5 miles southwest of developed areas associated with the town of Rosamond. Rosamond is a developed community that serves as the entrance to Edwards Air Force Base, and has a population of more than 10,000. Lancaster and Palmdale,

located approximately 6 and 14 miles south of the proposed Project site respectively, together have a population of more than 300,000.

Energy facilities and infrastructure are common in the western Antelope Valley. Several high-voltage transmission lines (constructed as both single pole structures and lattice structures) cross the area and converge at the Antelope Substation located approximately 8.2 miles south of the Project site, and the Whirlwind Substation located approximately 6.8 miles northwest of the Project site. Large-scale wind energy developments are located approximately 10 miles north/northwest of the Project site along the foothills of the Tehachapi Mountains.

The area within five miles of the Project site is largely rural. Irrigated agricultural fields are common to the north and northwest. Clusters of residential development are located approximately 2 miles southeast (known as Antelope Acres) and 2.5 miles to the northeast. The Project site is visually screened from Antelope Acres by Little Buttes, which is less than a mile southeast of the Project site. Little Buttes is an isolated hill surrounded by flat desert, which is considered a scenic area by the City of Lancaster (City of Lancaster 2009a). Little Buttes has hiking trails, but they are largely unmarked social trails and no formal scenic overlook or parking areas have been established by signage. Photo 6 in Appendix C shows a view from a social trail at the top of Little Buttes towards the Project area. Additional clusters of residential development are located approximately 2.5 miles northeast of the Project site. There are thirteen rural residences that appear to be occupied within a mile of the Project site boundaries. These residences typically have several outbuildings, and some have planted trees around the residence. The combination of structures and vegetation provides some degree of visual screening.

5.2 Project Site Description

The Project site itself is located in the west/central portion of the Antelope Valley, and it is very flat, sloping gradually downwards from approximately 2479 feet above mean sea level (AMSL) on the Project site's western border to approximately 2473 feet AMSL along the eastern border.

The San Gabriel Mountains foothills are visible in far-off views to the south from the site. The Tehachapi Mountains are visible in far-off views to the northwest. Both mountain ranges appear hazy from the Project site due to distance, and topographic details other than the ridgelines are indistinct. The area immediately surrounding the site is characterized by a predominantly flat landscape. The Little Buttes area, just west of 90th Street West approximately one mile southeast of the Project site, provides some isolated topographic variation.

Photos 2 and 7 in Appendix C show various views towards the Project site from the west along West Avenue B. Both Photo 2 and Photo 7 are taken from locations adjacent to the Project site. The Project site is fallow agricultural land that was previously used for irrigation farming (alfalfa production). There is one residence which is currently vacant, located along 105th Street West. The residences and associated outbuildings would be demolished as part of the Project. No drainage features were identified on the Project site. A dirt track runs east-west across the project site approximately 0.1 mile north of West Avenue B, connecting the residence area with 100th Street West. Another dirt road, 107th Street West, runs north/south through the western portion of the Project site. A high-voltage electric transmission line runs north/south through the

Project site. An electric distribution line is located along the southern boundary of the Project site, along the westbound lane of West Avenue B.

Vegetation types on the Project site are categorized as Disturbed Saltbush Scrub, Ruderal, and Disturbed or Barren. The majority of the site is categorized as Disturbed Saltbush Scrub. This community is similar to intact Desert Saltbush Scrub in that saltbush species (*Atriplex spp.*) are an important component, but the Disturbed Saltbush Scrub is of low-quality with a higher percentage of non-native weedy species (greater than 20 percent of the species composition) and shows prior disturbance from grading, over-grazing, or other ground-disturbing activities. Cover of native vegetation is low with significant bare ground between widely spaced shrubs. Plant species found within the site that are typical of Disturbed Saltbush Scrub communities include allscale (*Altriplex polycarpa),* foxtail chess (*Bromus madritensis ssp. Rubens)* and western tansy-mustard (*Descuriania pinnata)*. Areas in the western portion of the project are classified as Ruderal. Ruderal areas are dominated by pioneering herbaceous species that readily colonize disturbed ground and are typically found in temporary, often frequently disturbed habitats.

The Disturbed or Barren area includes an area surrounding the residence (which is classified as Developed) that appears to have been graded and the dirt track that parallels West Avenue B approximately 0.1 mile north of West Avenue B. Disturbed areas are either devoid of vegetation or areas that have a high percentage of non-native weedy species.

5.3 Scenic Resources

Section 4.1 of this report identifies categories of scenic resources located within the Project area. The following sections identify which of those scenic resources may be potentially impacted by the proposed Project.

5.3.1 Scenic Vistas

The locations of these resources in relation to the proposed Project site are shown in Figure 3. The Project will not be visible from Piute Ponds or Little Rock Wash, which are both located over 10 miles away from the Project site on the east side of the Antelope Valley Freeway. It is highly unlikely that the Project will be visible the Foothills Area or Quartz Hill, which are both located over 9 miles from the Project site. Even though these areas are at higher elevations than the Project site, from this distance the proposed Project will fade into the flat landscape.

The Project may be visible from certain locations in the California Poppy Reserve, and will be visible from the Little Buttes area. The California Poppy Reserve is located approximately 4.7 miles southwest of the Project site. The California Poppy Reserve is a hilly area that is a higher elevation than the surrounding desert to the south and west of the Project site. While most views towards the Project site from the interior of the preserve will be screened by terrain, it is possible that the Project site would be visible from some locations. At a distance of five miles, however, the Project site will be barely discernible, and largely fade into the flat landscape. If it is discernible, it will appear as a rectangular form similar to an agricultural field in shape and size.

5.3.2 Scenic Highways or Corridors

Photos 1, 2, 3, 4, and 6 show views towards the Project area from various roadways around the Project site. The Project site is bordered by West Avenue B to the south, and 110th Street West to the west. Both West Avenue B and 105th Street West are visible in Photo 2 in Appendix C. West Avenue B and 110th Street West are paved roads with medium/light gray gravel and a dashed yellow centerline with dirt shoulders. West Avenue B is a paved road between the Sierra Highway and 110th Street W. West of 110th Street W, West Avenue B it becomes an intermittent dirt road. West Avenue B and 110th Street west are not main thoroughfares, and appear to serve mostly local traffic. 105th Street West is a tan-colored dirt road that appears to serve only farm and local residential traffic.

90th Street West is located approximately 1.3 miles east of the Project site, and is considered a potential scenic route by the City of Lancaster's MEA (City of Lancaster 2009a). 90th Street West is located at a slightly lower elevation than the proposed Project site. As shown in Photo 8 in Appendix C, the landscape between 90th Street West north of West Avenue B and the Project site is very flat. South of 90th Street west, the proposed Project would be screened by higher elevation terrain associated with the Little Buttes area (Photo 9). Because of the low profile of the solar modules and the level to lower elevation of 90th Street West compared to the Project site, where visible the Project will likely fade into the flat landscape and not dominate the view.

5.3.3 Significant Ridgelines and Hillside Management Areas

No designated significant ridgelines are located within the Project area. The Project site is flat with a grade of less than 25 percent, and therefore the Hillside Management Ordinance does not apply to the Project site.

5.3.4 Riding and Hiking Trails

The nearest trails identified are associated with Little Buttes, approximately 0.7 mile southeast of the Project site. The proposed Project will be visible from trails in the Little Buttes area when not screened by topography. The Project may also be visible from trails within the California Poppy Reserve where not screened by topography, located approximately 4.7 miles southwest of the Project site. If visible from the Poppy Reserve, the Project will largely fade into the flat landscape and appear similar to an agricultural field in size, shape, and color.

The Pacific Crest Trail (PCT) crosses the Tehachapi Mountains and at the base of the foothills of the Tehachapi Mountains, and is located approximately 8 miles northwest of the Project site at its closest point. Wind energy facilities, substations, and transmission lines are located between the Project site and the PCT. The Project may be visible from the PCT, but from an 8 mile distance, the Project would appear as a rectangular shape not unlike an agricultural field.

5.3.5 Undisturbed Land

Disturbance is evident on the Project site as well as in lands surrounding the Project site. The Project site and surrounding land is primarily unproductive agricultural land dominated by non-native vegetation species. Cultural modifications to the landscape surrounding the Project site

include rural residences, agricultural fields, high-voltage electric transmission lines, electrical distribution lines, roadways, communications towers, and a water treatment plant.

6.0 VISUAL IMPACT ANALYSIS

Using the CEQA checklist criteria provided in the County of Los Angeles' Environmental Checklist Form (presented in Section 3 of this report), the visual impacts from the proposed Project were assessed:

(a) Would the project have a substantial adverse effect on a scenic vista?

Recommended Rating: LESS THAN SIGNIFICANT IMPACT

According to the Los Angeles County Environmental Checklist Form, potential impacts could result from obstructing views to or from the scenic resource, degrading the character of a scenic highway, or disrupting a scenic vista.

Of the scenic resources locations identified by the City of Lancaster, the proposed Project will be visible from Little Buttes, and may be visible from higher elevations in the California Poppy Reserve where views are not blocked by terrain. Other scenic resources identified by the City of Lancaster (Piute Ponds, Little Rock Wash, the Foothills Area, and Quartz Hill) are located a sufficient distance away such that the Project will fade into the horizon line and not be discernible. The Antelope Valley is extremely flat, which limits the visibility of the Project unless the viewer is located in a superior position (at an elevation higher from the object/location being viewed). Even from a superior viewing position along the Pacific Crest Trail, a viewer is not likely to be able to distinguish the Project site at a distance of 8 miles away from the Project site. If the Project was visible from that distance, it will not appear dissimilar to an agricultural field in shape and color.

A visual simulation was developed from a viewpoint on top of Little Buttes at approximately 2577 feet AMSL, approximately 100 feet in elevation higher than the southeast corner of the Project site (elevation 2474 feet AMSL). The viewpoint was located approximately 0.7 miles southeast of the southeast corner of the Project site. The visual simulation and a photograph of existing conditions are shown in Figure 4. A contrast rating (Appendix D) was conducted to evaluate the degree of contrast that would be introduced to the landscape at this viewpoint by the proposed Project. The overall contrast introduced to the landscape at this viewpoint was evaluated to be weak. No changes are anticipated to landforms. The visual effects of vegetation removal would be screened by the solar modules, and this change would not be visible from this perspective. The installation of the solar modules would create a weak contrast in terms of form, and a moderate contrast in terms of line, color, and texture. The rectangular shape of the solar field mimics the shape of an agricultural field. The lines of the solar field are stronger and more distinct than the lines along the edges of agricultural fields. The color of the solar field is darker than the surrounding fallow agricultural fields. The texture of the solar field is smoother and more evenly spaced than the randomly stippled vegetation that exists on the landscape, but the difference is not pronounced. The lines created by the edges of the solar field are more distinct than the lines created by field edges, and create a moderate contrast on the landscape. The overall contrast rating from this viewpoint was evaluated as moderate.

Simulation.

Existing.

Figure 4. Photo Simulation – From Little Buttes

The MEA identifies several roadways that could potentially serve as scenic routes in the future, but currently have no formal designation. This includes 90th Street West, which is located approximately 1.3 miles east of the Project site at a slightly lower elevation. Because of the low profile of the solar modules and the level to lower elevation of 90th Street West compared to the Project site, where visible the Project will likely fade into the flat landscape and not dominate the view.

Even where visible, the proposed Project components will not be a dominant element in the landscape unless the viewer is situated directly adjacent to the facility. At 8 feet tall, the PV modules are relatively short, and given their design, which is to absorb sunlight instead of reflecting it, the modules will not be highly reflective. From viewing points at approximately the same elevation as the solar facility, it will fade into the flat landscape and not dominate the view. In addition, other electric infrastructure, including the high-voltage transmission lines and a large wind farm are also visible from the Project site. Because this existing electrical infrastructure is also visible from scenic vistas from the PCT and Little Buttes, the proposed Project will not significantly degrade views from nearby scenic vistas.

(b) Would the project be visible from or obstruct views from a regional riding or hiking trail?

Recommended Rating: LESS THAN SIGNIFICANT IMPACT

The proposed Project will be visible from trails associated with the Little Buttes Area, and may be visible from trails inside the California Poppy Reserve, and from the PCT. As shown in Figure 4, the solar field would create a weak contrast in the existing landscape from the Little Buttes trails located approximately 0.7 miles southeast of the Project site. The Poppy Reserve and PCT are located 4.7 miles and 8 miles away from the Project site, respectively. If visible at these distances, the Project would not be a dominant element in the landscape and would appear as a rectangular pattern on the flat landscape, not dissimilar in form to other rectangular shaped land uses such as agricultural fields and the Antelope Substation. The proposed Project will not obstruct views from trails because of the low profile of the solar panels.

(c) Will the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

Recommended Rating: NO IMPACT

According to the Los Angeles County Environmental Checklist Form, impacts may occur from development of undisturbed lands on-site or in the vicinity of the Project area. All development and staging would occur on the Project site or on already disturbed areas. As described in Section 5.3.5, the Project site is disturbed land and is surrounded by cultural modifications.

As described in Question I(a), the proposed Project is not located along or in proximity to a state scenic highway. The proposed Project will not substantially damage or impact scenic resources such as trees (including Joshua Trees) or rock outcroppings, and there are no historic buildings located in the proposed Project site.

(d) Will the proposed project substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?

Recommended Rating: LESS THAN SIGNIFICANT

According to the Los Angeles County Environmental Checklist Form, the height/bulk of a proposed project could negatively impact the surrounding area depending on how well the design of the proposed project integrates with the visual character of its surroundings from the perspective of height, bulk, pattern, scale, character, or other features.

The existing site is currently a fallow agricultural field, and is typical of the surrounding landscape. The visual quality of the Project site is low. The Project site itself does not have unique or rare features, or hold special significance. The topography is uniform and flat. Vegetation is uniform and consists of grasses and short shrubs. No permanent water features occur on the site, and there are no features or characteristics that set the Project site apart from the surrounding landscape.

From elevated locations, the proposed Project would not dominate the view as shown in Figure 4. A second simulation was completed from a point along West Avenue B adjacent to the Project site. The simulation is shown in Figure 5. A contrast rating was conducted from this viewpoint and is included in Appendix D to assess the level of contrast that would be introduced by the proposed Project at this viewpoint. According to the contrast rating, the Project can be expected to introduce a strong level of contrast to the landscape from that viewpoint. Grading associated with the proposed Project would flatten out the landscape, removing visible piles of dirt near the existing house, creating a weak contrast. Removal of trees around the existing structures creates a weak contrast. Construction of the solar field creates a strong contrast due to the prominent addition of the solar modules adjacent to roadway.

Although a strong contrast is created when the viewer is adjacent to the proposed Project, the proposed Project integrates with the surrounding landscape because of its low, flat profile which mimics the lines of the flat landscape. From distances greater than 0.25 mile, the proposed Project will largely fade into the flat landscape. The Project will not be prominent unless the observer is situated directly adjacent to the solar field. Man-made elements are common in the landscape around the site. Electrical infrastructure within the viewshed of the Project site includes high-voltage transmission lines and distribution lines, and a large wind farm in the foothills of the Tehachapi Mountains. Other man-made elements in the landscape include farms and residences. Vegetation and the flat terrain will serve to partially screen the proposed Project from surrounding residences.

Because other man-made structures are common in the vicinity of the Project site and in the larger Project area, and because the Project site itself is not characterized by high visual quality, the impact of the Project on the existing visual character of the proposed Project site and its surroundings will be less than significant.

Simulation.

Existing.

Figure 5. Photo Simulation – From West Avenue B

(e) Will the project create a new source of substantial light or glare which will adversely affect day or nighttime views in the area?

Recommended Rating: LESS THAN SIGNIFICANT

According to the County of Los Angeles' Environmental Checklist Form, impacts may occur if shadows are cast upon nearby sensitive uses, or if reflective light or glare impeded views in and around the Project site.

Because of the low profile of the solar modules, no significant shadows will be cast upon nearby sensitive land uses. Impacts from new sources of light or glare are expected to be less than significant. The Project will not create a significant source of light. Light sources associated with the Project will be minimal, and will be restricted to that required for nighttime safety and security according to county requirements. Lighting will be installed and directed downward and shielded to avoid light trespass. The amount of light generated by the security lights will be consistent with existing sources produced by man-made structures adjacent to the proposed Project site, including residences, roadway lights, and the water treatment facility.

Project components will introduce minimal amounts of glare to the existing landscape. The Project PV modules are designed to absorb sunlight, and the glass modules that protect the PV surface are typically formulated glass designed to allow sunlight to pass with minimal reflection.

7.0 CONCLUSIONS

Implementation of the proposed Project is expected to have a less than significant impact on scenic resources and aesthetic values.

The following mitigation measures that will minimize visual impacts are incorporated into the Project design:

Construction Phase:

- Implement a Fugitive Dust Control Plan to minimize dust (visual pollution).
- The Project site will be maintained free of debris, trash, and waste during construction.

Operations Phase:

- The proposed structures onsite will be neutral colors (grays) and non-reflective.
- A landscape plan will be developed prior to Project construction that shows detail of any proposed earthwork or vegetation intended to screen the Project visually from area residents or travelers on nearby roadways.
- Lighting will be pointed downwards to minimize light trespass, and mounted on essential infrastructure rather than on separate light poles

8.0 REFERENCES

Association of Environmental Professionals. 2012. 2012 California Environmental Quality Act (CEQA) Statute and Guidelines. Available online at: http://ceres.ca.gov/ceqa/docs/CEQA_Handbook_2012_wo_covers.pdf (Accessed June 20, 2012).

Lancaster, City of. 2009a.General Plan 2030 Master Environmental Assessment. Available online at: http://www.cityoflancasterca.org/Modules/ShowDocument.aspx?documentid=11352 (Accessed February 18, 2012.)

Lancaster, City of. 2009b. General Plan 2030. Available online at: http://www.cityoflancasterca.org/index.aspx?page=427 (Accessed February 18, 2012.)

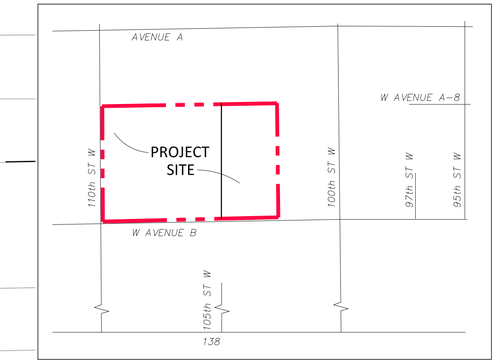
Los Angeles County, 1986. *Antelope Valley Areawide General Plan.* Available online at: http://planning.lacounty.gov/assets/upl/data/tnc_avap.pdf. (Accessed February 22, 2012).

Los Angeles County. 1980. County of Los Angeles General Plan. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_web80-introduction.pdf. (Accessed February 22, 2012).

University of California, Santa Barbara. *Management Recommendations for Piute Ponds Edwards Air Force Base, California.* 2009. Available online at: http://ees.bren.ucsb.edu/research/documents/Piute_Brief.pdf. (Accessed February 20, 2012).

APPENDIX A

SITE PLAN



VICINITY MAP
NO SCALE

PROJECT SITE:
PROJECT SITE IS 239 ACRES (NET)

NOTES:

1. 'ZONE X' AS SHOWN ON PANEL 0150F OF FLOOD INSURANCE RATE MAP NO. 06037C0150F. ZONE "X" DESIGNATED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

2. FIRE DEPARTMENT ACCESS DEVICE AND EMERGENCY CONTACT PLACARD LOCATED AT ALL ENTRANCE GATES.

3. MOBILE SANITATION FACILITY, AS DEFINED BY THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH, CAN BE LOCATED AT ALL PARKING LOCATIONS AND WILL BE LOCATED AT THE NEAREST LOCATION TO CONSTRUCTION AND OPERATIONAL WORKERS ACTIVITY. THE FACILITIES WILL BE KEPT TO LOS ANGELES COUNTY CODE, TITLE 11 – HEALTH & SAFETY, AND CAL-OSHA SANITATION STANDARDS IN SECTION 3360, TITLE 8, CALIFORNIA CODE OF REGULATIONS. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-07.

4. INTERIOR ACCESS ROADS WILL BE 20' WIDE, COMPACTED TO 90%, WITH 32 FOOT TURNING RADIUS AT CENTER LINE. THE INNER RADIUS WILL BE 22' AND THE OUTER RADIUS WILL BE 42'. INTERIOR ACCESS ROADS WILL BE PROVIDED TO INVERTER/ELECTRICAL EQUIPMENT PADS AND AROUND THE PERIMETER OF THE PROJECT. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-07.

5. 10 FOOT WIDE SLOPE EASEMENT WILL BE PROVIDED AROUND PERIMETER.

6. DRIVEWAY ACCESS GATES TO BE SET 40 FEET BACK FROM EDGE OF PROPERTY. DRIVEWAY WILL BE 24 FEET WIDE.

7. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION DURING DETAILED DESIGN.

8. TANK CONNECTIONS PER LOS ANGELES COUNTY FIRE DEPARTMENT.

LEGEND:

MIN	MINIMUM
ROW	RIGHT OF WAY
℄	CENTERLINE
x x	FENCE LINE
	OVERHEAD LINE
	UNDERGROUND LINE
	PROPERTY LINE (AFTER ROW DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
(2470)	CONTOUR LINE
	SOLAR ARRAY FIELD
	10' WIDE VEGETATIVE BUFFER
	10' WIDE SLOPE EASEMENT
	12' WIDE DEDICATION FOR LITTLE BUTTES TRAIL

200 0 200 400
SCALE IN FEET

1"=200'
WHEN PRINTED TO SCALE ON 22"x34" SHEET

C-01
2011-00833 (RCUP201100079)

REGISTERED PROFESSIONAL ENGINEER JULIE ANN DELANEY No.C54558 CIVIL STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	09/05/13	EXPANDED SITE	JD	SP
B	6/20/12	REVISIONS FOR COUNTY	JD	SP
A	5/26/11	INITIAL ISSUE	JD	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch

Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

DRAWING: Site Plan

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 1 NORTH
LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\CAD\PROJECTS\106-4336 SILVERADO POWER\SP LA\5-COUNTY SUBMITTAL-C_ER\C-01-SITE-4.DWG
PLOT/UPDATE: Aug 28, 2013 - 11:53:19 PM

APPENDIX B

CORRESPONDENCE WITH LOS ANGELES COUNTY/ ENVIRONMENTAL CHECKLIST FORM

Correspondence with Los Angeles County/ Environmental Checklist Form

Good Afternoon Mike,

Before I respond to your question below, please note that your opening paragraphs on Regulatory Setting section 3.1.3 are not up to date with revised County procedures. Let me clarify that first.

1) With regard to thresholds of significance, generally they are derived from the County of Los Angeles Department of Regional Planning's Initial Study Checklist, which is based on Appendix G of the CEQA Guidelines with County-specific additional items. Please use the attached updated County version.

2) The 2005 County CEQA Guidelines cited are currently in process of revision. Please use attached I.S. and the most recent version (January, 2012) of the State CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387) also available from http://ceres.ca.gov/ceqa/docs/CEQA_Handbook_2012_wo_covers.pdf). It will not be necessary at this time to cite the 2005 County CEQA Guidelines document.

3) We will have to discuss further where to include discussion of relevant Lancaster "Sphere of Influence" information included in Section 3.1.3 City of Lancaster General Plan and Master Environmental Assessment. We do not normally include other non-binding jurisdictional material in the regulatory setting section for Projects solely within County jurisdiction.

With regard to your question below, does the visual analysis you provided include the expanded analysis, or, are you asking if the attached requires an expanded analysis?
Whatever the case may be, please make the necessary changes regarding use of the above-mentioned County and State documents. We will also need to discuss how and where the Lancaster "Sphere of Influence" discussion is to be framed and located within the document.
Kim

Mr. Kim Szalay, AICP
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Special Projects Section
Department of Regional Planning
320 W. Temple Street
Los Angeles, CA 90012
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213-974-4876

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From: DiSano, Michael [mailto:Michael.DiSano@tetratech.com]
Sent: Wednesday, May 16, 2012 4:58 PM
To: Blengini, Carolina
Cc: Szalay, Kim; Low, Tara
Subject: Aesthetics

Carolina,

I was wondering if you think we should expand our technical study in regards to Aesthetics? Attached is the finalized visual document for your reference. I don't think it would be necessary to do a contrast rating but I want to defer to you as the Lead Agency to make that determination.

Regards,

Michael Di Sano | **Assistant Project Manager**
Direct: 949.809.5034 | Main: 949.806.5000 | Fax: 949.809.5004
Michael.DiSano@tetratech.com

Tetra Tech
17885 Von Karman Ave | Irvine, CA 92614-5227 | www.tetratech.com

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Environmental Checklist Form (Initial Study)

County of Los Angeles, Department of Regional Planning

Project title: "Project Name" (if applicable) / Project No. / Case No(s). (All entered text should be Garamond font, size 11 or 12, underlined, single-spaced, and align-justified)

Lead agency name and address: _____

Contact Person and phone number: _____

Project sponsor's name and address: _____

Project location: (Address)
APN: _____ *USGS Quad*: _____

Gross Acreage: _____

General plan designation: _____

Community/Area wide Plan designation: _____

Zoning: (In addition to the zoning designation, indicate which Community Standards District the property is located within, if applicable.)

Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation.)

Surrounding land uses and setting: (Briefly describe the project's surroundings.)

Other public agencies whose approval may be required (e.g., permits, financing approval, or participation agreement):

Public Agency	*Approval Required*
_____	_____
_____	_____

Major projects in the area:

Project/Case No.	*Description and Status*
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Reviewing Agencies: **[***See* **CEQA Appendix B** *to help determine which agencies should review your project***]**

Responsible Agencies

- ☐ None
- Regional Water Quality Control Board:
  - ☐ Los Angeles Region
  - ☐ Lahontan Region
- ☐ Coastal Commission
- ☐ Army Corps of Engineers

Special Reviewing Agencies

- ☐ None
- ☐ Santa Monica Mountains Conservancy
- ☐ National Parks
- ☐ National Forest
- ☐ Edwards Air Force Base
- ☐ Resource Conservation District of Santa Monica Mountains Area
- ☐

Regional Significance

- ☐ None
- ☐ SCAG Criteria
- ☐ Air Quality
- ☐ Water Resources
- ☐ Santa Monica Mtns. Area
- ☐

Trustee Agencies

- ☐ None
- ☐ State Dept. of Fish and Game
- ☐ State Dept. of Parks and Recreation
- ☐ State Lands Commission
- ☐ University of California (Natural Land and Water Reserves System)

County Reviewing Agencies

- ☐ DPW: (delete those that don't apply)
  - Land Development Division (Grading & Drainage)
  - Geotechnical & Materials Engineering Division
  - Watershed Management Division (NPDES)
  - Traffic and Lighting Division
  - Environmental Programs Division
  - Waterworks Division
  - Sewer Maintenance Division
- ☐ Fire Department (delete those that don't apply)
  - Forestry, Environmental Division
  - -Planning Division
  - Land Development Unit
  - Health Hazmat
- ☐ Sanitation District
- ☐ Public Health/Environmental Health Division: Land Use Program (OWTS), Drinking Water Program (Private Wells), Toxics Epidemiology Program (Noise)
- ☐ Sheriff Department
- ☐ Parks and Recreation
- ☐ Subdivision Committee
- ☐

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project.

☐ Aesthetics	☐ Greenhouse Gas Emissions	☐ Population/Housing
☐ Agriculture/Forest	☐ Hazards/Hazardous Materials	☐ Public Services
☐ Air Quality	☐ Hydrology/Water Quality	☐ Recreation
☐ Biological Resources	☐ Land Use/Planning	☐ Transportation/Traffic
☐ Cultural Resources	☐ Mineral Resources	☐ Utilities/Services
☐ Energy	☐ Noise	☐ Mandatory Findings of Significance
☐ Geology/Soils		

DETERMINATION: (To be completed by the Lead Department.)
On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature (Prepared by) Date

_____ _____

Signature (Approved by) Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources the Lead Department cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the Lead Department has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level. (Mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced.)

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA processes, an effect has been adequately analyzed in an earlier EIR or negative declaration. (State CEQA Guidelines § 15063(c)(3)(D).) In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of, and adequately analyzed in, an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

7) The explanation of each issue should identify: the significance threshold, if any, used to evaluate each question, and; mitigation measures identified, if any, to reduce the impact to less than significance. Sources of thresholds include the County General Plan, other County planning documents, and County ordinances. Some thresholds are unique to geographical locations.

8) Climate Change Impacts: When determining whether a project's impacts are significant, the analysis should consider, when relevant, the effects of future climate change on : 1) worsening hazardous conditions that pose risks to the project's inhabitants and structures (e.g., floods and wildfires), and 2) worsening the project's impacts on the environment (e.g., impacts on special status species and public health).

1. AESTHETICS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☐

General Discussion

The purpose of this question is to identify the scenic resources that exist on the project site and in the surrounding area and determine how the proposed project will impact those resources. If your project is directly adjacent to another jurisdiction, ensure it is not affecting any scenic resource in that jurisdiction. Potential impacts could result from obstructing views to or from the scenic resource, degrading the character of a scenic highway, or disrupting a scenic vista. The preparer should identify

- Designated scenic highways adjacent to or in proximity to the project site (State-designated highways are listed in the Stock Language Section below);
- Scenic highways, corridors, and resources designated by the County General Plan and the applicable Area/Community Plan or Local Coastal Program;
- Scenic highways or corridors designated by cities adjacent to or near the project site; and
- Significant ridgelines (major ridgelines on Santa Catalina Island).

If the proposed project is not sited near any designated scenic highways, significant ridgeline, or other identified scenic resources, then it is unlikely that the proposed project would result in any impacts related to having a substantial adverse effect on a scenic vista.

Resources

- GIS-NET Scenic Highways layer (in the "Transportation" folder) and Significant Ridgelines layer (in the "Administrative Layers & Districts" folder)
- State of California CalTrans Scenic Highway Mapping System (Updated 9/7/2011): http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

Potential Mitigation

- Mitigation may include reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors, use of earth tone colors and landscaping.
- Specific mitigation measures will be tailored to each proposed project.

b) Be visible from or obstruct views from a regional riding or hiking trail?	☐	☐	☐	☐

General Discussion

The purpose of this question is to determine how the proposed project would impact riding or hiking trails. Riding trails can include horseback riding, biking, hiking, etc. The preparer should identify:

- Designated or proposed trails traversing, adjacent to, or in proximity to, the project site; and

- Designated trails in cities adjacent to or near the project site.

Impacts would arise from the vacation of a portion of the trail, degrading the scenic character in and around the trail, as well as obstructing expansive views visible from the trial's course but not compromising the trail itself. If the proposed project is not sited near any designated riding or hiking trails, then it would not result in any impacts related to having a substantial adverse effect on these resources. Subdivision trail requirements are imposed through Subdivision Committee Meetings.

Resources

- GIS-NET Trails layer (in the "Transportation" folder) – make sure to cite the map source and year.

Potential Mitigation

- Reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will be tailored to each proposed project.

c) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? ☐ ☐ ☐ ☐

General Discussion

This question is concerned with how the proposed project would impact other scenic resources that are not identified in the first two questions, and specifically, impacts to trees, rock outcroppings, historic buildings, and undisturbed areas. For this question, the preparer should identify:

- Other scenic resources designated by the General Plan and applicable Community or Area plan, or Local Coastal Program in the vicinity of the project site;
- Undeveloped or undisturbed areas either on the project site or in the vicinity of the project site;
- Hillside management areas – impacts from grading, any alteration of topography (indicate the quantity);
- Nationally- or state-designated historic resources on, or in the vicinity of, the project site (the County does not currently have an historic preservation ordinance and thus does not designate any historic resources itself)

Development of on-site, greenfield conditions is likely to result in a significant impact given the previously undisturbed nature of the land. Similarly, previously undisturbed land in the vicinity of the project site may be impacted by the buildout of the proposed project if that land is used for construction staging or in some other phase of project buildout.

Resources

- List of Historic resources and points of interest designated by the State of California in unincorporated Los Angeles County - file://regionalfp1/E-DRIVE/Current%20Planning/Wiki/environmental_doc/Historic_sites.pdf
- California Office of Historic Preservation: http://ohp.parks.ca.gov/

- National Register of Historic Places: http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome
- State Register of Historic Places: http://ceres.ca.gov/geo_area/counties/Los_Angeles/landmarks.html

Potential Mitigation

- Reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will need to be tailored to each proposed project and with regard to their specific project site context.
- Compliance with the Hillside Management Ordinance to mitigate impacts in designated hillside management areas to a less than significant level.
- Regarding historic structures, because they are protected by law, mitigation may include complete project redesign or integration of the historic structure into the proposed project.

d) Substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features? ☐ ☐ ☐ ☐

General Discussion

This question wants to know how well the design of the proposed project would integrate with the visual character of its surroundings and the project's level of visual integration from the perspective of height, bulk, pattern, scale, character, or other features. If site photos are unavailable, perform a site visit and document the visual character of the project site and surroundings. Note that state and local laws do not protect views from private properties through the project site of some scenic resource. However, views of a scenic resource through the project site from public space (such as significant recreation or scenic areas such as the Santa Monica Mountains) or designated scenic highways are protected and should be noted. The preparer should take note of:

- The prevailing building heights (specifically, the height in feet and stories of the tallest structure in the vicinity of the project site), architectural styling, and setbacks;
- Hillside management areas – impacts from grading, any alteration of topography (indicate the quantity); and,
- Views of the project site from nearby vantage points.

It is unlikely that the architectural style employed by the proposed project will negatively impact the surrounding community given the wide variety of architectural styles found throughout southern California. However, the height/bulk of the proposed project could negatively impact the surrounding area. Ultimately, the final impact determination will have to do with how well the proposed project integrates with the surrounding neighborhood.

Resources

- Site photos, Site visits, and Project renderings

Potential Mitigation

- Mitigation may include project redesign, reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.

- Specific mitigation measures will be tailored to each proposed project and with regard to their specific project site context.
- Though already required by law, the preparer should mention compliance with the Hillside Management Ordinance to be used to mitigate impacts in designated hillside management areas to a less than significant level.

e) Create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area? ☐ ☐ ☐ ☐

General Discussion

The preparer must determine whether or not the proposed project would be a new source of substantial shadows, light, or glare. A substantial amount of shadows is dependent upon a combination of factors including the height of the proposed project, the width of the street on which the proposed project is located, the proposed project's setbacks, and the project site's distance from nearby sensitive uses (residences, schools, parks, etc), and how long any shadows created by the proposed project are cast upon those sensitive uses. A land use survey of sensitive uses around the project site may be needed. If there are no sensitive uses nearby, there will be no shade/shadow impacts. For projects only achieving a couple of floors, it is unlikely that they will generate shadows of sufficient size to be cast upon nearby sensitive uses. However, with taller projects, it is far more likely that shadows will be cast upon nearby sensitive uses, and a shade/shadow modeling may be required. Note that Los Angeles County does not have any significance thresholds for determining potential impacts.

For light or glare, the preparer must take note of the project's surface materials, lighting program, and any signage component. Regarding glare, a project containing large expanses of windows and covered with lots of reflective surfaces could potentially result in a significant impact as light reflecting from the proposed structure may impede views in and around the project site. A project that contains a significant amount of light that is not shielded may significantly impact views in the project vicinity as the light pollution may hinder views of the night sky and other visual elements. However, the proposed project would be unlikely to result in a significant impact regardless of the amount of light generated because it would be required to comply with the County's Dark Skies Ordinance (once adopted). This ordinance would address such things as directing lighting toward the ground and shielding lights to prevent light pollution.

Resources

- Shade/shadow model (if needed)
- Check with Building & Safety
- Note: San Gabriel CSD 45 degree angle clauses related to glare and light

Potential Mitigation

- Since Los Angeles County does not have any adopted significance thresholds, the best way to mitigate any potentially significant shadow impacts would be to break up the shadow as much as possible, which may require that the applicant redesign the project such that the massing is broken up to create passages through which light may pass or that the applicant reorient the proposed structure such that the shadows generated are smaller.
- Potential mitigation for glare impacts may include requirements that all non-glass reflective surfaces be sanded down to reduce the project's reflectivity and on all glass surfaces, that the

developer apply a low reflective coating, use of tinted windows or even curtains;
- Potential mitigation for light generation includes compliance with Los Angeles County's Dark Skies Ordinance.

EVALUATION OF ENVIRONMENTAL IMPACTS:

Official State Scenic Highways are designated by the California Department of Transportation (CalTrans). According to CalTrans, "[t]he stated intent (Streets and Highway Code Section 260) of the California Scenic Highway Program is to protect and enhance California's natural beauty and to protect the social and economic values provided by the State's scenic resources" (State of California Department of Transportation, California Scenic Highway Program, website: http://www.dot.ca.gov/dist3/departments/mtce/scenic.htm, accessed October 6, 2011). While there are numerous designated Scenic Highways across the state, the following have been designated in Los Angeles County: Angeles Crest Highway (Route 2) from just north of Interstate 210 to the Los Angeles/San Bernardino County Line, two segments of Mulholland Highway from Pacific Coast Highway to Kanan Dume Road and from west of Cornell road to east of Las Virgenes Road, and Malibu Canyon-Las Virgenes Highway from Pacific Coast Highway to Lost Hills Road.

In addition to scenic highways, unincorporated Los Angeles County identifies ridgelines of significant aesthetic value that are to be preserved in their current state. This preservation is accomplished by limiting the type and amount of development near them. These "Significant Ridgelines" ("Major Ridgelines" on Santa Catalina Island) are designated by the General Plan or applicable Area/Community Plan, Local Coastal Program, or Community Standards District.

Riding and hiking trails have been designated throughout unincorporated Los Angeles County. At present, there are officially adopted trails in the Antelope Valley, the Santa Clarita Valley, and the Santa Monica Mountains designated by the General Plan or applicable Area/Community Plan and Local Coastal Program.

FOR projects in Hillside Management Areas:

The Hillside Management Ordinance (Los Angeles County Code Title 22, Section 22.56.215) is designed to protect designated hillsides from incompatible development. The County of Los Angeles designates two hillside management areas, one urban and one non-urban with both designations applying to properties that have hillsides with a 25 percent grade or greater. The ordinance protects these resources by requiring almost all development on properties with either the urban or non-urban designation to obtain a conditional use permit with the intent of preserving the remaining natural topography.

Briefly describe the proposed project, the environmental and/or regulatory setting related to all of the questions above, and your environmental determination.

APPENDIX C

PROJECT AREA PHOTOGRAPHS

APPENDIX C

PROJECT AREA PHOTOGRAPHS

Photograph 1.

Photograph 2.

APPENDIX C

PROJECT AREA PHOTOGRAPHS

Photograph 3.

Photograph 4.

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PROJECT AREA PHOTOGRAPHS

Photograph 5.

Photograph 6.

APPENDIX C

PROJECT AREA PHOTOGRAPHS

Photograph 7.

Photograph 8.

APPENDIX D

CONTRAST RATING FORMS

TETRA TECH EC, INC.

VISUAL CONTRAST RATING WORKSHEET
FOR KOPS ON NON-NFS/BLM LANDS

Section A: Project Information

Project Name	Key Observation Point	Latitude / Longitude	Notes
Silver Sun Greenworks (CUP Group 6)	PP 13	34 48'19.11"N, 118 19'10.20" W	View northeast towards the project from West Avenue B.

Section B: Characteristic Landscape Description

	LAND / WATER	VEGETATION	STRUCTURES
FORM	Foreground/Middleground (FG/MG): Horizontal, flat, level; Low, horizontal mound (soil pile) Background (BG): Irregular, rugged (mountains)	FG/MG: Individual shrubs are small and medium, rounded. Shrubs form solid patch; Larger rounded shrubs and trees along roads and near houses. BG: Indistinguishable	FG/MG: Tall, narrow, geometric, solid and transparent (transmission structures); Low, geometric (buildings/concrete wall); Straight, narrow strip (road) BG: Indistinguishable
LINE	FG/MG: Horizontal, straight; Slightly curved (soil pile) BG: Low, irregular, horizontal, mountain silhouettes	FG/MG: Straight, diagonal abut edge (along road); Low, horizontal, straight thin strip (trees around residential) BG: Indistinguishable	FG/MG: Vertical straight and angular, triangular (transmission structures); buildings and wall create short horizontal and vertical lines;: Parallel, straight, diagonal bands (road) BG: Indistinguishable
COLOR	FG/MG: Tan BG: Tan and brown; Bluish due to distance and atmospheric conditions	FG/MG: Small shrubs are grayish-green; golden yellow; Larger shrubs/trees are green and dark green BG: Indistinguishable	FG/MG: Light and dark gray, dark brown (transmission structures); Light gray, yellow (roads); Brown, light gray (buildings); Tan, brown (wall) BG: Indistinguishable
TEXTURE	FG/MG: Fine BG: Fine to medium	FG/MG: Medium dense (shrubs); Medium to fine grain (trees) BG: Indistinguishable	FG/MG: Fine to medium, uniform, ordered (transmission structures); Fine to medium (buildings) BG: Indistinguishable

Section C: Proposed Activity Description

HAS PHOTO SIMULATION BEEN CREATED FOR KOP? ☒ Yes ☐ No IF YES, FIGURE NUMBER: Figure 5

	LAND / WATER	VEGETATION	STRUCTURES
FORM	FG: Removal of soil pile removes the low mounded form it created	FG/MG: Removal of trees around structure creates weak contrast	FG: Simple, long, narrow horizontal strip (solar field); Low, dome and geometric (ancillary structures/substation); Tall, narrow (transmission structures); Removal of existing buildings removes geometric forms they created
LINE	FG: Removal of soil pile removes the slightly curving line it created	FG/MG: Removal of trees makes smoother horizon line	FG: Low, horizontal, straight (solar field); Straight, thin, vertical (gen-tie structure) Low curved, straight, horizontal and vertical (ancillary structures/substation)
COLOR	FG: Removal of some tan color with the removal of the soil pile	FG/MG: Removal of trees removes grayish trees	FG: Dark gray (solar field); Gray, matte (transmission structures/ancillary facilities/substation).
TEXTURE	FG: Removal of soil pile removes some of the fine texture created by it	FG/MG: Removal of trees removes texture	FG: Fine, simple

Section D: Contrast Rating

FEATURES

ELEMENTS / DEGREE OF CONTRAST	LAND/WATER				VEGETATION				STRUCTURES			
	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
FORM			x				x				x	
LINE			x				x			x		
COLOR			x				x			x		
TEXTURE			x				x				x	

OVERALL LEVEL OF CONTRAST: Moderate

Section E: Viewer Sensitivity

VIEWER EXPECTATIONS	DURATION OF VIEW	USE VOLUME	OVERALL SENSITIVITY
Moderate	Moderate	Low	Moderate

ADDITIONAL COMMENTS

The low-profile of the solar panels does not block background views of the Willow Springs Butte or other distant mountain ranges. The form and lines created by the facility mimic the natural landscape and other cultural modifications within the landscape. However, the color of the solar field is in contrast with the surround lighter color vegetation; thus potentially attracting attention of the casual viewer.

EVALUATORS NAMES: Lori Davidson

DATE: July 5, 2012

TETRA TECH EC, INC.

VISUAL CONTRAST RATING WORKSHEET FOR KOPS ON NON-NFS/BLM LANDS

Section A: Project Information

Project Name	Key Observation Point	Latitude / Longitude	Notes
Silver Sun Greenworks (CUP Group 6)	PP 15	34 47'53.84"N, 118 18'15.29" W	View northwest towards the project from Little Butte.

Section B: Characteristic Landscape Description

	LAND / WATER	VEGETATION	STRUCTURES
FORM	Foreground/Middleground (FG/MG): Horizontal, flat, level Background (BG): Gently sloping (bajada) leading to Irregular, rugged (mountains)	FG/MG: Individual shrubs are small, rounded. Shrubs form large, rectangular patches; Larger rounded shrubs/trees along roads and near houses. BG: Amorphous patches	FG/MG: Straight, narrow strips (roads); Tall, narrow (transmission poles); Low, narrow, regularly spaced (distribution poles); Low, geometric (buildings) BG: Many simple, tall (wind turbines)
LINE	FG/MG: Horizontal, straight BG: Irregular, horizontal, diagonal, mountain silhouettes	FG/MG Boundary between dense and sparse shrub patches form straight, horizontal lines abutting field edge (at roads and field lines); BG: Horizontal, digitized edge (top of peak)	FG/MG: Parallel, straight, diagonal bands (road); Subtle, tall, straight, vertical (transmission/distribution poles); buildings create short horizontal and vertical lines BG: Subtle, straight (wind turbines)
COLOR	FG/MG: Light tan BG: Light tan, tan, reddish-brown, bluish due to distance and atmospheric conditions	FG/MG: Small shrubs are grayish-green, larger shrubs/trees are olive green BG: Dark green	FG/MG: Light gray (roads); Light gray (transmission); Dark brown (distribution poles); Brown, white (buildings) BG: White (wind turbines)
TEXTURE	FG/MG: Fine BG: Fine to medium	FG/MG: Sparse patches are finely, unevenly textured. Dense patches are fine grain, dense BG: Fine grain, dense	FG/MG: Fine, uniform, ordered (transmission and distribution poles) BG: Fine, subtle, stippled (patch of wind turbines)

Section C: Proposed Activity Description

HAS PHOTO SIMULATION BEEN CREATED FOR KOP? ☒ Yes ☐ No IF YES, FIGURE NUMBER: Figure 4

	LAND / WATER	VEGETATION	STRUCTURES
FORM	No change	Vegetation removal not visible from this perspective	FG/MG: Individual solar panels structures are barely discernible from this distance. Solar field creates simple geometric shape on the landscape.
LINE	No change	Vegetation removal not visible from this perspective	FG/MG: Low, horizontal, straight, diagonal, rectangular (solar panels)
COLOR	No change	Vegetation removal not visible from this perspective	FG/MG: Light and dark gray, matte (solar panels)
TEXTURE	No change	Vegetation removal not visible from this perspective	FG/MG: Fine, simple, uniform, ordered

Section D: Contrast Rating

FEATURES

ELEMENTS: DEGREE OF CONTRAST	LAND/WATER				VEGETATION				STRUCTURES			
	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
FORM				x			x				x	
LINE				x			x			x		
COLOR				x			x				x	
TEXTURE				x			x				x	

OVERALL LEVEL OF CONTRAST: Weak

Section E: Viewer Sensitivity

VIEWER EXPECTATIONS	DURATION OF VIEW	USE VOLUME	OVERALL SENSITIVITY
Moderate	Moderate	Low	Moderate

ADDITIONAL COMMENTS

The low-profile of the solar panels does not block background views of the Tehachapi mountains. In addition, the muted gray color of the solar panels helps to blend the facility in with the surrounding grayish-green vegetation minimizing contrast. From this distance solar field appears similar to agricultural field.

EVALUATORS NAMES: Lori Davidson

DATE: June 18, 2012

APPENDIX B-1.2

PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH AESTHETIC IMPACTS REPORT

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

WESTERN ANTELOPE BLUE SKY RANCH
(CUP GROUP 7)
AESTHETIC IMPACTS REPORT

Prepared for:

44 Montgomery Street, Suite 3065
San Francisco, CA 94104

Prepared by:

Tetra Tech EC, Inc.
17885 Von Karman Avenue, Site 500
Irvine, CA 92614-6213

August 2012

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1.0 INTRODUCTION

This Aesthetics Impact Report has been prepared for the proposed Western Antelope Blue Sky Ranch (CUP 7) (Project) to assess the potential visual impacts resulting from the construction and operation of the Project. The Project is proposed by Silverado Power, LLC, for a 157-acre site approximately 10 miles west of Lancaster, California. The Project is located in unincorporated northern Los Angeles County (Figure 1).

For the purposes of the visual assessment, “Project site” refers to the area within the delineated boundary for the Project components, and ”Project area” refers to those landscapes within 15 miles of the Project site.

2.0 PROJECT DESCRIPTION

The proposed Project will have a total generating capacity of 40 megawatts alternating current and be located on 157 acres of disturbed, fallow agricultural land (Figure 2). The Project site is located approximately 10 miles west of Lancaster, California in unincorporated northern Los Angeles County. The Project site is located below the foothills of the San Gabriel Mountains, and is bounded by 110th Street West to the east.

The Project will employ a series of photovoltaic (PV) module arrays to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system. The PV modules convert sunlight into low-voltage direct current (DC) power, which is subsequently transformed into alternating current (AC) power through an inverter.

The Project will consist of construction and operation of a solar generation facility that will utilize PV technology on fixed-tilt or tracker mounting supports. The Project will be constructed in phases and operated for a period of 35 years, and will consist of the following elements:

- PV modules
- Module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- One 2-acre Substation
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing

The Project will not require the construction of an on-site operations and maintenance (O&M) facility. It is anticipated that the Project will require a Conditional Use Permit from Los Angeles County for the construction and operation of this facility.

The following sections detail the visual characteristics of major project components.

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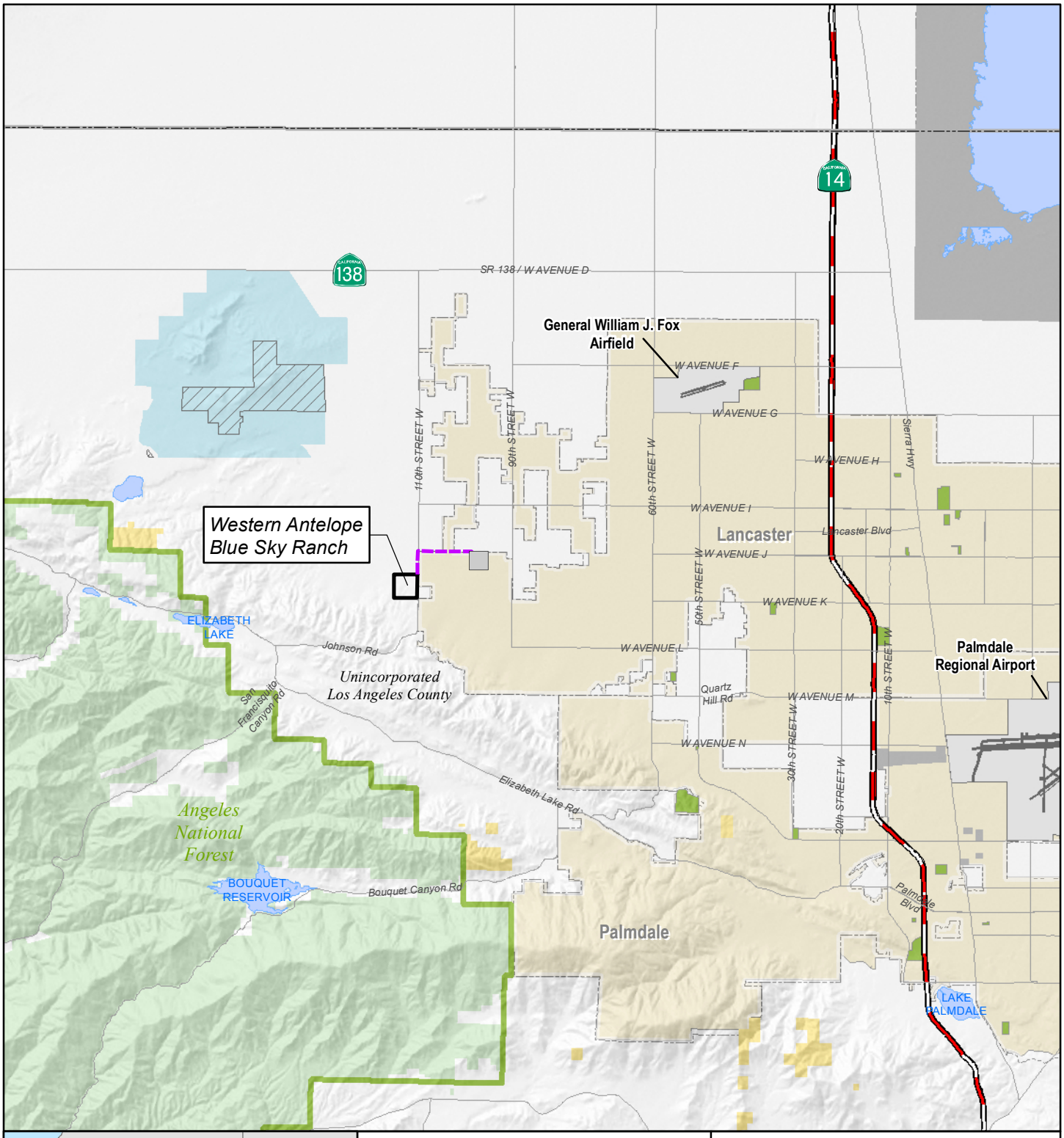

Legend

- CUP 7 Western Antelope Blue Sky Ranch
- Proposed Generation Tie Line

Land Jurisdiction

- Bureau of Land Management
- Military
- State
- US Forest Service

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER
WESTERN ANTELOPE BLUE SKY RANCH

FIGURE 1
VICINITY MAP

0 1.5 3 6
Miles

TETRA TECH EC, INC.

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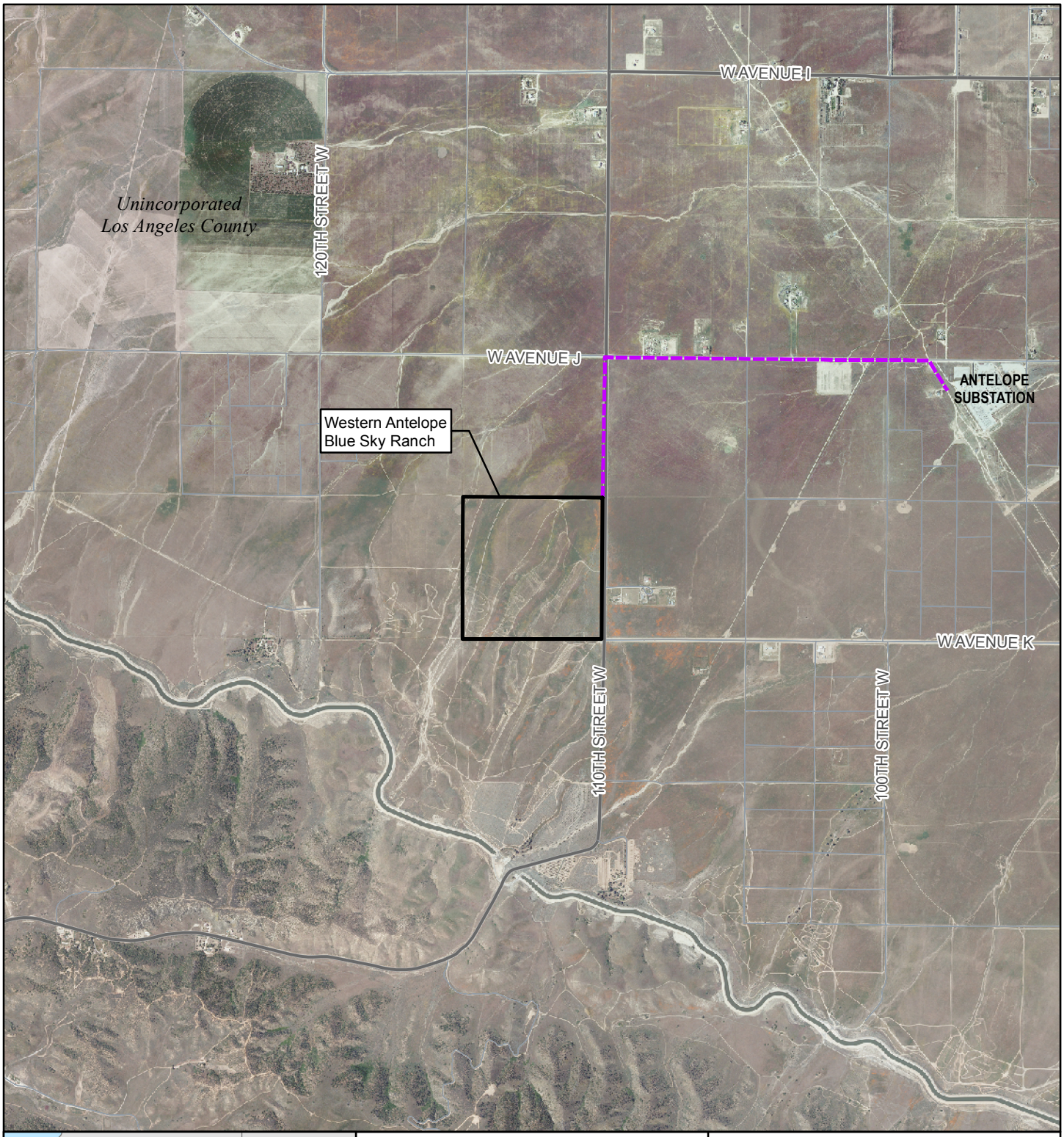


Legend

- Western Antelope Blue Sky Ranch
- Proposed Generation Tie Line

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.

SILVERADO power

TETRA TECH EC, INC.

SILVERADO POWER
WESTERN ANTELOPE BLUE SKY RANCH

FIGURE 2
VICINITY AERIAL MAP

0 0.25 0.5 1
Miles

2.1 Photovoltaic Modules

The solar generation facility will require installation of PV modules. The total number of PV modules required will depend on the technology selected, optimization evaluation, and detailed design. The market conditions, economic considerations, and the environmental factors will be taken into account during the detail design process. The following PV module technologies or equivalent are being considered for incorporation into the Project:

- PV thin-film technology
- PV crystalline silicon technology
- Fixed-tilt configuration

The modules configured with a fixed tilt will be oriented toward the south and angled at a degree that will optimize solar resource efficiency. Modules will be non-reflective and highly absorptive.

The PV modules will be thin rectangular blocks, mounted in multiple rows aligned from east to west. The front of each module will appear in varying shades of dark blue and purple, depending on the angle of the sun and brightness of the sky. The backs of the modules will be colored either white or a very light gray. The modules will be mounted on light gray steel support structures. The modules will be arranged at a fixed angle (i.e., tilted) of 45 degrees towards the sun. Depending on the final design, the assembled PV modules will have a typical height of approximately 6.5 feet above the ground, based on the orientation of the racks.

A site plan is provided in Appendix A to show the arrangement of the PV arrays. The Project will consist of PV array blocks measuring approximately 559 feet by 337 feet (covering approximately 4.3 acres each). Each block will contain rows of PV arrays and an inverter/electrical equipment pad, which will consist of equipment enclosed in a gray-colored box approximately 9-feet tall, and a small parking area.

During construction of the PV facilities, the proposed Project site will be cleared of vegetation, graded to remove localized mounds or valleys, and internal roads finished with a layer of aggregate to allow for various construction activities to take place. These activities will include trenching for installation of gathering lines, pouring of the support structure foundations, delivery of the PV module components, and PV module installation. Disturbance areas will appear as large patches of fine, buff-colored rock and soil. Construction activities may produce visible dust but impacts will be mitigated to less than significant with implementation of a fugitive dust plan.

2.2 Generation Tie-Line

The power generated by the Project will be connected to the Antelope Substation with the voltage transformation equipment and system safety equipment constructed on the site and an approximate 1.7-mile above-ground gen-tie line. The collector system cables will be located underground, and will connect to a generator step-up transformer. The main collector cables will rise into the low-voltage busbar and protection equipment that will be enclosed together with the generator step-up

transformer. Both the generator step-up transformer and the primary switchgear will stand approximately 87 inches in height.

The above-ground gen-tie line will originate from the site substation in the northeast corner of the site (described in Section 2.3 below). The gen-tie line will cross to the east side of 110th Street West and be located on the east side of 110th Street West for approximately 0.5 mile between the Project site and West Avenue J. The gen-tie line will be located parallel to West Avenue J on the south side of the road between 110th Street West and the Antelope Substation, where it will tie into the existing transmission system.

2.3 Substation

One 2-acre substation is proposed to serve the Project site. The proposed substation will be located in the northeast corner of the site, as shown in the site plan in Appendix A.

The substation site will be appropriately graded and excavated to accommodate transformer equipment. A concrete foundation will be constructed for the substation, and structural components include transformers, switchgear, and safety systems, as well as footings and oil containment system for the transformers. The equipment will appear similar to other substations in the Project area, including the Antelope Substation (but on a smaller scale). In general, substations are characterized by many long, thin cylinders of bluish-gray steel, arranged in a geometric pattern of vertical and horizontal lines. Multiple short geometric blocks housing various electrical monitoring components will be present on the substation site. Some pieces of equipment will be constructed with a smooth stainless steel finish that will be moderately reflective under certain light conditions. The ground surface of each substation site will be finished with a light tan to buff-colored covering of small stones and gravel.

2.4 Other Infrastructure Elements

A series of internal access roads and driveways will extend throughout the proposed Project site between the PV arrays and will be characterized by approximately 20-foot-wide bands of light tan and buff-colored aggregate.

The perimeter of the site will be enclosed by a galvanized chain link fence topped with a three-strand barbed wire section. The total height of the fence will be 8 feet. The light gray fence posts will be spaced at approximately 10-foot intervals. The 40-foot long driveways from the street to the gates will be 24 feet wide. A 10,000 gallon fire water tank will be located at the gate. Portable toilets will be provided during construction, but no other sanitary facilities will be onsite. Lighting at specific locations for nighttime security purposes will be fence or structure-mounted and will be directed downwards.

One access gate will be provided along 110th Street West, as shown in the Site Plan in Appendix A.

3.0 REGULATORY SETTING

3.1 California Environmental Quality Act

A Conditional Use Application was filed with Los Angeles County in June 2011 for construction and operation of the Project. Los Angeles County is responsible for implementing the requirements of the California Environmental Quality Act (CEQA) for projects proposed for unincorporated Los Angeles County, in accordance with the California Public Resources Code, Section 21000 et. seq. (CEQA). Appendix G of the 2012 State CEQA guidelines (Association of Environmental Professionals 2012) contains four questions relating to visual resources and aesthetics.

a) Would the project have a substantial adverse effect on a scenic vista?

b) Would the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

c) Would the proposed project substantially degrade the existing visual character or quality of the site and its surroundings?

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

In addition, Los Angeles County currently utilizes the Environmental Checklist Form (Initial Study) to provide thresholds of significance for potential impacts to resources including aesthetics (Correspondence and Environmental Checklist Form provided in Appendix B). The following five questions relating to visual resources and aesthetics are provided;

a) Would the project have a substantial adverse effect on a scenic vista?

According to the Environmental Checklist Form, a scenic vista may include designated scenic highways, scenic highways or resources designated by local land use plans, scenic highways or corridors designated by cities adjacent to or near the project site, or significant ridgelines. If the proposed project is not sited near any designated scenic highways, significant ridgelines, or other identified scenic resources, it is unlikely to result in impacts related to having as substantial adverse effect on a scenic vista.

b) Would the project be visible from or obstruct views from a regional riding or hiking trail?

Impacts may arise from the vacation of a portion of a trail, degradation of the scenic character in and around the trail, or obstruction of expansive views visible from the trail's course but not compromising the trail itself.

c) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

According to the Environmental Checklist Form, this question is concerned with not only trees, rock outcroppings, and historic buildings, but also undisturbed areas and hillside management areas. The question required identification of "undeveloped" or "undisturbed" areas either on the project site or in the vicinity of the project site. According to the form, development of on-site

greenfield conditions is likely to result in a significant impact given the previously undisturbed nature of the land.

d) Would the project substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?

This checklist question evaluates how well the design of the proposed project would integrate with the visual character of its surroundings and the project's level of visual integration from the perspective of height, bulk, pattern, scale, character, or other features. According to the checklist, the height/bulk of a project could negatively impact the surrounding area. Ultimately, the final impact determination will have to do with how well the proposed project integrates with the surrounding neighborhood.

e) Would the project create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area?

Whether a project will produce a substantial amount of shadows is dependent upon a combination of factors including height of the project, width, setbacks, and the length of shadows cast upon potentially sensitive uses. Light or glare is dependent on a project's surface materials, lighting program, and signage. Projects involving large expanses of reflective surfaces may potentially result in a significant impact if reflected light (glare) impedes views in and around the project site. The checklist states that projects must comply with Los Angeles County's Dark Skies Ordinance, however at the time of this report, the Dark Skies Ordinance had not been officially adopted.

The county checklist questions are largely based on the state checklist, with the County's questions requiring additional detail. This Aesthetics Impacts Study therefore uses the County checklist and associated guidance to determine if the Project will potentially impact visual resources, and whether those impacts are less than significant, less than significant with mitigation, or significant.

3.2 Local Land Use Plans and Guidance

Development in the Project area is guided by county and local land use plans. Land use plans reviewed for relevant guidelines and policies include the Los Angeles County General Plan, the Antelope Valley Area Plan, and the City of Lancaster General Plan.

3.2.1 Los Angeles County General Plan

The Los Angeles County General Plan (Los Angeles County 1980) included the following policy relevant to visual resources:

- *General Goals and Policies, Goal 15:* Protect areas that have significant natural resources and scenic values, including significant ecological areas, the coastal zone, and prime agricultural lands.
- *Conservation and Open Space Goals and Policies, Policy 15:* Protect the visual quality of scenic areas including ridgelines and scenic views from public roads, trails, and key vantage points.

The Los Angeles County General Plan also identifies officially designated scenic highways, and divides proposed scenic highways into first- and second-priority proposed scenic highways. First priority routes recommended for further study include the Antelope Valley Freeway, located approximately 1 mile east of the Project site. There are no second-priority routes in the vicinity of the proposed Project site.

3.2.2 Antelope Valley Area Plan

The Project site is located within the boundaries of the planning area for the Antelope Valley Areawide General Plan (Los Angeles County 1986). The areawide plan contains the following policy relevant to visual resources:

- *Policy 22:* Minimize environmental degradation by enforcing controls on sources of pollutants (including visual pollution) and noise.

Visual pollution is not defined by the general plan, but typically includes dust, smog, trash, or visual clutter.

3.2.3 Los Angeles County Hillside Management Ordinance

The Hillside Management Ordinance (Los Angeles County Code Title 22, Section 22.56.215) designates hillside management areas in urban and non-urban areas that have hillsides with a 25 percent grade or greater. The ordinance requires development on properties covered by the hillside management ordinance to obtain a conditional use permit with the intent of preserving remaining natural topography.

4.0 SITE VISIT METHODOLOGY

4.1 Identification of Potential Scenic Areas

Potential scenic areas were identified prior to the field visit so they could be evaluated and photographed. Potential scenic areas were identified from review of maps, local land use plans, county land use plans, and relevant guidance as described in Section 3.0.

As detailed in Section 3.1, the Los Angeles County Environmental Checklist Form (Appendix B) identifies other aesthetic considerations and categories of scenic resources that must be addressed. The following categories of scenic resources are addressed in this report:

- Scenic highways
- Scenic highways or resources designated by local land use plans
- Scenic highways or corridors designated by cities adjacent to or near the Project site
- Significant Ridgelines
- Hillside Management Areas
- Riding and Hiking Trails
- Trees, Rock Outcroppings, and historic buildings within a state scenic highway
- Undisturbed land on the Project site or in the vicinity of the Project site

Guidance contained in question (a) in the Aesthetics Section of the Environmental Checklist requires consideration of scenic resources designated by local land use plans or by cities adjacent to or near the project site. The City of Lancaster's Master Environmental Assessment (MEA) (2009a) and the City of Lancaster's General Plan (2009b) were used to identify specific scenic resources in the area. Although the Project is located in unincorporated Los Angeles County adjacent to but outside the boundaries of the "Sphere of Influence" identified in the MEA, scenic resources identified in the Sphere of Influence were analyzed in this report due to the proximity of the Sphere of Influence. Scenic resources are defined by the MEA as "those unique visual features that provide attractive views either into or from the study area" (City of Lancaster 2009a). Five scenic areas were identified in the Sphere of Influence identified in the MEA, which included areas beyond the city of Lancaster's municipal boundaries: the Foothills Area, Little Buttes, Quartz Hill, Piute Ponds, and Little Rock Wash:

- The Foothills Area is the northern edge of the San Gabriel Mountains. The area between the Angeles National Forest and the Antelope Valley provides many trails for hiking and biking. Trails along the California Aqueduct provide access for hiking, biking, and fishing. These trails provide visitors with expansive views of the surrounding mountains and Antelope Valley. The MEA identifies a visual buffer area extending from the foothills area into the valley, but does not provide specific direction for management of the visual buffer area.
- Little Buttes is located approximately 7.5 miles west of the Antelope Valley Freeway, and 1.5 miles north of West Avenue D. Little Buttes is a butte (hill) rising from the flat desert landscape, and is crossed by a number of undesignated hiking trails.
- Quartz Hill is a hill surrounded by residential development within the unincorporated community of Quartz Hill immediately south of the City of Lancaster. Quartz Hill rises over 200 feet above the surrounding community and is located approximately 2.7 miles west of the Antelope Valley Freeway along West Avenue M/Columbia Way.
- The Piute Ponds area is located on Edwards Air Force Base east of the Antelope Valley Freeway. Access is restricted, and special permission is required to enter the area. The Piute Ponds consist of several shallow amorphous ponds on the southern edge of Rosamond Dry Lake. These ponds form a series of interconnected impoundments that receive wastewater from the Lancaster Water Reclamation Plant as well as seasonal runoff from washes that cross the valley floor (University of California-Santa Barbara 2009). Recreational activities in the Piute Ponds area include hiking and wildlife watching.
- Little Rock Wash, located approximately 11 miles southeast of the proposed Project site and one of the larger washes in the Project area, is dry most of the year. According to the MEA (City of Lancaster 2009a), Little Rock Wash is the most significant natural desert wash within the study area in terms of plant diversity and biological value. Little Rock Wash is considered a Significant Ecological Area. Trails and proposed trails exist in the area of Little Rock Wash. The MEA identifies a visual buffer area surrounding the wash, but does not provide specific direction for management of the visual buffer area.

The MEA also mentions the scenic value of the Antelope Valley California Poppy Reserve, a state natural reserve, located west of the Sphere of Influence. The Poppy Reserve receives the majority of its visitors during the spring and early summer months when the poppy flowers that are common to the area are in bloom.

The MEA mentions the Joshua tree as the most well-known desert plant in the Antelope Valley, with desert and desert woodland plant communities being of significant local and regional value. The Lancaster General Plan identifies local views of the surrounding buttes, Quartz Hill, and long distance panoramas of the San Gabriel Mountains and desert expanses as visual/scenic resources.

The MEA also identifies several roadways that could potentially serve as scenic routes in the future, but currently have no formal designation. These include the following:

- Antelope Valley Freeway, for long-range views of the San Gabriel Mountains to the southwest, south, and southeast, and far-off views of the San Bernardino Mountains to the southeast and the Tehachapi Mountains to the northwest. To the north this route provides close-in views of open desert lands.
- Avenue K between 110th Street West and 90th Street West, for views of the San Gabriel Mountains to the south and of the Portal Ridge foothills to the southwest.
- Avenue M between the Antelope Valley Freeway and 60th Street West, for views of the San Gabriel Mountains to the south and Quartz Hill.
- 60th Street West between Avenues K and M, for views of Portal Ridge to the west and the San Gabriel foothills to the south.
- 90th Street West, for long-range views of the San Gabriel Mountains to the south and southwest, , close-in views of the open desert in the northern portion of the valley and of the Tehachapi Mountains to the northwest.

4.2 Field Visit

In an effort to properly assess the existing visual character of the landscapes in the Project area, a two-day visit to the proposed Project site and the surrounding Project area was conducted on Tuesday January 24th and Wednesday January 25, 2012 by Tetra Tech visual resource specialist Tara Low. On Tuesday, January 24, 2012, photos were taken near the Project site between 1:00PM and 4:00PM. The weather was a mix of sun and clouds, becoming more overcast over the course of the site visit.

A Nikon D90 digital single lens reflex camera (dSLR) equipped with a 35-millimeter (mm) lens was used to take the photographs. When used with a 1.5x cropped-sensor camera such as the D90, a 35-mm lens is considered a “52-mm equivalent lens.” A 52-mm equivalent lens is considered a “normal lens” that closely approximates the field of vision of the human eye. In photos taken using the combination of the D90 and a 35-mm lens, the size and scale objects in the background and foreground are depicted realistically, and are not distorted.

The Nikon D90 dSLR was also equipped with a Global Positioning System (GPS) device manufactured by Promote Systems. This GPS device records the latitude, longitude, and elevation of each photograph as it is taken and embeds this information in the .jpg itself. This feature allows one to upload the Project area photos to a Google Earth .kmz, which displays both the photos themselves and the locations where each photo was taken on an interactive representation of the earth. Other relevant project information, such as Project boundaries, existing transmission infrastructure, and jurisdiction boundaries can be displayed simultaneously in the .kmz along with the photo locations.

Each location where photographs were taken is referred to as a "photo point" in this report. At each photo point, a panorama, or an overlapping series of photos, is captured. After the conclusion of the field visit, each of these panoramas was created using a panorama creation program called PTGui. These panoramas were then added to a Google Earth .kmz file, where the locations of each panorama were displayed on an interactive representation of the earth. A map showing the locations of each of the photo points visited during the field visit can be seen in Figure 3. Panoramic photos taken during the field visit relevant to the Project site and this analysis are provided in Appendix C.

Photo points were captured at the proposed Project site from locations along adjacent roads and intersections near the Project site (Figure 3). During this site visit, the following locations were visited and photographed:

- The proposed Project site, and other sites proposed for solar development for separate permitting processes
- Locations in representative landscapes in the Project area where the Project may be seen
- Potentially sensitive viewing areas where the Project may be seen, which can include residential areas, community facilities such as parks, open space areas, fairgrounds, or playgrounds, or highways or well-travelled roads
- Scenic areas identified in the City of Lancaster's Master Environmental Assessment, including the Poppy Reserve, Foothills Area, Little Buttes, and Quartz Hill.

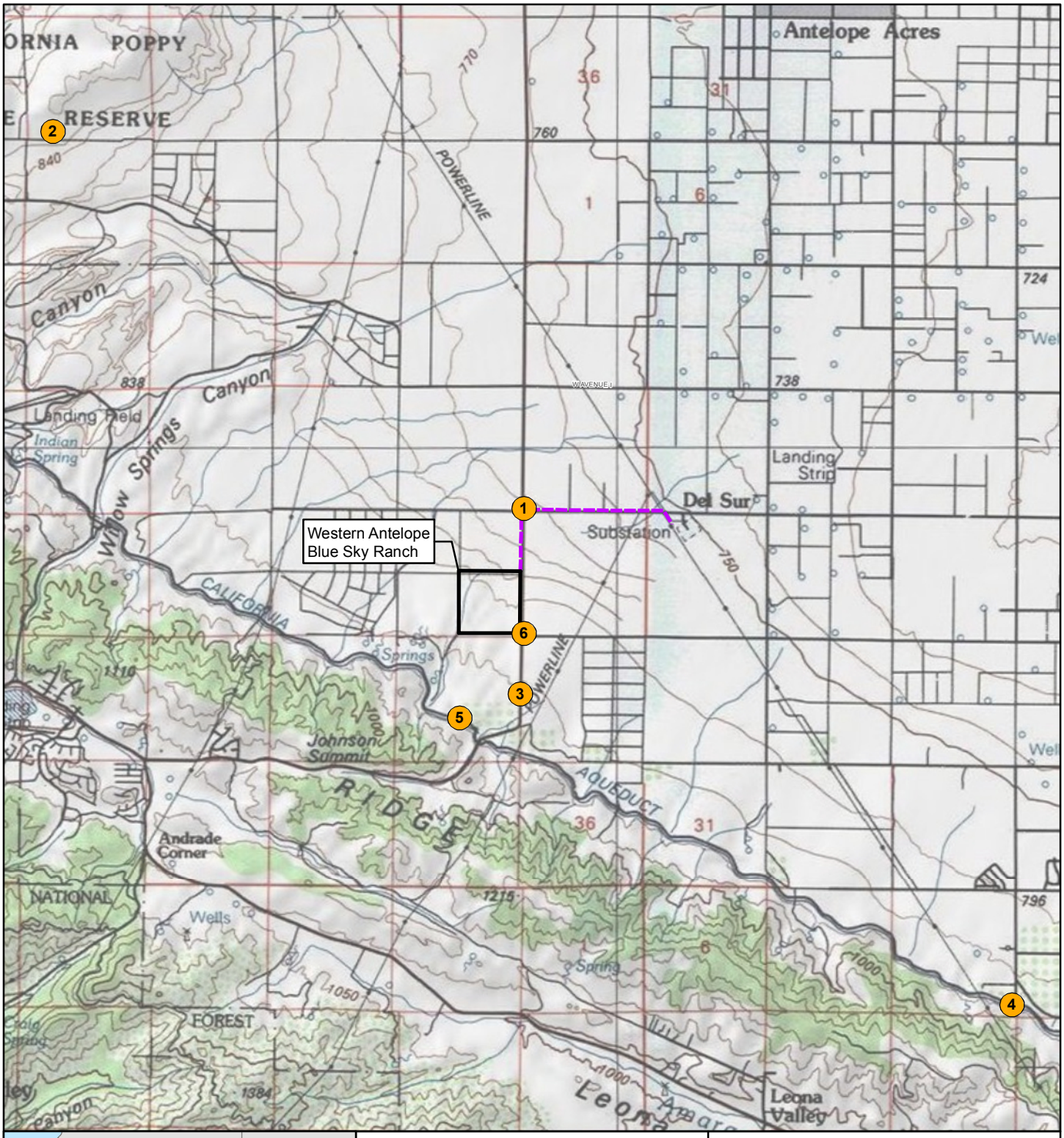
Photos were not taken from Piute Ponds and Little Rock Wash, both located east of the Antelope Valley Freeway for the purpose of this visual assessment. The Piute Ponds area is located on Edwards Air Force Base approximately 14 miles northeast of the Project site, and special permission is required to enter the area. The Project site will not be visible from Piute Ponds due to distance. The visual resource specialist drove around the Little Rock Wash area, located approximately 17 miles east/southeast of the Project site, to observe the regional setting. The Project site is not visible from the Little Rock Wash area due to the distance of the Project site from Little Rock Wash.

4.3 Photographic Simulations and Contrast Ratings

When assessing the potential visual impacts of the proposed Project, it is important to compare the visual characteristics of existing landscapes in the Project area with the visual characteristics of specific Project components that will be visible in those landscapes. The BLM's visual contrast rating process (*Handbook 8431-1 Visual Resource Contrast Rating*) was used as the basis for reviewing potential impacts to visual resources. Because the proposed Project is on private land and not subject to BLM regulations, a form adapted from the BLM's Visual Contrast Rating Worksheet (BLM Form 8400-4) was used to assess the degree of contrast the proposed project will introduce to the existing landscape.

The visual contrast rating worksheet uses landscape character elements and distance zones to describe the landforms (including water), vegetation, and man-made features (structures) that currently exist in the landscape using the basic landscape character elements of form, line, color, and texture:

Date: 8/27/2012 10:31:35 AM
Path: P:\GIS\Projects\4336_Silverado_CUP\MXD\CUP7\Visual\CUP7-29_FIG3_PhotoLocation.mxd



Legend

- Western Antelope Blue Sky Ranch
- Proposed Generation Tie Line
- Photo Locations

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.

SILVERADO power

SILVERADO POWER
WESTERN ANTELOPE BLUE SKY RANCH

FIGURE 3
PHOTO LOCATION MAP

0 3,000 6,000 12,000
Feet

TETRA TECH EC, INC.

- Form—The shape and mass of landforms or structures
- Line—The edge of shapes or masses, silhouettes, or bands
- Color—The property of reflecting light of a particular intensity of wavelength that the eye can see
- Texture—The nature of the surface of landforms, vegetation, or structures

When the visual resources in an area are described, the distance between objects or landforms and any potential viewer has a direct influence on that description. Objects or features that are closer to a viewer's location will appear more detailed and more dominant than those that are further away. The following distance zones are used in landscape descriptions:

- Foreground/Middleground—Areas immediately in front of to 5 miles away from an observer
- Background—Areas from 5 to 15 miles away from an observer
- Seldom Seen—Beyond background or can't see

Descriptions of the existing landscape and of the landscape after a proposed project is implemented are compared to identify the level of contrast a project's components may introduce. Photographic simulations are often created to help visualize the impacts to the existing landscape and to aid in the description of the proposed Project components. These simulations are created using a combination of Geographic Information Systems (GIS) and current 3D software to ensure accuracy in the locations of the proposed Project components.

5.0 AFFECTED ENVIRONMENT

5.1 Regional Landscapes

The proposed Project site is located in the western Antelope Valley, which is part of the Mojave Desert basin. The Antelope Valley is broad and relatively flat, with few variations in topography. The valley is shaped like a sideways letter "V," sloping northward toward the Tehachapi Mountains and southward toward the San Gabriel Mountains. The western portion of the valley slopes upward toward the point where these two mountain ranges come together at the junction of the San Andreas and the Garlock faults. In the Project area, these mountain ranges are characterized by many complex and well-eroded hills rising approximately 2,000 to 5,000 feet above the valley floor. Many small valleys and drainage complexes are visible in the foothills that border the valley.

Surface water is rarely observed in the Antelope Valley. There are many washes that meander across the valley; however, these streams are dry for the majority of the year and only fill with water during the spring snow melt originating from the nearby mountains and after major rain events. Conversely, concrete-lined aqueducts, which include the California Aqueduct and the Los Angeles Aqueduct, parallel the natural contours of the foothills of the San Gabriel and Tehachapi Mountains. Recreational trails line the California Aqueduct, which is located approximately 0.6 miles south of the Project site.

The Project site is located within a half-mile of the Antelope Substation, an approximately 90-acre substation located at West Avenue J and 95th Street West. The Antelope Substation is

a major substation, and several high-voltage transmission lines and electric distribution lines connected to the Antelope Substation are located in the vicinity of the Project site.

The desert woodland vegetation native to the Mojave Desert and includes tall, irregular Joshua Trees, and round Juniper shrubs ranging from 4 to 10 feet tall (City of Lancaster 2009b). In most of the Project area, the native woodland vegetation has been cleared for agricultural use. Irrigated agricultural areas appear as square, rectangular, or circular green shapes on the brown-toned desert landscape. Root vegetables and fruit trees, as well as alfalfa, hay, and grapes are grown in the valley. In portions of the Project area where agriculture has yet to be developed or has been abandoned, a mixture of short grasses, wildflowers, and low desert scrub bushes are common. During the spring bloom, wildflowers cover the valley in brilliant displays of orange, yellow, and purple wildflowers (City of Lancaster 2009b). On the slopes of the foothills to the north and south, low woody vegetation is common, and includes scrub oak, sagebrush, Creosote, and Juniper bushes. During the spring and early summer, this vegetation appears in varying shades of dark and light green. During the fall and winter, patches of dark brown and grayish red hues are visible.

There are several well-developed cities in the Project area. Both Lancaster and Palmdale, located approximately 6 miles east and 13.6 miles southeast of the proposed Project site respectively, each have a population of more than 100,000. The nearby city of Quartz Hill (approximately 6.5 miles southeast of the Project site) has a population of more than 10,000. The Project site is located west of densely developed areas associated with Quartz Hill, Palmdale and Lancaster.

Development proximate to the Project site is rural in nature. The nearest residences are located approximately 0.1 mile north of the 110th Street West/West Avenue K intersection on the opposite (east) side of 110th Street West from the Project site. These are ranch residences that each has some screening vegetation planted around the residential building.

5.2 Project Site Description

The Project site consists of 157 acres of previously disturbed, fallow agricultural land and at the foot of the San Gabriel foothills. Site topography is gently rolling, as shown by topographic contours on the site plan provided in Appendix A. Steeper slopes in the area proposed for construction measure less than 10 percent. As shown in the site plan, the area proposed for development is concentrated in the northern portion and along the eastern boundary of the Project site. The steepest slopes, which run diagonally from the southwest corner of the Project site towards the northeast, are avoided.

As shown in Photo 1 in Appendix C, Portal Ridge dominates views to the south from the site. Portal Ridge is part of the San Gabriel Mountains foothills, and is characterized by a horizontal line formed by coarse hills and complex drainages rising approximately 1,000 feet above the proposed Project site. As shown in Photo 3 in Appendix C, views to the north reveal a predominantly flat landscape with very little topographic variation. The jagged ridgeline of the Tehachapi Mountains is visible in the far distance in views to the north from the proposed Project site.

Photo 1, Photo 3, and Photo 6 in Appendix C show various views towards the Project site from local roads surrounding the area. A number of pathways/two-tracks that appear similar to dirt trails occur onsite. No marked trails were observed onsite. Electric distribution lines are located along the southern boundary of the Project site, and along W 110th Avenue on the east side of the road. A high-voltage electric transmission line is located along the northern boundary of the Project site. No residences are located onsite.

The Project site was previously used for agricultural production. As shown in Photos 1, 3, and 5 in Appendix C, there are no trees onsite and vegetation consists of grasses and shrubs. Five vegetation communities were identified onsite, including Ruderal, Valley Needle Grassland, Non-Native Annual Grassland, Saltbush Scrub, and Rubber Rabbitbush scrub. Each of these vegetation communities is described below.

- Areas with Ruderal vegetation are present in the northwest corner of the Project site. Areas classified as Ruderal tend to be dominated by pioneering herbaceous species that readily colonize disturbed ground and that are typically found in temporary, often frequently disturbed habitats. Ruderal plant species found on the project site include soft chess (*Bromus hordeaceus*) and red-stem filaree (*Erodium cicutarium*).
- Valley Needlegrass Grassland is present throughout the Project site. Valley Needlegrass Grassland is mid-height (up to 2 feet) grassland dominated by perennial tussock-forming purple needlegrass. Native and introduced annual herbaceous plants occur between the perennial grasses, often exceeding the bunchgrasses in overall vegetative cover.
- Non-Native Grassland is present throughout the center and eastern portion of the Project site. Non-Native Annual Grassland consists of a dense to sparse cover of annual grasses such as oats (*Avena sp*.), bromes (*Bromus sp*.), and ryegrass (*Lolium sp*.) with flowering culms up to 3 feet in height. This community is often associated with numerous species of showy-flowered, native annual forbs "wildflowers" such as California poppy (*Eschscholzia californica*), lupines (*Lupinus sp.),* and goldfields (*Lasthenia sp*.) especially in years of favorable rainfall (Holland 1986). Plant species found on the project site typical of this vegetation community include: cheat grass (*Bromus tectorum*), foxtail chess (*Bromus madritensis ssp. rubens*) and Mediterranean schismus (*Schismus barbatus*).
- Desert Saltbush Scrub is present in the southeastern corner of the Project site. Desert Saltbush Scrub is typically characterized by low, grayish microphyllous shrubs 1 to 3 feet in height dominated by saltbush (*Atriplex sp*.) with some succulent species. Cover in this community is often low with much bare ground between the widely spaced shrubs. Plant species found within this site typical of this vegetation community include cattle saltbush (*Atriplex polycarpa*).
- Rubber Rabbitbrush Scrub is present throughout the southeastern portion of the Project site. Rubber Rabbitbrush Scrub is dominated by rubber rabbitbrush (*Chrysothamnus nauseosus),* usually approximately 3 feet in height with regularly-spaced gray-green shrubs that bloom in late summer or early fall. Rabbitbrush Scrub is a disturbance-maintained community in which fire, grazing, or soil tilling perpetuate the same species within the herb and shrub layers and the disturbance occurs with regular (less than 10 years) frequency. Plant species found within this site typical of this vegetation community include: western tansymustard (*Descurainia pinnata*) and rubber rabbitbrush.

5.3 Scenic Resources

Section 4.1 of this report identifies categories of scenic resources located within the Project area. The following sections identify which of those scenic resources may be potentially impacted by the proposed Project.

5.3.1 Scenic Vistas

Figure 3 shows the location of scenic resources in relation to the proposed Project site. The Project will not be visible from Piute Ponds or Little Rock Wash, which are both located over 10 miles away from the Project site. It is highly unlikely that the Project will be discernible from Little Buttes or Quartz Hill, which are both located over 6 miles from the Project site. Even though viewpoints from Little Buttes and Quartz Hill are at higher elevations than the Project site, from this distance the proposed Project will fade into the flat landscape. Photo 4 in Appendix C shows a view from Quartz Hill in the direction of the Project. As is seen from the photo, which was taken from an elevated location, areas beyond the residential developments in Lancaster are not discernible.

The Project is not likely to be discernible from the California Poppy Reserve, located approximately 6 miles west/northwest from the Project site. Photo 2 in Appendix C shows a view from the top of the Valley Vista Trail in the Poppy Reserve. The Antelope Substation, an approximately 90-acre facility just north of the Project site, is not discernible from this location. It is highly unlikely therefore, that the Project itself will be discernible from this distance. Instead, it will fade into the flat landscape.

The Project will be visible from certain locations in the Foothills Area, including portions of the California Aqueduct trails. Photo 5 in Appendix C provides a view from the California Aqueduct Trail located approximately 0.6 mile south of the Project site (Figure 3). Although the Project would be visible from certain locations along the trails, in many locations it would be screened by terrain.

5.3.2 Scenic Highways or Corridors

Paved roads that serve as primary travel routes in the area adjacent to the Project site include 110th Street West, West Avenue K, and West Avenue J. Traffic on these roads consists of a combination of local residents, tourists going to and from the Poppy Reserve and the Foothills Area, and business traffic. These three roads are two-lane paved roadways, characterized by dark to light grey concrete/asphalt. Other minor roads adjacent to the Project site are light tan/gray dirt/gravel roads that primarily serve local residents.

The City of Lancaster's MEA (City of Lancaster 2009b) identifies West Avenue K (between 90th Street West and 110th Street West) as a potential scenic route. This roadway has no official designation as scenic routes at this time. This stretch of road is located adjacent to the southeast corner of the Project site. The Project would be visible from the road.

5.3.3 Significant Ridgelines and Hillside Management Areas

No designated significant ridgelines are located within the Project area. The Project site has a grade of less than 25 percent, and therefore the Hillside Management Ordinance does not apply to the Project site.

5.3.4 Riding and Hiking Trails

Riding and hiking trails in the vicinity of the Project site include trails in the Foothills area (including the California Aqueduct Trail) and trails in the California Poppy Reserve. On the Project site there appear to be several social trails, but no trail markers were observed. A review of trails data from Los Angeles County also did not identify any official trails onsite.

5.3.5 Undisturbed Land

The Project site consists of vacant, fallow agricultural land that has been previously disturbed, and is dominated by non-native vegetation species. Cultural modifications to the landscape include farms, rural residences, agricultural fields, high-voltage power lines, electrical distribution lines, roadways, and a large substation (the Antelope Substation).

6.0 VISUAL IMPACT ANALYSIS

Using the CEQA checklist criteria provided in the County of Los Angeles' Environmental Checklist Form (included in Appendix B), the visual impacts from the proposed Project were assessed:

(a) Will the project have a substantial adverse effect on a scenic vista?

Recommended Rating: LESS THAN SIGNIFICANT

According to the Los Angeles County Environmental Checklist Form, potential impacts could result from obstructing views to or from the scenic resource, degrading the character of a scenic highway, or disrupting a scenic vista.

Because of the low profile of the solar modules, the Project would not obstruct views to or from any scenic resources. Of the scenic resources in the Project area, the proposed Project will be visible from the Foothills Area. Other scenic resources identified by the City of Lancaster (the California Poppy Reserve, Little Buttes, Piute Ponds, Little Rock Wash, and Quartz Hill) are located a sufficient distance away such that the Project will fade into the horizon line and not be discernible. The Antelope Valley is extremely flat, which limits the visibility of the Project unless the viewer is located in a superior position (at an elevation higher from the object/location being viewed). Even from a superior viewing position at Quartz Hill or the Poppy Reserve, a viewer is not likely to be able to distinguish the Project site from these distances.

A photographic simulation was completed from a viewpoint in the Foothills Area, and is provided in Figure 4. The photograph was taken from the California Aqueduct Trail, approximately 0.6 miles south of the Project site. A contrast rating was conducted from the viewpoint shown in Figure 4 to assess the level of contrast that would be introduced by the proposed Project from this vantage point. The contrast rating form is provided in Appendix D. The overall level of contrast introduced by the proposed Project was evaluated as low from this viewpoint. The

Simulation.

Existing.

Figure 4. Photo Simulation

Project is largely screened by terrain. No noticeable modifications to landforms are anticipated. Vegetation removal would be screened by the installation of solar modules. The introduction of solar modules would create a low contrast in form, line, color, and texture from existing conditions. The horizontal lines and colors of the solar field mimic those found in the existing environment. The Project will not dominate views from the trail given the degree of cultural modifications that have already been introduced to the landscape, including roads, electrical infrastructure (transmission lines, substations, and distribution lines, and because the Project would be largely screened by rolling terrain that exists between the trail and the Project. The Project may be more noticeable from higher elevations in the Foothills area where not screened by terrain. Overall impacts to this viewpoint are less than significant.

A photographic simulation was completed from a viewpoint at the intersection of 110th Street West and West Avenue K, and is provided in Figure 5. West Avenue K is identified in the MEA as a potential scenic route, but is not officially designated as such. The photo simulation provided in Figure 5 was taken adjacent to the Project site on the opposite side of 110th Street West. A contrast rating was conducted from the viewpoint shown in Figure 5 to assess the level of contrast that would be introduced by the proposed Project. The contrast rating form is provided in Appendix D. The overall level of contrast introduced by the proposed Project was evaluated as moderate from this viewpoint. The rows of modules mimic the horizontal lines of the flat landscape, and repeat colors that already exist in the existing environment. Contrast is rated at moderate due to the prominence of the solar panels in the immediate foreground.

West Avenue K is valued for its views to the south of the San Gabriel Mountains and Portal Ridge foothills. Because the proposed Project is located northwest of West Avenue K, it will not impede views to the south of Portal Ridge. Also, other electrical infrastructure, including high voltage transmission lines, distribution lines, and the Antelope Substation are situated within a mile from this stretch of West Avenue K. Impacts to views along West Avenue K are therefore not significant.

(b) Would the project be visible from or obstruct views from a regional riding or hiking trail?

Recommended Rating: LESS THAN SIGNIFICANT IMPACT

According to the Los Angeles County Environmental Checklist Form, impacts would arise from the vacation of a portion of the trail, degrading the scenic character in or around the trail, or obstructing expansive views visible from the trail's course.

No designated trails are located on the Project site; therefore the Project would not cause the vacation of any portion of any trail. Because the solar modules are low-profile, the Project would not obstruct expansive views.

The proposed Project may be visible from elevated portions of riding or hiking trails that are not screened by terrain, including portions of the California Aqueduct trails, and from other trails in the Foothills Area. A photographic simulation and contrast rating were conducted from a view point in the Foothills Area (see Figure 4, and Contrast Rating evaluation in Appendix D). As discussed in question (a), the level of contrast that would be introduced by the proposed Project from the scenic area is low. The Project is largely screened by terrain. No noticeable modifications to landforms are anticipated. Vegetation removal would be screened by the installation of solar modules. The introduction of solar modules would create a low contrast in

Simulation.

Existing.

Figure 5. Photo Simulation

form, line, color, and texture from existing conditions. The horizontal lines and colors of the solar field mimic those found in the existing environment. The Project will not dominate views from the trail given the degree of cultural modifications that have already been introduced to the landscape, including roads, electrical infrastructure (transmission lines, substations, and distribution lines, and because the Project would be largely screened by rolling terrain that exists between the trail and the Project. The Project may be more noticeable from higher elevations in the Foothills area where not screened by terrain. Overall impacts to this viewpoint are less than significant.

(c) Will the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

Recommended Rating: NO IMPACT

According to the Los Angeles County Environmental Checklist, impacts may occur from development of undisturbed lands on-site or in the vicinity of the Project area. All development and staging would occur on the Project site or on already disturbed areas. As described in Section 5.3.5, the Project site is disturbed land and is surrounded by cultural modifications.

As described in Question (a), the proposed Project is not located along or in proximity to any designated scenic highways. The proposed Project will not substantially damage or impact scenic resources such as trees (including Joshua Trees) or rock outcroppings, and there are no historic buildings located in the proposed Project site.

(d) Will the proposed project substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?

Recommended Rating: LESS THAN SIGNIFICANT WITH MITIGATION

According to the Los Angeles County Environmental Checklist, the height/bulk of a proposed project could negatively impact the surrounding area depending on how well the design of the proposed project integrates with the visual character of its surroundings from the perspective of height, bulk, pattern, scale, character, or other features.

The existing site is vacant land in a rural area, and is typical of the surrounding landscape. The visual quality of the Project site is low. The Project site itself does not have unique or rare features, or hold special significance. The topography is rolling to flat, sloping upwards towards the foothills of the San Gabriel Mountains. Vegetation is uniform and consists of grasses and short shrubs. No permanent water features occur on the site, and there are no features or characteristics that set the Project site apart from the surrounding landscape. Viewers such as nearby residents and travelers will still experience views of the open desert lands and the foothills of the San Gabriel Mountains around the Project site after the solar facility is constructed.

Even where visible, the proposed Project components will not be a dominant element in the landscape unless the viewer was directly adjacent to the facility. From viewing points further than approximately 0.25 mile from the solar field, at approximately the same elevation, the solar facility will fade into the flat landscape and not dominate the view.

The Project is not out-of-character when considering the context of the surrounding landscape. Cultural modifications are common in the landscape around the site, which is situated approximately 1.5 miles north/northeast of the Antelope Substation. The electrical infrastructure

associated with this substation is more complex with varying heights and shapes of equipment, while the proposed Project will appear very uniform throughout the Project site. Several distribution lines and high-voltage transmission lines converge at the Antelope Substation. Other cultural modifications to the landscape include farms and residences. In the larger Project area, electrical infrastructure such as PV solar fields, transmission lines, and substations are common.

Because other cultural modifications structures are common in the vicinity of the Project site and in the larger Project area, and because the Project site itself is not characterized by high visual quality, the visual impact of the Project on the existing visual character of the proposed Project site and its surroundings will be less than significant.

(e) Will the project create a new source of substantial light or glare which will adversely affect day or nighttime views in the area?

Recommended Rating: LESS THAN SIGNIFICANT

According to the County of Los Angeles' Environmental Checklist Form, the impacts may occur if shadows are cast upon nearby sensitive uses, or if reflective light or glare impeded views in and around the Project site.

Because of the low profile of the solar modules, no significant shadows will be cast upon nearby sensitive land uses. Impacts from new sources of light or glare are expected to be less than significant. The Project will not create a significant source of light. Light sources associated with the Project will be minimal, and will be restricted to that required for nighttime safety and security according to county requirements. Lighting will be installed and directed downward and shielded to avoid light trespass. The amount of light generated by the security lights will be consistent with existing sources produced by man-made structures adjacent to the proposed Project site, including residences, the Westview Estates subdivision, roadway lights, and the Antelope Substation.

Project components will introduce minimal amounts of glare to the existing landscape. The Project PV modules are designed to absorb sunlight, and the glass modules that protect the PV surface are typically formulated glass designed to allow sunlight to pass with minimal reflection.

7.0 CONCLUSIONS

Implementation of the proposed Project is expected to have a less than significant impact on scenic resources and aesthetic values.

The following mitigation measures that will minimize visual impacts are incorporated into the Project design:

Construction Phase:

- Implement a Fugitive Dust Control Plan to minimize dust (visual pollution).
- The Project site will be maintained free of debris, trash, and waste during construction.

Operations Phase:

- The proposed structures onsite will be neutral colors (grays) and non-reflective.
- A landscape plan will be developed prior to Project construction that shows detail of any proposed earthwork or vegetation intended to screen the Project visually from area residents or travelers on nearby roadways.
- Lighting will be pointed downwards to minimize light trespass, and mounted on essential infrastructure rather than on separate light poles

8.0 REFERENCES

Association of Environmental Professionals. 2012. 2012 California Environmental Quality Act (CEQA) Statute and Guidelines. Available online at: http://ceres.ca.gov/ceqa/docs/CEQA_Handbook_2012_wo_covers.pdf (Accessed June 20, 2012).

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Lancaster, City of. 2009a. General Plan 2030. Available online at: http://www.cityoflancasterca.org/index.aspx?page=427 (Accessed February 18, 2012.)

Lancaster, City of. 2009b.General Plan 2030 Master Environmental Assessment. Available online at: http://www.cityoflancasterca.org/Modules/ShowDocument.aspx?documentid=11352 (Accessed February 18, 2012.)

Los Angeles County, 1986. *Antelope Valley Areawide General Plan.* Available online at: http://planning.lacounty.gov/assets/upl/data/tnc_avap.pdf. (Accessed February 22, 2012).

Los Angeles County, 1980. County of Los Angeles General Plan. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_web80-introduction.pdf. (Accessed February 22, 2012).

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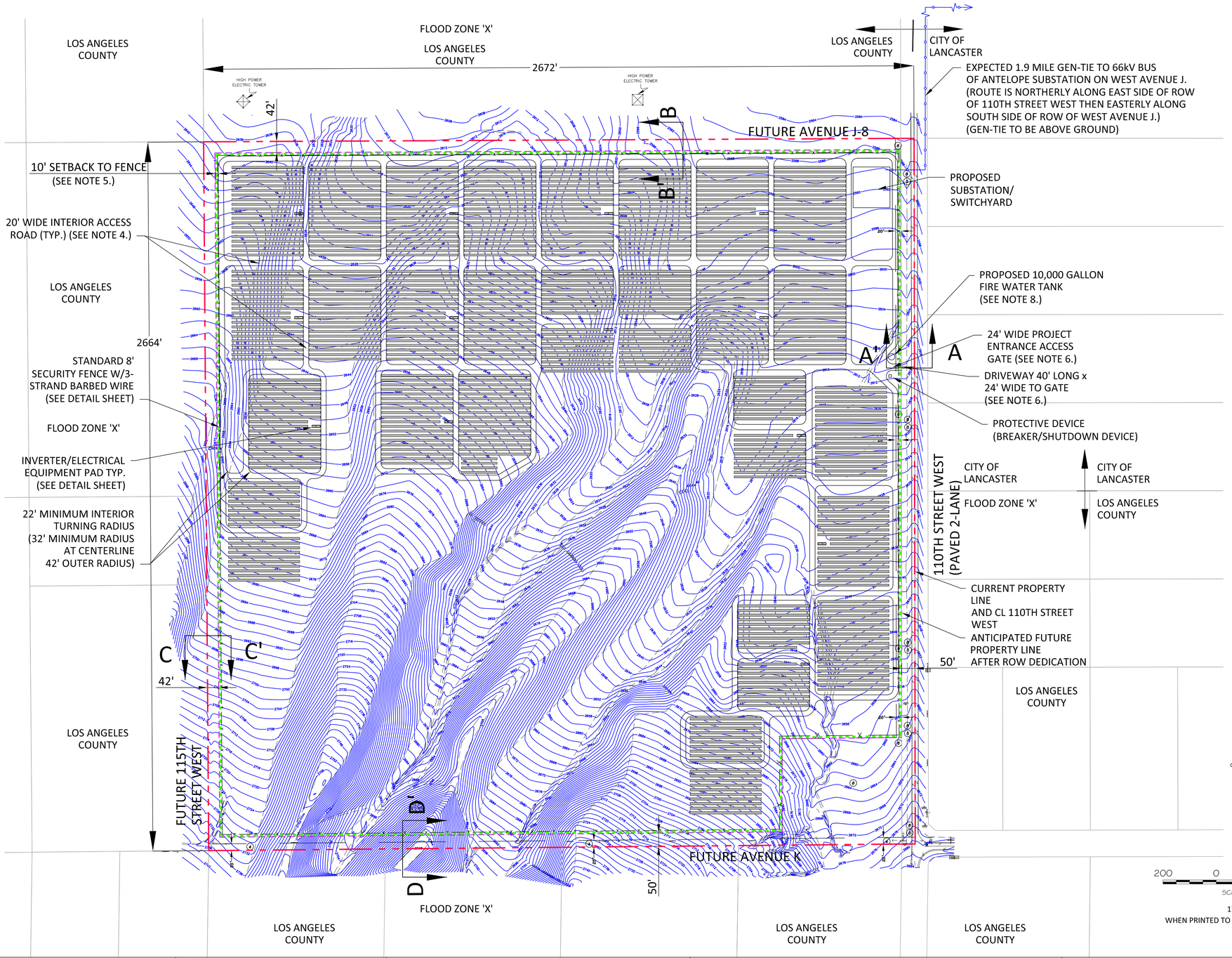
APPENDIX A

SITE PLAN



PROJECT SITE:

PROJECT SITE IS 163 ACRES (NET)

NOTES:

1. 'ZONE X' AS SHOWN ON PANEL 0400F OF FLOOD INSURANCE RATE MAP NO. 06037C0400F. ZONE "X" DESIGNATED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

2. FIRE DEPARTMENT ACCESS DEVICE AND EMERGENCY CONTACT PLACARD LOCATED AT ALL ENTRANCE GATES.

3. MOBILE SANITATION FACILITY, AS DEFINED BY THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH, CAN BE LOCATED AT ALL PARKING LOCATIONS AND WILL BE LOCATED AT THE NEAREST LOCATION TO CONSTRUCTION AND OPERATIONAL WORKERS ACTIVITY. THE FACILITIES WILL BE KEPT TO LOS ANGELES COUNTY CODE, TITLE 11 - HEALTH & SAFETY, AND CAL-OSHA SANITATION STANDARDS IN SECTION 3360, TITLE 8, CALIFORNIA CODE OF REGULATIONS. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-06.

4. INTERIOR ACCESS ROADS WILL BE 20' WIDE, COMPACTED TO 90%, WITH 32 FOOT TURNING RADIUS AT CENTER LINE. THE INNER RADIUS WILL BE 22' AND THE OUTER RADIUS WILL BE 42'. INTERIOR ACCESS ROADS WILL BE PROVIDED TO INVERTER/ELECTRICAL EQUIPMENT PADS AND AROUND THE PERIMETER OF THE PROJECT. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-06.

5. 10 FOOT WIDE SETBACK ZONE AROUND PERIMETER TO FENCE LINE TO PROVIDE DRAINAGE EASEMENT.

6. DRIVEWAY ACCESS GATES TO BE SET 40 FEET BACK FROM EDGE OF PROPERTY. DRIVEWAY WILL BE 24 FEET WIDE.

7. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION DURING DETAILED DESIGN.

8. TANK CONNECTIONS PER LOS ANGELES COUNTY FIRE DEPARTMENT.

LEGEND:

MIN	MINIMUM
ROW	RIGHT OF WAY
℄	CENTERLINE
x — x	FENCE LINE
	OVERHEAD LINE
	PROPERTY LINE (AFTER DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
	CONTOUR LINE

C-01

R2011-00798 (RCUP201100070)

REGISTERED PROFESSIONAL ENGINEER JULIE ANN DELANEY No.C54558 CIVIL STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH EC, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
B	08/29/12	REVISIONS FOR COUNTY	JD	SP
A	5/26/11	INITIAL ISSUE	JD	SP

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068 Project 2

Project Name:
Western Antelope Blue Sky Ranch

Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

DRAWING: Site Plan

APPLICANT:
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104
(415) 692-7740

SILVERADO power

WESTERN ANTELOPE BLUE SKY RANCH
LOS ANGELES COUNTY, CA

44 Montgomery Street, Suite 3065 | San Francisco, CA 94104 | 415.692.7740 main

P:\1436-SILVERADO POWER SOLAR CUP\CAD\SITE PLANS\Y\7-COUNTY SUBMITTAL-B\C-0102-SITE GRAD-7-8-10.DWG
8/27/2012 Aug 28, 2012 - 9:55:13 PM

APPENDIX B

CORRESPONDENCE AND ENVIRONMENTAL CHECKLIST FORM

From: Szalay, Kim <kszalay@planning.lacounty.gov>
Sent: Thursday, May 17, 2012 4:38 PM
To: DiSano, Michael
Cc: Low, Tara; Blengini, Carolina; Dea, Samuel
Subject: Silverado: I.S. and Aesthetics, etc.
Attachments: Initial_study_wguidelines 4-18-12.docx

Good Afternoon Mike,

Before I respond to your question below, please note that your opening paragraphs on Regulatory Setting section 3.1.3 are not up to date with revised County procedures. Let me clarify that first.

1) With regard to thresholds of significance, generally they are derived from the County of Los Angeles Department of Regional Planning's Initial Study Checklist, which is based on Appendix G of the CEQA Guidelines with County-specific additional items. Please use the attached updated County version.

2) The 2005 County CEQA Guidelines cited are currently in process of revision. Please use attached I.S. and the most recent version (January, 2012) of the State CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387) also available from http://ceres.ca.gov/ceqa/docs/CEQA_Handbook_2012_wo_covers.pdf). It will not be necessary at this time to cite the 2005 County CEQA Guidelines document.

3) We will have to discuss further where to include discussion of relevant Lancaster "Sphere of Influence" information included in Section 3.1.3 City of Lancaster General Plan and Master Environmental Assessment. We do not normally include other non-binding jurisdictional material in the regulatory setting section for Projects solely within County jurisdiction.

With regard to your question below, does the visual analysis you provided include the expanded analysis, or, are you asking if the attached requires an expanded analysis?

Whatever the case may be, please make the necessary changes regarding use of the above-mentioned County and State documents. We will also need to discuss how and where the Lancaster "Sphere of Influence" discussion is to be framed and located within the document.

Kim

Mr. Kim Szalay, AICP
Principal Planner
Special Projects Section
Department of Regional Planning
320 W. Temple Street
Los Angeles, CA 90012
http://planning.lacounty.gov
213-974-4876

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From: DiSano, Michael [mailto:Michael.DiSano@tetratech.com]
Sent: Wednesday, May 16, 2012 4:58 PM
To: Blengini, Carolina
Cc: Szalay, Kim; Low, Tara
Subject: Aesthetics

Carolina,

I was wondering if you think we should expand our technical study in regards to Aesthetics? Attached is the finalized visual document for your reference. I don't think it would be necessary to do a contrast rating but I want to defer to you as the Lead Agency to make that determination.

Regards,

Michael Di Sano | **Assistant Project Manager**
Direct: 949.809.5034 | Main: 949.806.5000 | Fax: 949.809.5004
Michael.DiSano@tetratech.com

Tetra Tech
17885 Von Karman Ave | Irvine, CA 92614-5227 | www.tetratech.com

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Think Green - Not every email needs to be printed.

Environmental Checklist Form (Initial Study)

County of Los Angeles, Department of Regional Planning

Project title: "Project Name" (if applicable) / Project No. / Case No(s). (All entered text should be Garamond font, size 11 or 12, underlined, single-spaced, and align-justified)

Lead agency name and address: _____

Contact Person and phone number: _____

Project sponsor's name and address: _____

Project location: (Address)
APN: _____ *USGS Quad*: _____

Gross Acreage: _____

General plan designation: _____

Community/Area wide Plan designation: _____

Zoning: (In addition to the zoning designation, indicate which Community Standards District the property is located within, if applicable.)

Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation.)

Surrounding land uses and setting: (Briefly describe the project's surroundings.)

Other public agencies whose approval may be required (e.g., permits, financing approval, or participation agreement):

Public Agency	*Approval Required*
_____	_____
_____	_____

Major projects in the area:

Project/Case No.	*Description and Status*
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Reviewing Agencies: [*See* **CEQA Appendix B** *to help determine which agencies should review your project***]**

Responsible Agencies

- ☐ None
- Regional Water Quality Control Board:
  - ☐ Los Angeles Region
  - ☐ Lahontan Region
- ☐ Coastal Commission
- ☐ Army Corps of Engineers

Special Reviewing Agencies

- ☐ None
- ☐ Santa Monica Mountains Conservancy
- ☐ National Parks
- ☐ National Forest
- ☐ Edwards Air Force Base
- ☐ Resource Conservation District of Santa Monica Mountains Area
- ☐

Regional Significance

- ☐ None
- ☐ SCAG Criteria
- ☐ Air Quality
- ☐ Water Resources
- ☐ Santa Monica Mtns. Area
- ☐

Trustee Agencies

- ☐ None
- ☐ State Dept. of Fish and Game
- ☐ State Dept. of Parks and Recreation
- ☐ State Lands Commission
- ☐ University of California (Natural Land and Water Reserves System)

County Reviewing Agencies

- ☐ DPW:
  (delete those that don't apply)
  - Land Development Division (Grading & Drainage)
  - Geotechnical & Materials Engineering Division
  - Watershed Management Division (NPDES)
  - Traffic and Lighting Division
  - Environmental Programs Division
  - Waterworks Division
  - Sewer Maintenance Division
- ☐ Fire Department
  (delete those that don't apply)
  - Forestry, Environmental Division
  - Planning Division
  - Land Development Unit
  - Health Hazmat
- ☐ Sanitation District
- ☐ Public Health/Environmental Health Division: Land Use Program (OWTS), Drinking Water Program (Private Wells), Toxics Epidemiology Program (Noise)
- ☐ Sheriff Department
- ☐ Parks and Recreation
- ☐ Subdivision Committee
- ☐

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project.

☐ Aesthetics	☐ Greenhouse Gas Emissions	☐ Population/Housing
☐ Agriculture/Forest	☐ Hazards/Hazardous Materials	☐ Public Services
☐ Air Quality	☐ Hydrology/Water Quality	☐ Recreation
☐ Biological Resources	☐ Land Use/Planning	☐ Transportation/Traffic
☐ Cultural Resources	☐ Mineral Resources	☐ Utilities/Services
☐ Energy	☐ Noise	☐ Mandatory Findings of Significance
☐ Geology/Soils		

DETERMINATION: (To be completed by the Lead Department.)
On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature (Prepared by) Date

_____ _____

Signature (Approved by) Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources the Lead Department cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the Lead Department has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level. (Mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced.)

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA processes, an effect has been adequately analyzed in an earlier EIR or negative declaration. (State CEQA Guidelines § 15063(c)(3)(D).) In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of, and adequately analyzed in, an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

7) The explanation of each issue should identify: the significance threshold, if any, used to evaluate each question, and; mitigation measures identified, if any, to reduce the impact to less than significance. Sources of thresholds include the County General Plan, other County planning documents, and County ordinances. Some thresholds are unique to geographical locations.

8) Climate Change Impacts: When determining whether a project's impacts are significant, the analysis should consider, when relevant, the effects of future climate change on : 1) worsening hazardous conditions that pose risks to the project's inhabitants and structures (e.g., floods and wildfires), and 2)

worsening the project's impacts on the environment (e.g., impacts on special status species and public health).

1. AESTHETICS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☐

General Discussion

The purpose of this question is to identify the scenic resources that exist on the project site and in the surrounding area and determine how the proposed project will impact those resources. If your project is directly adjacent to another jurisdiction, ensure it is not affecting any scenic resource in that jurisdiction. Potential impacts could result from obstructing views to or from the scenic resource, degrading the character of a scenic highway, or disrupting a scenic vista. The preparer should identify

- Designated scenic highways adjacent to or in proximity to the project site (State-designated highways are listed in the Stock Language Section below);
- Scenic highways, corridors, and resources designated by the County General Plan and the applicable Area/Community Plan or Local Coastal Program;
- Scenic highways or corridors designated by cities adjacent to or near the project site; and
- Significant ridgelines (major ridgelines on Santa Catalina Island).

If the proposed project is not sited near any designated scenic highways, significant ridgeline, or other identified scenic resources, then it is unlikely that the proposed project would result in any impacts related to having a substantial adverse effect on a scenic vista.

Resources

- GIS-NET Scenic Highways layer (in the "Transportation" folder) and Significant Ridgelines layer (in the "Administrative Layers & Districts" folder)
- State of California CalTrans Scenic Highway Mapping System (Updated 9/7/2011): http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

Potential Mitigation

- Mitigation may include reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors, use of earth tone colors and landscaping.
- Specific mitigation measures will be tailored to each proposed project.

b) Be visible from or obstruct views from a regional riding or hiking trail?	☐	☐	☐	☐

General Discussion

The purpose of this question is to determine how the proposed project would impact riding or hiking trails. Riding trails can include horseback riding, biking, hiking, etc. The preparer should identify:

- Designated or proposed trails traversing, adjacent to, or in proximity to, the project site; and
- Designated trails in cities adjacent to or near the project site.

Impacts would arise from the vacation of a portion of the trail, degrading the scenic character in and around the trail, as well as obstructing expansive views visible from the trial's course but not compromising the trail itself. If the proposed project is not sited near any designated riding or hiking trails, then it would not result in any impacts related to having a substantial adverse effect on these resources. Subdivision trail requirements are imposed through Subdivision Committee Meetings.

Resources

- GIS-NET Trails layer (in the "Transportation" folder) – make sure to cite the map source and year.

Potential Mitigation

- Reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will be tailored to each proposed project.

c) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? ☐ ☐ ☐ ☐

General Discussion

This question is concerned with how the proposed project would impact other scenic resources that are not identified in the first two questions, and specifically, impacts to trees, rock outcroppings, historic buildings, and undisturbed areas. For this question, the preparer should identify:

- Other scenic resources designated by the General Plan and applicable Community or Area plan, or Local Coastal Program in the vicinity of the project site;
- Undeveloped or undisturbed areas either on the project site or in the vicinity of the project site;
- Hillside management areas – impacts from grading, any alteration of topography (indicate the quantity);
- Nationally- or state-designated historic resources on, or in the vicinity of, the project site (the County does not currently have an historic preservation ordinance and thus does not designate any historic resources itself)

Development of on-site, greenfield conditions is likely to result in a significant impact given the previously undisturbed nature of the land. Similarly, previously undisturbed land in the vicinity of the project site may be impacted by the buildout of the proposed project if that land is used for construction staging or in some other phase of project buildout.

Resources

- List of Historic resources and points of interest designated by the State of California in unincorporated Los Angeles County - file://regionalfp1/E-DRIVE/Current%20Planning/Wiki/environmental_doc/Historic_sites.pdf
- California Office of Historic Preservation: http://ohp.parks.ca.gov/
- National Register of Historic Places: http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome
- State Register of Historic Places: http://ceres.ca.gov/geo_area/counties/Los_Angeles/landmarks.html

Potential Mitigation

- Reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will need to be tailored to each proposed project and with regard to their specific project site context.
- Compliance with the Hillside Management Ordinance to mitigate impacts in designated hillside management areas to a less than significant level.
- Regarding historic structures, because they are protected by law, mitigation may include complete project redesign or integration of the historic structure into the proposed project.

d) Substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features? ☐ ☐ ☐ ☐

General Discussion

This question wants to know how well the design of the proposed project would integrate with the visual character of its surroundings and the project's level of visual integration from the perspective of height, bulk, pattern, scale, character, or other features. If site photos are unavailable, perform a site visit and document the visual character of the project site and surroundings. Note that state and local laws do not protect views from private properties through the project site of some scenic resource. However, views of a scenic resource through the project site from public space (such as significant recreation or scenic areas such as the Santa Monica Mountains) or designated scenic highways are protected and should be noted. The preparer should take note of:

- The prevailing building heights (specifically, the height in feet and stories of the tallest structure in the vicinity of the project site), architectural styling, and setbacks;
- Hillside management areas – impacts from grading, any alteration of topography (indicate the quantity); and,
- Views of the project site from nearby vantage points.

It is unlikely that the architectural style employed by the proposed project will negatively impact the surrounding community given the wide variety of architectural styles found throughout southern California. However, the height/bulk of the proposed project could negatively impact the surrounding area. Ultimately, the final impact determination will have to do with how well the proposed project integrates with the surrounding neighborhood.

Resources

- Site photos, Site visits, and Project renderings

Potential Mitigation

- Mitigation may include project redesign, reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will be tailored to each proposed project and with regard to their specific project site context.
- Though already required by law, the preparer should mention compliance with the Hillside Management Ordinance to be used to mitigate impacts in designated hillside management areas to a

less than significant level.

e) Create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area? ☐ ☐ ☐ ☐

General Discussion

The preparer must determine whether or not the proposed project would be a new source of substantial shadows, light, or glare. A substantial amount of shadows is dependent upon a combination of factors including the height of the proposed project, the width of the street on which the proposed project is located, the proposed project's setbacks, and the project site's distance from nearby sensitive uses (residences, schools, parks, etc), and how long any shadows created by the proposed project are cast upon those sensitive uses. A land use survey of sensitive uses around the project site may be needed. If there are no sensitive uses nearby, there will be no shade/shadow impacts. For projects only achieving a couple of floors, it is unlikely that they will generate shadows of sufficient size to be cast upon nearby sensitive uses. However, with taller projects, it is far more likely that shadows will be cast upon nearby sensitive uses, and a shade/shadow modeling may be required. Note that Los Angeles County does not have any significance thresholds for determining potential impacts.

For light or glare, the preparer must take note of the project's surface materials, lighting program, and any signage component. Regarding glare, a project containing large expanses of windows and covered with lots of reflective surfaces could potentially result in a significant impact as light reflecting from the proposed structure may impede views in and around the project site. A project that contains a significant amount of light that is not shielded may significantly impact views in the project vicinity as the light pollution may hinder views of the night sky and other visual elements. However, the proposed project would be unlikely to result in a significant impact regardless of the amount of light generated because it would be required to comply with the County's Dark Skies Ordinance (once adopted). This ordinance would address such things as directing lighting toward the ground and shielding lights to prevent light pollution.

Resources

- Shade/shadow model (if needed)
- Check with Building & Safety
- Note: San Gabriel CSD 45 degree angle clauses related to glare and light

Potential Mitigation

- Since Los Angeles County does not have any adopted significance thresholds, the best way to mitigate any potentially significant shadow impacts would be to break up the shadow as much as possible, which may require that the applicant redesign the project such that the massing is broken up to create passages through which light may pass or that the applicant reorient the proposed structure such that the shadows generated are smaller.
- Potential mitigation for glare impacts may include requirements that all non-glass reflective surfaces be sanded down to reduce the project's reflectivity and on all glass surfaces, that the developer apply a low reflective coating, use of tinted windows or even curtains;
- Potential mitigation for light generation includes compliance with Los Angeles County's Dark Skies Ordinance.

EVALUATION OF ENVIRONMENTAL IMPACTS:

Official State Scenic Highways are designated by the California Department of Transportation (CalTrans). According to CalTrans, "[t]he stated intent (Streets and Highway Code Section 260) of the California Scenic Highway Program is to protect and enhance California's natural beauty and to protect the social and economic values provided by the State's scenic resources" (State of California Department of Transportation, California Scenic Highway Program, website: http://www.dot.ca.gov/dist3/departments/mtce/scenic.htm, accessed October 6, 2011). While there are numerous designated Scenic Highways across the state, the following have been designated in Los Angeles County: Angeles Crest Highway (Route 2) from just north of Interstate 210 to the Los Angeles/San Bernardino County Line, two segments of Mulholland Highway from Pacific Coast Highway to Kanan Dume Road and from west of Cornell road to east of Las Virgenes Road, and Malibu Canyon-Las Virgenes Highway from Pacific Coast Highway to Lost Hills Road.

In addition to scenic highways, unincorporated Los Angeles County identifies ridgelines of significant aesthetic value that are to be preserved in their current state. This preservation is accomplished by limiting the type and amount of development near them. These "Significant Ridgelines" ("Major Ridgelines" on Santa Catalina Island) are designated by the General Plan or applicable Area/Community Plan, Local Coastal Program, or Community Standards District.

Riding and hiking trails have been designated throughout unincorporated Los Angeles County. At present, there are officially adopted trails in the Antelope Valley, the Santa Clarita Valley, and the Santa Monica Mountains designated by the General Plan or applicable Area/Community Plan and Local Coastal Program.

FOR projects in Hillside Management Areas:

The Hillside Management Ordinance (Los Angeles County Code Title 22, Section 22.56.215) is designed to protect designated hillsides from incompatible development. The County of Los Angeles designates two hillside management areas, one urban and one non-urban with both designations applying to properties that have hillsides with a 25 percent grade or greater. The ordinance protects these resources by requiring almost all development on properties with either the urban or non-urban designation to obtain a conditional use permit with the intent of preserving the remaining natural topography.

Briefly describe the proposed project, the environmental and/or regulatory setting related to all of the questions above, and your environmental determination.

APPENDIX C

PROJECT AREA PHOTOGRAPHS

APPENDIX C

PROJECT AREA PHOTOGRAPHS

Photo 1. Taken from northeast corner of 110th Street West and West Avenue J, approximately 0.5 mile north of the Project site, looking south to east.

Photo 2. From the top of the Valley Vista Trail in the Antelope Valley California Poppy Reserve, approximately 5 miles west of the Project site.

Photo 3. Taken along 110th Street West approximately 0.5 mile south of West Avenue K and the Project site, looking north.

Photo 4. Taken from Quartz Hill, looking west to northwest, approximately 7 miles southeast of the Project site, looking northwest.

Photo 5. Taken from the California Aqueduct Trail, approximately 0.6 mile south of the Project site, looking north/northeast.

Photo 6. Taken from the northeast corner of 110th Street West and West Avenue K, adjacent to the Project site, looking east to north.

APPENDIX D

CONTRAST RATING FORM

TETRA TECH EC, INC.

Visual Contrast Rating Worksheet For KOPs on Non-NFS/BLM Lands

Section A: Project Information

Project Name	Key Observation Point	Latitude / Longitude	Notes
Western Antelope Blue Sky Ranch	PP007	34° 40'33.55" N 118° 19' 26.33"	Adjacent to the southeast corner of the Project site, looking west to north.

Section B: Characteristic Landscape Description

	Land / Water	Vegetation	Structures
Form	FG/MG: flat landscape sloping upwards to the left in the immediate foreground BG: Rugged mountains	FG/MG: Clumpy grasses and shrubs, patchy grass areas, matted grasses, circular/oval trees BG: Patchy	FG/MG: Short/vertical (street signs), Tall/vertical and repeating (distribution poles), Vertical/H-shaped (lattice towers), vertical/conical (lattice towers), rectangular (signs), thick bands (road)
Line	FG/MG: Horizontal, sloping BG: horizontal, Jagged	FG/MG: Horizontal (trees in line along field lines) BG: Horizontal/undulating (vegetation change at foot of Tehachapi mountains)	FG/MG: Vertical/diagonal repeating (transmission towers and conductors), Horizontal/diagonal (road), BG: Vertical (Wind turbines)
Color	FG/MG: Tan) BG: Mountains in background are hazy and blue toned with reddish, black, and white (snow) patches	FG/MG: grey-green, grey, tan, dark green BG: hazy/bluish	FG/MG: dark brown, medium grey, white, blue, (transmission towers), light grey, white, and brown (structures) BG: white (wind turbines)
Texture	FG/MG: Fine, granular BG: Coarse	FG/MG: Course (grass clumps), smooth (matted grasses) BG: Fine/in dis tin gush able. Patchy texture at high elevations.	FG/MG: ordered (street sign) BG: Coarse (wind turbines)

Section C: Proposed Activity Description

Has Photo Simulation Been Created for KOP? ☐ Yes ☐ No If Yes, Figure Number: _____

	Land / Water	Vegetation	Structures
Form	No change	No change	FG/MG: Banded rectangular structures BG: No change
Line	No change	No change	FG/MG: Long, thick horizontal line, short thing vertical lines BG: No change
Color	No change	No change	FG/MG: black, grey, light grey/silver/white BG: No change
Texture	No change	No change	FG/MG: Smooth, ordered BG: No change

Section D: Contrast Rating

Degree of Contrast / Features	Land/Water				Vegetation				Structures			
Elements	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form				✓				✓		✓		
Line				✓				✓		✓	✓	
Color				✓				✓			✓	
Texture				✓				✓			✓	

Overall Level of Contrast: Moderate

Section E: Viewer Sensitivity

Viewer Expectations	Duration of View	Use Volume	Overall Sensitivity
Low	Short	Moderate	Low

Additional Comments

Rows of modules mimic the horizontal lines of the flat landscape, and repeat colors that already exist in the existing environment. Contrast is moderate due to the prominence of the solar panels in the immediate foreground.

Evaluators Names	Date
Tara Low	8/16/12

TETRA TECH EC, INC.

Visual Contrast Rating Worksheet For KOPs on Non-NFS/BLM Lands

Section A: Project Information

Project Name	Key Observation Point	Latitude / Longitude	Notes
Western Antelope Blue Sky Ranch	PP005	34° 39'54.54" N 118° 19' 58.40"	0.6 mile south of the Project site along California Aqueduct Trail, Looking north/northeast

Section B: Characteristic Landscape Description

	Land / Water	Vegetation	Structures
Form	FG/MG: Rounded hills, flat landscape, amorphous (rocks) BG: flat landscape, rugged mountains	FG/MG: Clumpy grasses and shrubs, patchy grass areas, matted grasses, circular/oval trees BG: Patchy	FG/MG: Short/vertical (fence posts), Vertical/conical (lattice towers), vertical/tall (communication towers), banded (trails and roads), patchy (development areas)
Line	FG/MG: Undulating, horizontal BG: horizontal, Jagged	FG/MG: Horizontal (trees in line along field lines) BG: Horizontal (vegetation change at foot of Tehachapi mountains)	FG/MG: Vertical/diagonal (transmission towers), fence posts. Horizontal/diagonal (roads and trails), BG: Vertical (Wind turbines)
Color	FG/MG: Reddish-tan to tan, light grey (rocks) BG: lighter tan (flat land). Mountains in background are hazy and blue toned with reddish, black, and white (snow) patches	FG/MG: Reddish-brown, grey-green, light green, grey, tan, dark green BG: tan, hazy/blue	FG/MG: dark brown, light tan (fence posts), dark grey (transmission towers), light grey, white, and brown (structures) BG: dark grey to brown (buildings and transmission towers), white (wind turbines)
Texture	FG/MG: Fine BG: Indistinguishable	FG/MG: Course (grass clumps), smooth (matted grasses) BG: Fine/indistinguishable	FG/MG: Coarse, repeating (lattice structures) BG: Coarse (wind turbines)

Section C: Proposed Activity Description

Has Photo Simulation Been Created for KOP? ☐ Yes ☐ No If Yes, Figure Number: _____

	Land / Water	Vegetation	Structures
Form	No change	No change	FG/MG: Rectangular BG: No change
Line	No change	No change	FG/MG: horizontal BG: No change
Color	No change	No change	FG/MG: Greyish blue, white BG: No change
Texture	No change	No change	FG/MG: Smooth BG: No change

Section D: Contrast Rating

Degree of Contrast / Elements	Land/Water				Vegetation				Structures			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form				✓				✓			✓	
Line				✓				✓			✓	
Color				✓				✓			✓	
Texture				✓				✓			✓	

Overall Level of Contrast: LOW

Section E: Viewer Sensitivity

Viewer Expectations	Duration of View	Use Volume	Overall Sensitivity
Moderate	Short	High	Moderate

Additional Comments

Project is partially screened by terrain. Modules appear grey-blue at this distance - similar to colors that already exist in the landscape. Overall contrast from this viewpoint is low.

Evaluators Names	Date
Tara Low	8/16/12

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APPENDIX B-1.3

PROJECT 3 AMERICAN SOLAR GREENWORKS AESTHETIC IMPACTS REPORT

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

AMERICAN SOLAR GREENWORKS
(CUP GROUP 9)
AESTHETIC IMPACTS REPORT

Prepared for:

44 Montgomery Street, Suite 3065
San Francisco, CA 94104

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Tetra Tech EC, Inc.
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August 2012

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1.0 INTRODUCTION

This Aesthetics Impact Report has been prepared for the proposed American Solar Greenworks (CUP 9) Solar Generation Facility Project (Project) to assess the potential visual impacts resulting from the construction and operation of the Project. The Project is proposed by Silverado Power, LLC, for a 136-acre site approximately 6 miles northwest of Lancaster, California. The Project is located in unincorporated northern Los Angeles County (Figure 1).

For the purposes of the visual assessment, “Project site” refers to the area within the delineated boundary for the Project components, and ”Project area” refers to those landscapes within 15 miles of the Project site.

2.0 PROJECT DESCRIPTION

The proposed Project will have a total generating capacity of 35 megawatts alternating current and be located on 136 acres of primarily unproductive agricultural land (Figure 2). The Project site is comprised of three rectangular parcels; American Solar Greenworks, Pinnacle Solar Ranch, and West LA Greenworks (Figure 1). The Project site is located approximately 6 miles northwest of Lancaster, California in unincorporated northern Los Angeles County. The Project site is bounded by West Avenue G to the north, 70th Street West to the east, Avenue G-12 to the south, and 75th Street West to the west.

The Project will employ a series of photovoltaic (PV) module arrays to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system. The PV modules convert sunlight into low-voltage direct current (DC) power, which is subsequently transformed into alternating current (AC) power through an inverter.

The Project will consist of construction and operation of a solar generation facility that will utilize PV technology on fixed-tilt or tracker mounting supports. The Project will be constructed in phases and operated for a period of 35 years, and will consist of the following elements:

- PV modules
- Module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- One two-acre substation
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing

It is anticipated that the Project will require a Conditional Use Permit from Los Angeles County for the construction and operation of this facility.

The following sections detail the visual characteristics of major project components.

Date: 8/16/2012 4:27:28 PM
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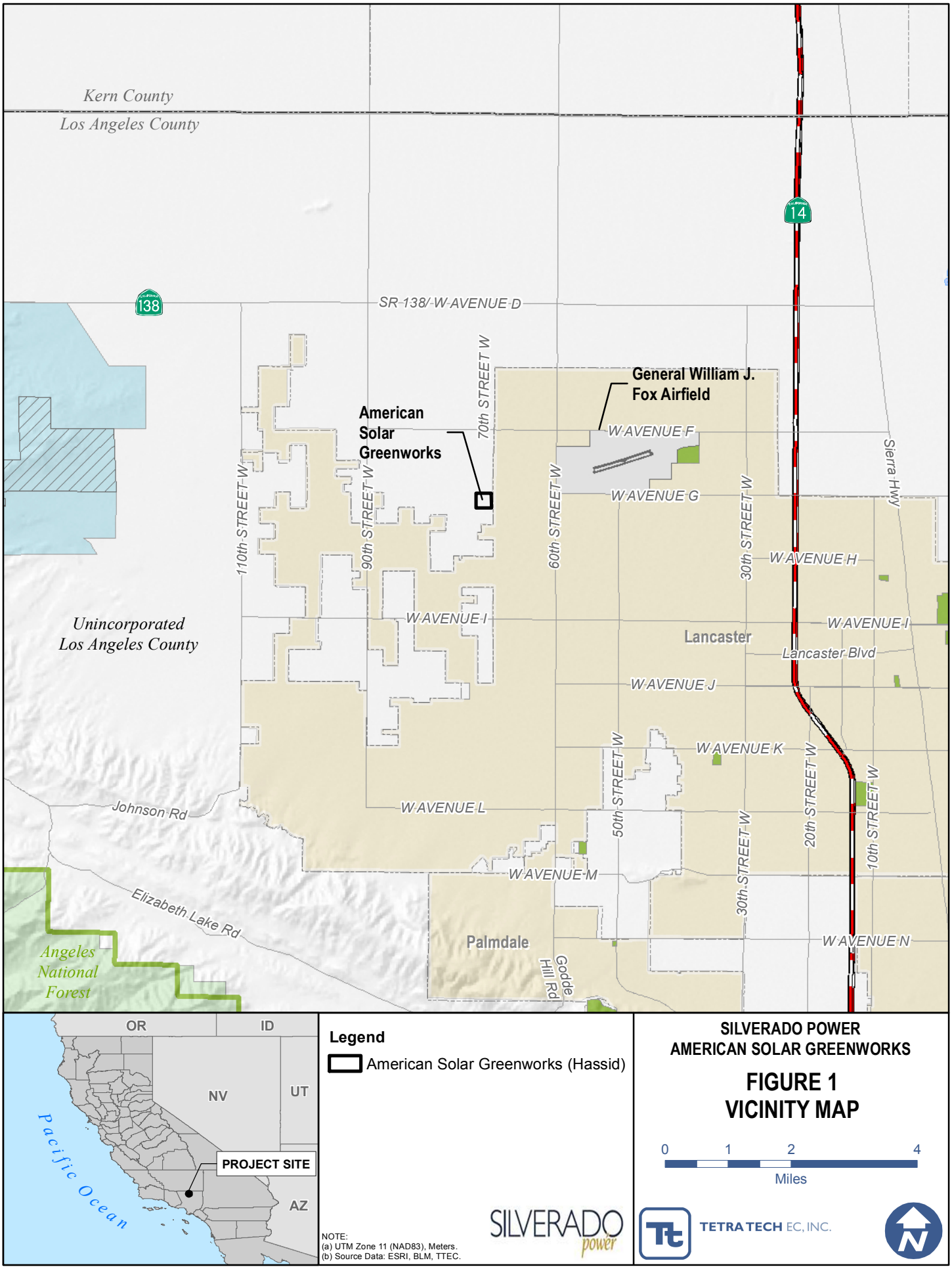

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

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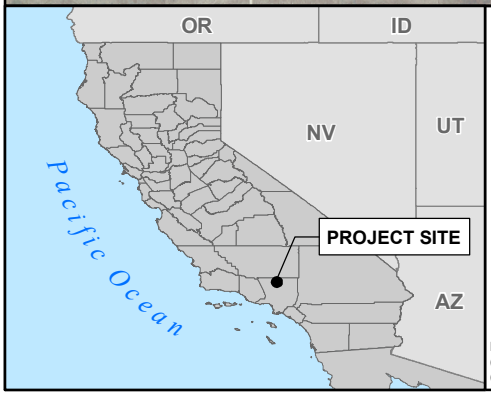

Legend

American Solar Greenworks (Hassid)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.

SILVERADO power

SILVERADO POWER
AMERICAN SOLAR GREENWORKS

FIGURE 2
VICINITY AERIAL MAP

0 1,000 2,000 4,000
Feet

TETRA TECH EC, INC.

2.1 Photovoltaic Modules

The solar generation facility will require installation of PV modules. The total number of PV modules required will depend on the technology selected, optimization evaluation, and detailed design. The market conditions, economic considerations, and the environmental factors will be taken into account during the detail design process. The following PV module technologies or equivalent are being considered for incorporation into the Project:

- PV thin-film technology
- PV crystalline silicon technology
- Fixed-tilt configuration

The modules configured with a fixed tilt will be oriented toward the south and angled at a degree that will optimize solar resource efficiency. Modules will be non-reflective and highly absorptive.

The PV modules will be thin rectangular blocks, mounted in multiple rows aligned from east to west. The front of each module will appear in varying shades of dark blue and purple, depending on the angle of the sun and brightness of the sky. The backs of the modules will be colored either white or a very light gray. The modules will be mounted on light gray steel support structures. The modules will be arranged at a fixed angle (i.e., tilted) of 45 degrees towards the sun. Depending on the final design, the assembled PV modules will have a typical height of approximately 6.5 feet above the ground, based on the orientation of the racks.

A site plan is provided in Appendix A to show the arrangement of the PV arrays. The Project will consist of PV array blocks measuring approximately 559 feet by 337 feet (covering approximately 4.3 acres each). Each block will contain rows of PV arrays and an inverter/electrical equipment pad, which will consist of equipment enclosed in a gray-colored box approximately 9-feet tall, and a small parking area.

During construction of the PV facilities, the proposed Project site will be cleared of vegetation, graded to remove localized mounds or valleys, and internal roads finished with a layer of aggregate to allow for various construction activities to take place. These activities will include trenching for installation of gathering lines, pouring of the support structure foundations, delivery of the PV module components, and PV module installation. Disturbance areas will appear as large patches of fine, buff-colored rock and soil. Construction activities may produce visible dust but impacts will be mitigated to less than significant with implementation of the fugitive dust plan.

2.2 Generation Tie-Line

The power generated by the Project will be connected to the existing transmission network with the voltage transformation equipment and system safety equipment constructed on the site. The collector system cables will be located underground, and will connect to a generator step-up transformer. The main collector cables will rise into the low-voltage busbar and protection equipment that will be enclosed together with the generator step-up transformer. The primary switchgear includes the main circuit breaker and utility metering equipment, and it will be

enclosed together with the generator step-up transformer. Both the generator step-up transformer and the primary switchgear will stand approximately 87 inches in height.

The output of the switchgear will be the start of the generator tie-line (gen-tie). Electricity will be delivered to the existing Southern California Edison 66-kV transmission line adjacent to the northern border of the West LA Greenworks and American Solar Greenworks parcels.

2.3 Substation

One two-acre substation is proposed to serve the Project site. The substation will be located in the northeast corner of the American Solar Greenworks parcel. The location for the proposed substation is shown in the Site Plan in Appendix A.

The substation site will be appropriately graded and excavated to accommodate transformer equipment. A concrete foundation will be constructed for the substation, and structural components include transformers, switchgear, and safety systems, as well as footings and oil containment system for the transformers. The equipment will appear similar to other substations in the Project area, including the Antelope Substation (but on a smaller scale). In general, substations are characterized by many long, thin cylinders of bluish-gray steel, arranged in a geometric pattern of vertical and horizontal lines. Multiple short geometric blocks housing various electrical monitoring components will be present on the substation site. Some pieces of equipment will be constructed with a smooth stainless steel finish that will be moderately reflective under certain light conditions. The ground surface of each substation site will be finished with a light tan to buff-colored covering of small stones and gravel.

2.4 Other Infrastructure Elements

A series of internal access roads and driveways will extend throughout the proposed Project site between the PV arrays and will be characterized by approximately 20-foot-wide bands of light tan and buff-colored aggregate.

The perimeter of the three parcels will each be enclosed by a galvanized chain link fence topped with a three-strand barbed wire section. The total height of the fence will be 8 feet. The light gray fence posts will be spaced at approximately 10-foot intervals. The 40-foot long driveway from the street to the gates will be 24 feet wide. A 10,000 gallon fire water tank will be located at the gate. Portable toilets will be provided during construction, but no other sanitary facilities will be onsite. Lighting at specific locations for nighttime security purposes will be fence or structure-mounted and will be directed downwards.

An access gate will be located along the west side of 70th Street West, between the American Solar Greenworks and Pinnacle Solar Ranch parcels.

3.0 REGULATORY SETTING

3.1 California Environmental Quality Act

A Conditional Use Application was filed with Los Angeles County in June 2011 for construction and operation of the Project. Los Angeles County is responsible for implementing the

requirements of the California Environmental Quality Act (CEQA) for projects proposed for unincorporated Los Angeles County, in accordance with the California Public Resources Code, Section 21000 et. seq. (CEQA). Appendix G of the 2012 State CEQA guidelines (Association of Environmental Professionals 2012) contains four questions relating to visual resources and aesthetics.

a) Would the project have a substantial adverse effect on a scenic vista?

b) Would the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

c) Would the proposed project substantially degrade the existing visual character or quality of the site and its surroundings?

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

In addition, the Los Angeles County currently utilizes the Environmental Checklist Form (Initial Study) to provide thresholds of significance for potential impacts to resources including aesthetics (Correspondence and Environmental Checklist Form provided in Appendix B). The following five questions relating to visual resources and aesthetics are provided;

a) Would the project have a substantial adverse effect on a scenic vista?

According to the Environmental Checklist Form, a scenic vista may include designated scenic highways, scenic highways or resources designated by local land use plans, scenic highways or corridors designated by cities adjacent to or near the project site, or significant ridgelines. If the proposed project is not sited near any designated scenic highways, significant ridgelines, or other identified scenic resources, it is unlikely to result in impacts related to having a substantial adverse effect on a scenic vista.

b) Would the project be visible from or obstruct views from a regional riding or hiking trail?

Impacts may arise from the vacation of a portion of a trail, degradation of the scenic character in and around the trail, or obstruction of expansive views visible from the trail's course but not compromising the trail itself.

c) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

According to the Environmental Checklist Form, this question is concerned with not only trees, rock outcroppings, and historic buildings, but also undisturbed areas and hillside management areas. The question required identification of "undeveloped" or "undisturbed" areas either on the project site or in the vicinity of the project site. According to the form, development of on-site greenfield conditions is likely to result in a significant impact given the previously undisturbed nature of the land.

d) Would the project substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?

This checklist question evaluates how well the design of the proposed project would integrate with the visual character of its surroundings and the project's level of visual integration from the perspective of height, bulk, pattern, scale, character, or other features. According to the checklist, the height/bulk of a project could negatively impact the surrounding area. Ultimately, the final impact determination will have to do with how well the proposed project integrates with the surrounding neighborhood.

e) Would the project create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area?

Whether a project will produce a substantial amount of shadows is dependent upon a combination of factors including height of the project, width, setbacks, and the length of shadows cast upon potentially sensitive uses. Light or glare is dependent on a project's surface materials, lighting program, and signage. Projects involving large expanses of reflective surfaces may potentially result in a significant impact if reflected light (glare) impedes views in and around the project site. The checklist states that projects must comply with Los Angeles County's Dark Skies Ordinance, however at the time of this report, the Dark Skies Ordinance had not been officially adopted.

The county checklist questions are largely based on the state checklist, with the County's questions requiring additional detail. This Aesthetics Impacts Study therefore uses the County checklist and associated guidance to determine if the Project will potentially impact visual resources, and whether those impacts are less than significant, less than significant with mitigation, or significant.

3.2 Local Land Use Plans and Guidance

Development in the Project area is guided by county and local land use plans. Land use plans reviewed for relevant guidelines and policies include the Los Angeles County General Plan, the Antelope Valley Area Plan, and the City of Lancaster General Plan.

3.2.1 Los Angeles County General Plan

The Los Angeles County General Plan (Los Angeles County 1980) included the following policy relevant to visual resources:

- *General Goals and Policies, Goal 15:* Protect areas that have significant natural resources and scenic values, including significant ecological areas, the coastal zone, and prime agricultural lands.
- *Conservation and Open Space Goals and Policies, Policy 15:* Protect the visual quality of scenic areas including ridgelines and scenic views from public roads, trails, and key vantage points.

The Los Angeles County General Plan also identifies officially designated scenic highways, and divides proposed scenic highways into first- and second-priority proposed scenic highways. First

priority routes recommended for further study include the Antelope Valley Freeway, located approximately 1 mile east of the Project site. There are no second-priority routes in the vicinity of the proposed Project site.

3.2.2 Antelope Valley Area Plan

The Project site is located within the boundaries of the planning area for the Antelope Valley Areawide General Plan (Los Angeles County 1986). The areawide plan contains the following policy relevant to visual resources:

- *Policy 22:* Minimize environmental degradation by enforcing controls on sources of pollutants (including visual pollution) and noise.

Visual pollution is not defined by the general plan, but typically includes dust, smog, trash, or visual clutter.

3.2.3 Los Angeles County Hillside Management Ordinance

The Hillside Management Ordinance (Los Angeles County Code Title 22, Section 22.56.215) designates hillside management areas in urban and non-urban areas that have hillsides with a 25 percent grade or greater. The ordinance requires development on properties covered by the hillside management ordinance to obtain a conditional use permit with the intent of preserving remaining natural topography.

4.0 SITE VISIT METHODOLOGY

4.1 Identification of Potential Scenic Areas

Potential scenic areas were identified prior to the field visit so they could be evaluated and photographed. Potential scenic areas were identified from review of maps, local land use plans, county land use plans, and relevant guidance as described in Section 3.0.

As detailed in Section 3.1, the Los Angeles County Environmental Checklist Form (Appendix B) identifies other aesthetic considerations and categories of scenic resources that must be addressed. The following categories of scenic resources are addressed in this report:

- Scenic highways
- Scenic highways or resources designated by local land use plans
- Scenic highways or corridors designated by cities adjacent to or near the Project site
- Significant Ridgelines
- Hillside Management Areas
- Riding and Hiking Trails
- Trees, Rock Outcroppings, and historic buildings within a state scenic highway
- Undisturbed land on the Project site or in the vicinity of the Project site

Guidance contained in question (a) in the Aesthetics Section of the Environmental Checklist requires consideration of scenic resources designated by local land use plans or by cities adjacent to or near the project site. The City of Lancaster's Master Environmental Assessment (MEA) (2009a) and the City of Lancaster's General Plan (2009b) were used to identify specific scenic resources in the area. Although the Project is located in unincorporated Los Angeles County outside municipal boundaries, it is inside the "Sphere of Influence" identified in the MEA. Scenic resources are defined by the MEA as "those unique visual features that provide attractive views either into or from the study area" (City of Lancaster 2009a). Five scenic areas were identified in the Sphere of Influence identified in the MEA, which included areas beyond the city of Lancaster's municipal boundaries: the Foothills Area, Little Buttes, Quartz Hill, Piute Ponds, and Little Rock Wash:

- The Foothills Area is the northern edge of the San Gabriel Mountains. The area between the Angeles National Forest and the Antelope Valley provides many trails for hiking and biking. Trails along the California Aqueduct provide access for hiking, biking, and fishing. These trails provide visitors with expansive views of the surrounding mountains and Antelope Valley. The MEA identifies a visual buffer area extending from the foothills area into the valley, but does not provide specific direction for management of the visual buffer area.
- Little Buttes is located approximately 7.5 miles west of the Antelope Valley Freeway, and 1.5 miles north of West Avenue D. Little Buttes is a butte (hill) rising from the flat desert landscape, and is crossed by a number of undesignated hiking trails.
- Quartz Hill is a hill surrounded by residential development within the unincorporated community of Quartz Hill immediately south of the City of Lancaster. Quartz Hill rises over 200 feet above the surrounding community and is located approximately 2.7 miles west of the Antelope Valley Freeway along West Avenue M/Columbia Way.
- The Piute Ponds area is located on Edwards Air Force Base east of the Antelope Valley Freeway. Access is restricted, and special permission is required to enter the area. The Piute Ponds consist of several shallow amorphous ponds on the southern edge of Rosamond Dry Lake. These ponds form a series of interconnected impoundments that receive wastewater from the Lancaster Water Reclamation Plant as well as seasonal runoff from washes that cross the valley floor (University of California-Santa Barbara 2009). Recreational activities in the Piute Ponds area include hiking and wildlife watching.
- Little Rock Wash, located approximately 11 miles southeast of the proposed Project site and one of the larger washes in the Project area, is dry most of the year. According to the MEA (City of Lancaster 2009a), Little Rock Wash is the most significant natural desert wash within the study area in terms of plant diversity and biological value. Little Rock Wash is considered a Significant Ecological Area. Trails and proposed trails exist in the area of Little Rock Wash. The MEA identifies a visual buffer area surrounding the wash, but does not provide specific direction for management of the visual buffer area.

The MEA also mentions the scenic value of the Antelope Valley California Poppy Reserve, a state natural reserve, located west of the Sphere of Influence. The Poppy Reserve receives the majority of its visitors during the spring and early summer months when the poppy flowers that are common to the area are in bloom.

The MEA mentions the Joshua tree as the most well-known desert plant in the Antelope Valley, with desert and desert woodland plant communities being of significant local and regional value. The Lancaster General Plan identifies local views of the surrounding buttes, Quartz Hill, and long distance panoramas of the San Gabriel Mountains and desert expanses as visual/scenic resources.

The MEA also identifies several roadways that could potentially serve as scenic routes in the future, but currently have no formal designation. These include the following:

- Antelope Valley Freeway, for long-range views of the San Gabriel Mountains to the southwest, south, and southeast, and far-off views of the San Bernardino Mountains to the southeast and the Tehachapi Mountains to the northwest. To the north this route provides close-in views of open desert lands.
- Avenue K between 110th Street West and 90th Street West, for views of the San Gabriel Mountains to the south and of the Portal Ridge foothills to the southwest.
- Avenue M between the Antelope Valley Freeway and 60th Street West, for views of the San Gabriel Mountains to the south and Quartz Hill.
- 60th Street West between Avenues K and M, for views of Portal Ridge to the west and the San Gabriel foothills to the south.
- 90th Street West, for long-range views of the San Gabriel Mountains to the south and southwest, close-in views of the open desert in the northern portion of the valley and of the Tehachapi Mountains to the northwest.

4.2 Field Visit

In an effort to properly assess the existing visual character of the landscapes in the Project area, a field visit to the proposed Project site and the surrounding Project area was conducted on April 6, 2012 by Tetra Tech environmental planner Michael DiSano. The weather was primarily clear, with widely scattered clouds.

A Nikon D90 digital single lens reflex camera (dSLR) equipped with a 35-millimeter (mm) lens was used to take the photographs. When used with a 1.5x cropped-sensor camera such as the D90, a 35-mm lens is considered a “52-mm equivalent lens.” A 52-mm equivalent lens is considered a “normal lens” that closely approximates the field of vision of the human eye. In photos taken using the combination of the D90 and a 35-mm lens, the size and scale objects in the background and foreground are depicted realistically, and are not distorted.

The Nikon D90 dSLR was also equipped with a Global Positioning System (GPS) device manufactured by Promote Systems. This GPS device records the latitude, longitude, and elevation of each photograph as it is taken and embeds this information in the .jpg itself. This feature allows one to upload the Project area photos to a Google Earth .kmz, which displays both the photos themselves and the locations where each photo was taken on an interactive representation of the earth. Other relevant project information, such as Project boundaries, existing transmission infrastructure, and jurisdiction boundaries can be displayed simultaneously in the .kmz along with the photo locations.

Each location where photographs were taken is referred to as a "photo point" in this report. At each photo point, a panorama, or an overlapping series of photos, is captured. After the conclusion of the field visit, each of these panoramas was created using a panorama creation program called PTGui. These panoramas were then added to a Google Earth .kmz file, where the locations of each panorama were displayed on an interactive representation of the earth. A map showing the locations of each of the photo points visited during the field visit can be seen in Figure 3. Panoramic photos taken during the field visit relevant to the Project site and this analysis are provided in Appendix C.

Photo points were captured at the proposed Project site from locations along adjacent roads and intersections near the Project site (Figure 3). During this site visit, the following locations were visited and photographed:

- The proposed Project site, and other sites proposed for solar development for separate permitting processes
- Locations in representative landscapes in the Project area where the Project may be seen
- Potentially sensitive viewing areas where the Project may be seen, which can include residential areas, community facilities such as parks, open space areas, fairgrounds, or playgrounds, or highways or well-travelled roads
- Scenic areas identified in the City of Lancaster's Master Environmental Assessment, including the Poppy Reserve, Foothills Area, Little Buttes, and Quartz Hill.

Photos were not taken from Piute Ponds and Little Rock Wash, both located east of the Antelope Valley Freeway for the purpose of this visual assessment. The Piute Ponds area is located on Edwards Air Force Base approximately 8 miles northeast of the Project site, and special permission is required to enter the area. The Project site will not be visible from Piute Ponds due to distance. The visual resource specialist drove around the Little Rock Wash area, located approximately 14 miles southeast of the Project site, to observe the regional setting. The Project site is not visible from the Little Rock Wash area due to the distance of the Project site from Little Rock Wash, and the location of development associated with the City of Lancaster between Little Rock Wash and the Project site.

4.3 Photographic Simulations and Contrast Ratings

When assessing the potential visual impacts of the proposed Project, it is important to compare the visual characteristics of existing landscapes in the Project area with the visual characteristics of specific Project components that will be visible in those landscapes. The BLM's visual contrast rating process (*Handbook 8431-1 Visual Resource Contrast Rating*) was used as the basis for reviewing potential impacts to visual resources. Because the proposed Project is on private land and not subject to BLM regulations, a form adapted from the BLM's Visual Contrast Rating Worksheet (BLM Form 8400-4) was used to assess the degree of contrast the proposed project will introduce to the existing landscape.

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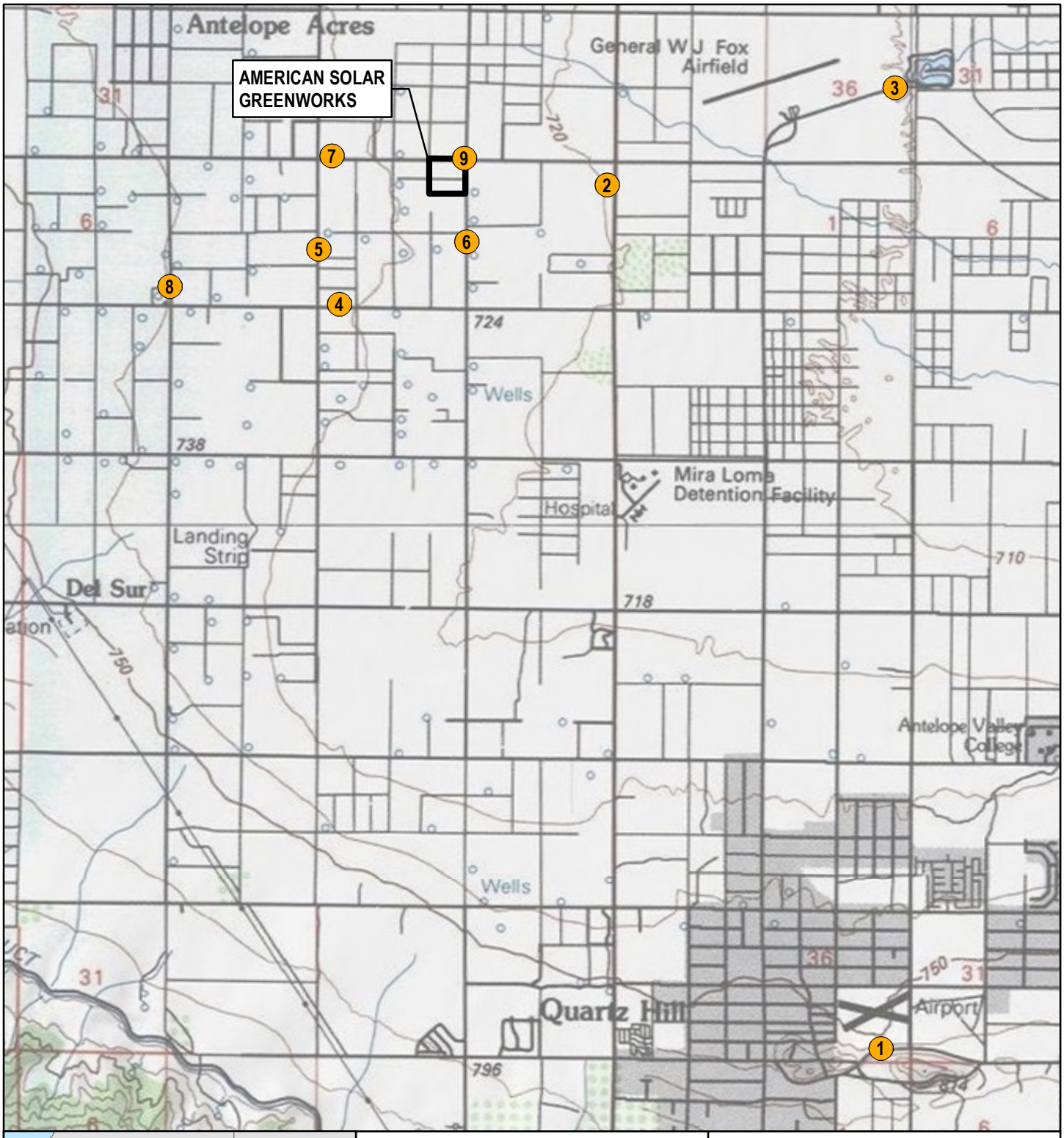

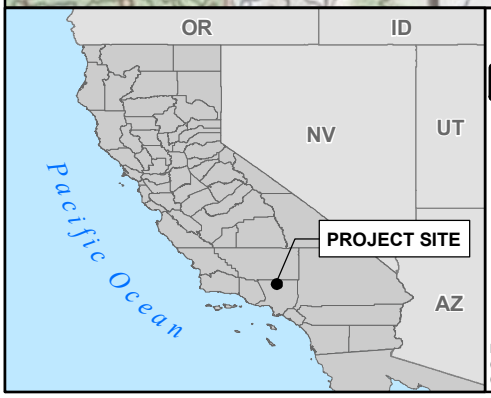

Legend

- American Solar Greenworks (Hassid)
- Photo Locations

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.

SILVERADO power

SILVERADO POWER
AMERICAN SOLAR GREENWORKS

FIGURE 3
PHOTO LOCATION MAP

0 2,500 5,000 10,000
Feet

TETRA TECH EC, INC.

The visual contrast rating worksheet uses landscape character elements and distance zones to describe the landforms (including water), vegetation, and man-made features (structures) that currently exist in the landscape using the basic landscape character elements of form, line, color, and texture:

- Form—The shape and mass of landforms or structures
- Line—The edge of shapes or masses, silhouettes, or bands
- Color—The property of reflecting light of a particular intensity of wavelength that the eye can see
- Texture—The nature of the surface of landforms, vegetation, or structures

When the visual resources in an area are described, the distance between objects or landforms and any potential viewer has a direct influence on that description. Objects or features that are closer to a viewer's location will appear more detailed and more dominant than those that are further away. The following distance zones are used in landscape descriptions:

- Foreground/Middleground—Areas immediately in front of to 5 miles away from an observer
- Background—Areas from 5 to 15 miles away from an observer
- Seldom Seen—Beyond background or can't see

Descriptions of the existing landscape and of the landscape after a proposed project is implemented are compared to identify the level of contrast a project's components may introduce. Photographic simulations are often created to help visualize the impacts to the existing landscape and to aid in the description of the proposed Project components. These simulations are created using a combination of Geographic Information Systems (GIS) and current 3D software to ensure accuracy in the locations of the proposed Project components.

5.0 AFFECTED ENVIRONMENT

5.1 Regional Landscapes

The proposed Project site is located in the Antelope Valley, which is part of the Mojave Desert basin. The Antelope Valley is broad and relatively flat, with few variations in topography. The valley is shaped like a sideways letter "V," sloping northward toward the Tehachapi Mountains and southward toward the San Gabriel Mountains. The western portion of the valley slopes upward toward the point where these two mountain ranges come together at the junction of the San Andreas and the Garlock faults. In the Project area, these mountain ranges are characterized by many complex and well-eroded hills rising approximately 2,000 to 5,000 feet above the valley floor. Many small valleys and drainage complexes are visible in the foothills that border the valley.

Surface water is rarely observed in the Antelope Valley. There are many washes that meander across the valley; however, these streams are dry for the majority of the year and only fill with water during the spring snow melt originating from the nearby mountains and after major rain events. Conversely, concrete-lined aqueducts, which include the California Aqueduct and the

Los Angeles Aqueduct, parallel the natural contours of the foothills of the San Gabriel and Tehachapi Mountains. Recreational trails line the California Aqueduct, which is located approximately 6 miles south of the Project site.

Several high-voltage transmission lines are located in the local Project area, many of which are connected to the Antelope Substation, located approximately 3.4 mile southeast of the Project site. Several high-voltage transmission lines and electric distribution lines converge at the Antelope Substation.

The desert woodland vegetation native to the Mojave Desert includes tall, irregular Joshua Trees, and round Juniper shrubs ranging from 4 to 10 feet tall (City of Lancaster 2009b). In most of the Project area, the native woodland vegetation has been cleared for agricultural use. Irrigated agricultural areas appear as square, rectangular, or circular green shapes on the brown-toned desert landscape. Root vegetables and fruit trees, as well as alfalfa, hay, and grapes are grown in the valley. In portions of the Project area where agriculture has yet to be developed or has been abandoned, a mixture of short grasses, wildflowers, and low desert scrub bushes are common. During the spring bloom, wildflowers cover the valley in brilliant displays of orange, yellow, and purple wildflowers (City of Lancaster 2009b). On the slopes of the foothills to the north and south, low woody vegetation is common, and includes scrub oak, sagebrush, Creosote, and Juniper bushes. During the spring and early summer, this vegetation appears in varying shades of dark and light green. During the fall and winter, patches of dark brown and grayish red hues are visible.

There are several well-developed cities in the Project area. Both Lancaster and Palmdale, located approximately 6.5 and 13.1 miles southeast of the proposed Project site respectively, each have a population of more than 100,000. The nearby city of Quartz Hill (approximately 6 miles southeast of the Project site) has a population of more than 10,000. The Project site is located northwest of densely developed areas associated with Quartz Hill, Palmdale and Lancaster. Photo 1 in Appendix C shows a view towards the Project site from Quartz Hill.

Development proximate to the Project site is mostly rural in nature. There are several rural ranch residences located directly adjacent to, or within a mile of the Project site. Several of the ranch residences have trees planted around them that will provide some degree of vegetative screening from the proposed Project. Antelope Acres, a residential community consisting of rural ranch-style homes, is located approximately 1.2 miles northwest of the Project site. A restaurant (Foxy's Southwest Steakhouse) is located along 60th Street West, approximately 1 mile east of the Project site. A view from the restaurant is shown in Photo 2 in Appendix C. An airport (General William J. Fox Field) and a small park (Apollo Community Regional Park) are located approximately 2.3 miles east/northeast of the Project site. Photo 3 in Appendix C shows a view towards the Project site from the southwest corner of Apollo Community Regional Park and the southeast side of the airport.

The Project site is located approximately 3.2 miles northeast of the Antelope Substation, an approximately 90-acre substation located at West Avenue J and 95th Street West. The Antelope Substation is a major substation, and several high-voltage transmission lines and electric distribution lines connected to the Antelope Substation are located in the Project area.

5.2 Project Site Description

The Project site is located in the west/central portion of the Antelope Valley. Portal Ridge, which is part of the San Gabriel Mountains foothills, is visible in views to the south from the site. This ridge is characterized by a jagged, horizontal line of coarse hills and complex drainages rising approximately 1,200 feet above the proposed Project site. Views to the north and east reveal a predominantly flat landscape, and very little topographic variation is visible. The jagged ridgeline of the Tehachapi Mountains is visible in far-off views to the north from the proposed Project site.

Photos 4 to 8 in Appendix C show various views towards the Project site from local roads surrounding the area. The Project site slopes slightly downwards from southwest to northeast with an elevation change of less than 20 feet, and appears very flat. Parcels that compose the overall Project site are fallow agricultural land, and vacant. Man-made features on the project site include two-track and dirt roads, and a distribution line that roughly follows 75th Street West. A Southern California Edison 66kV transmission line, constructed on single-pole wood structures, is adjacent to the northern border of the Project site.

The Project site consists of fallow agricultural fields. Both the American Solar Greenworks and the West LA Greenworks parcels consist entirely of Non-Native Annual Grasslands vegetation community. Non-Native Annual Grassland consists of a dense to sparse cover of annual grasses such as oats (*Avena spp.)*, bromes (*Bromus spp.)*, and ryegrass (*Lolium spp.)* with flowering culms up to 3 feet in height. This community is often associated with numerous species of native annual wildflowers such as the California poppy (*Eschscholzia californica)*, lupines (*Lupinus spp.)*, and goldfields (*Lasthenia spp.)* especially in years of favorable rainfall. Typically, plants are dead through the summer-fall dry season. The Pinnacle Solar Ranch parcel consists of mostly non-native annual grassland. A small patch of Disturbed Rubber Rabbitbrush Scrub is located near the western boundary of the parcel. Disturbed Rubber Rabbitbrush Scrub is similar to intact Rubber Rabbitbrush Scrub in which rubber rabbitbrush (*Chrysothamnus nauseosus*) remains an important component, but this community is of low-quality with a higher percentage of non-native weedy species (i.e., greater than 20 percent of the species composition) and shows evidence of prior disturbance from grading, over-grazing, or other ground-disturbance activities. Plant species found within this site typical of this vegetation community include: big sagebrush (*Artemisia tridentata*), rubber rabbitbrush and prickly lettuce (*Lactuca serriola*).

5.3 Scenic Resources

Section 4.1 of this report identifies categories of scenic resources located within the Project area. The following sections identify which of those scenic resources may be potentially impacted by the proposed Project.

5.3.1 Scenic Vistas

Figure 3 shows the location of scenic resources in relation to the proposed Project site. The Project will not be visible from Piute Ponds or Little Rock Wash, which are both located over 8 miles away from the Project site. It is highly unlikely that the Project will be discernible from Little Buttes, Quartz Hill, the Foothills Area, or the California Poppy Reserve which are all located

over five miles from the Project site. Even though viewpoints from Little Buttes, Quartz Hill, the Foothills Area, and the California Poppy Reserve are at higher elevations than the Project site, from this distance the proposed Project will fade into the flat landscape. Photo 1 in Appendix C shows a view from Quartz Hill in the direction of the Project. As is seen from the photo, which was taken from an elevated location, areas beyond the residential developments in Lancaster are not visible. The Project site would not be visible from Apollo Regional Park, which is surrounded by trees.

5.3.2 Scenic Highways or Corridors

Paved roads that serve as primary travel routes in the area adjacent to the Project site include West Avenue G and 70th Street West. Traffic on these roads likely consists of mostly local residents and business traffic. West Avenue G and 70th Street West are two-lane paved roadways, characterized by light grey concrete/asphalt. Other minor roads adjacent to the Project site are light tan/gray dirt/gravel roads that primarily serve local residents.

The City of Lancaster's MEA (City of Lancaster 2009b) identifies 90th Street West, located approximately 1.5 miles west of the Project site, as a potential scenic route. This roadway has no official designation as a scenic route at this time.

5.3.3 Significant Ridgelines and Hillside Management Areas

No designated significant ridgelines are located within the Project area. The Project site is flat with a grade of less than 25 percent, and therefore the Hillside Management Ordinance does not apply.

5.3.4 Riding and Hiking Trails

No riding or hiking trails were identified within five miles of the Project site. The Project is not likely to be discernible from riding and hiking in the Foothills area (including the California Aqueduct Trail), California Poppy Reserve, Quartz Hill, or Little Buttes.

5.3.5 Undisturbed Land

The proposed Project is located on land that is vacant, but is not undisturbed. Disturbance is evident on the Project site as well as in lands surrounding the Project Site. The Project site and surrounding land is primarily unproductive agricultural land dominated by non-native vegetation species. Cultural modifications to the landscape around the Project site include farms, rural residences, agricultural fields, high-voltage power lines, electrical distribution lines, and roadways.

6.0 VISUAL IMPACT ANALYSIS

Using the CEQA checklist criteria provided in the County of Los Angeles' Environmental Checklist Form (included in Appendix B), the visual impacts from the proposed Project were assessed:

(a) Will the project have a substantial adverse effect on a scenic vista?

Recommended Rating: LESS THAN SIGNIFICANT

According to the Los Angeles County Environmental Checklist Form, potential impacts could result from obstructing views to or from the scenic resource, degrading the character of a scenic highway, or disrupting a scenic vista.

Because of the low profile of the solar modules, the Project would not obstruct views to or from any scenic resources. The Project will not be visible from Piute Ponds or Little Rock Wash, which are both located over 8 miles away from the Project site. It is highly unlikely that the Project will be discernible from Little Buttes, Quartz Hill, the Foothills Area, or the California Poppy Reserve, all of which are located over five miles from the Project site. The Antelope Valley is extremely flat, which limits the visibility of the Project unless the viewer is located in a superior position (at an elevation higher from the object/location being viewed). Even from a superior viewing position at these locations, a viewer is not likely to be able to distinguish the Project site from over five miles away from the Project site. From this distance the proposed Project will likely fade into the flat landscape. If it is visible, at such a distance the Project would not appear dissimilar to an agricultural field in shape and size.

The MEA also identifies several roadways that could potentially serve as scenic routes in the future, but currently have no formal designation, including 90th Street West. The proposed Project components will be located approximately 1.5 miles east of 90th Street West. The Project will not be dominant in motorists' views unless directly adjacent to the Project site. A simulation was developed from less than 0.1 mile south of the Project boundary along 70th Street West (Figure 4). From this distance, the Project is visible but does not dominate the view due to the low-profile of the solar panels. From a 1.5 mile distance, the Project will be much less noticeable and will largely fade into the flat landscape.

(b) Would the project be visible from or obstruct views from a regional riding or hiking trail?

Recommended Rating: LESS THAN SIGNIFICANT IMPACT

According to the Los Angeles County Environmental Checklist Form, impacts would arise from the vacation of a portion of the trail, degrading the scenic character in or around the trail, or obstructing expansive views visible from the trail's course.

No trails are located on the Project site, therefore the Project would not cause the vacation of any portion of any trail nor would it obstruct expansive views from any trails. No riding or hiking trails were identified within five miles of the Project site. The Project is not likely to be discernible from riding and hiking in the Foothills area (including the California Aqueduct Trail), California Poppy Reserve, Quartz Hill, or Little Buttes.

(c) Will the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

Recommended Rating: NO IMPACT

According to the Los Angeles County Environmental Checklist, impacts may occur from development of undisturbed lands on-site or in the vicinity of the Project area. All development and staging would occur on the Project site or on already disturbed areas. As described in Section 5.3.5, the Project site is disturbed land and is surrounded by cultural modifications.

Simulation.

Existing.

Figure 4. Photo Simulation

As described in Question (a), the proposed Project is not located along or in proximity to any designated scenic highways. The proposed Project will not substantially damage or impact scenic resources such as trees (including Joshua Trees) or rock outcroppings, and there are no historic buildings located in the proposed Project site.

(d) Will the proposed project substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?

Recommended Rating: LESS THAN SIGNIFICANT

According to the Los Angeles County Environmental Checklist, the height/bulk of a proposed project could negatively impact the surrounding area depending on how well the design of the proposed project integrates with the visual character of its surroundings from the perspective of height, bulk, pattern, scale, character, or other features.

The existing site is vacant land in a rural area, and is typical of the surrounding landscape. The visual quality of the Project site is low. The Project site itself does not have unique or rare features, or hold special significance. The topography is uniform and flat. Vegetation is uniform and consists of grasses and short shrubs. No permanent water features occur on the site, and there are no features or characteristics that set the Project site apart from the surrounding desert landscape. Viewers such as nearby residents and travelers on nearby roads will still experience views of the open desert lands around the Project site after the solar facility is constructed.

Even where visible, the proposed Project components will not be a dominant element in the landscape unless the viewer was situated directly adjacent to the facility. A visual simulation was developed from a point less than 0.1 mile south (approximately 300 feet south) of the Project site boundary along 70th Street West, looking north towards the proposed Project at the same elevation. Existing conditions and the simulation are provided in Figure 5. A contrast rating form was completed from this viewpoint and is provided in Appendix D. The overall contrast of the proposed Project was rated as “weak” from this viewpoint. Although vegetation would be removed under the solar panels, this change would not be visible. The solar panels would form a horizontal line on the landscape that mimics the flat lines of the landscape, and therefore creates only a weak contrast from this perspective. Because of the low profile of the solar panels, views of the Tehachapi Mountains would not be blocked. The grey color and smooth texture of the solar panels does already exist in the landscape, creating a weak contrast. Because the contrast introduced to the landscape from less than 0.1 mile away is considered weak, it is reasonable to assume that the solar facility will largely fade into the flat landscape and not dominate the view from viewpoints further than approximately 0.25 mile away from the Project site.

Even though the Project components are out-of-character with the directly adjacent land (which is primarily rural residential), the Project is not out-of-character when considering the context of the surrounding landscape. Cultural modifications are common in the landscape around the site and include rural residences, an airport, agricultural fields, residential developments, and electrical infrastructure such as electric distribution lines and high-voltage transmission lines. In the larger Project area, electrical infrastructure such as PV solar fields, transmission lines, and substations are common.

Simulation.

Existing.

Figure 5. Photo Simulation

Because other cultural modifications structures are common in the vicinity of the Project site and in the larger Project area, and because the Project site itself is not characterized by high visual quality, the visual impact of the Project on the existing visual character of the proposed Project site and its surroundings will be less than significant. As shown by the simulation in Figure 4, the Project will not dominate the landscape from most viewpoints unless the viewer is located directly adjacent to the proposed Project. Because of the low profile of the solar panels, the Project will largely fade into the flat landscape.

(e) Will the project create a new source of substantial light or glare which will adversely affect day or nighttime views in the area?

Recommended Rating: LESS THAN SIGNIFICANT

According to the County of Los Angeles' Environmental Checklist Form, the impacts may occur if shadows are cast upon nearby sensitive uses, or if reflective light or glare impeded views in and around the Project site.

Because of the low profile of the solar modules, no significant shadows will be cast upon nearby sensitive land uses. Impacts from new sources of light or glare are expected to be less than significant. The Project will not create a significant source of light. Light sources associated with the Project will be minimal, and will be restricted to that required for nighttime safety and security according to county requirements. Lighting will be installed and directed downward and shielded to avoid light trespass. The amount of light generated by the security lights will be consistent with existing sources produced by man-made structures adjacent to the proposed Project site, including residences and roadway lights.

Project components will introduce minimal amounts of glare to the existing landscape. The Project PV modules are designed to absorb sunlight, and the glass modules that protect the PV surface are typically formulated glass designed to allow sunlight to pass with minimal reflection.

7.0 CONCLUSIONS

Implementation of the proposed Project is expected to have a less than significant impact on scenic resources and aesthetic values.

The following mitigation measures that will minimize visual impacts are incorporated into the Project design:

Construction Phase:

- Implement a Fugitive Dust Control Plan to minimize dust (visual pollution).
- The Project site will be maintained free of debris, trash, and waste during construction.

Operations Phase:

- The proposed structures onsite will be neutral colors (grays) and non-reflective.
- A landscape plan will be developed prior to Project construction that shows detail of any proposed earthwork or vegetation intended to screen the Project visually from area residents or travelers on nearby roadways.
- Lighting will be pointed downwards to minimize light trespass, and mounted on essential infrastructure rather than on separate light poles

8.0 REFERENCES

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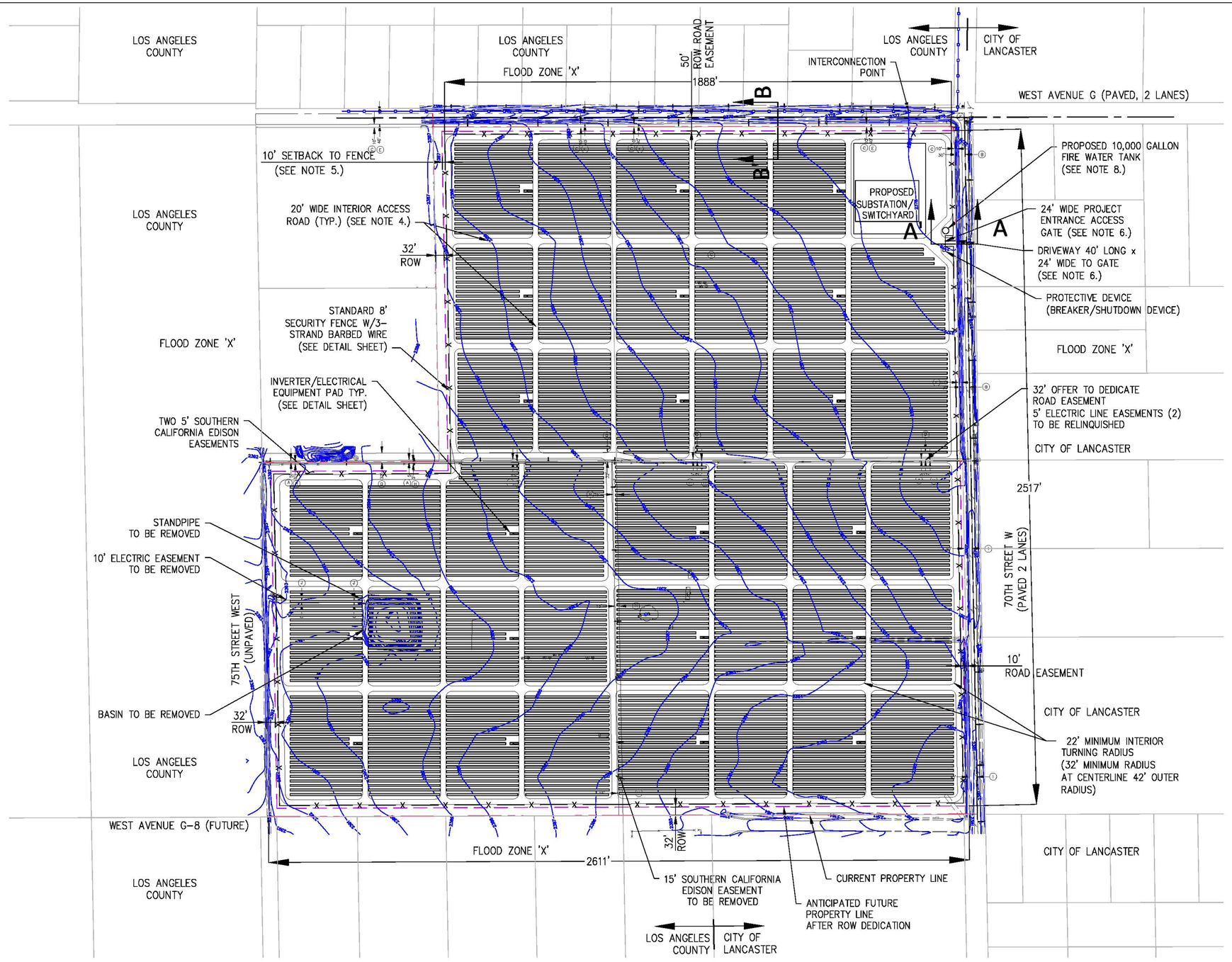
APPENDIX A

SITE PLAN



PROJECT SITE:

PROJECT SITE IS 134.6 ACRES (NET)

NOTES:

1. 'ZONE X' AS SHOWN ON PANEL 0400F OF FLOOD INSURANCE RATE MAP NO. 06037C0400F. ZONE "X" DESIGNATED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

2. FIRE DEPARTMENT ACCESS DEVICE AND EMERGENCY CONTACT PLACARD LOCATED AT ALL ENTRANCE GATES.

3. PORTABLE TOILETS WILL BE PROVIDED DURING CONSTRUCTION AND MAINTENANCE ACTIVITIES. NO OTHER SANITARY FACILITIES WILL BE ON SITE.

4. INTERIOR ACCESS ROADS WILL BE 20' WIDE, COMPACTED TO 90%, WITH 32 FOOT TURNING RADIUS AT CENTER LINE. THE INNER RADIUS WILL BE 22' AND THE OUTER RADIUS WILL BE 42'. INTERIOR ACCESS ROADS WILL BE PROVIDED TO INVERTER/ELECTRICAL EQUIPMENT PADS AND AROUND THE PERIMETER OF THE PROJECT. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-04.

5. 10 FOOT WIDE SETBACK ZONE AROUND PERIMETER TO FENCE LINE TO PROVIDE DRAINAGE EASEMENT.

6. DRIVEWAY ACCESS GATES TO BE SET 40 FEET BACK FROM EDGE OF PROPERTY. DRIVEWAY WILL BE 24 FEET WIDE.

7. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION DURING DETAILED DESIGN.

8. TANK CONNECTIONS PER LOS ANGELES COUNTY FIRE DEPARTMENT.

LEGEND:

MIN	MINIMUM
ROW	RIGHT OF WAY
℄	CENTERLINE
x — x	FENCE LINE
	OVERHEAD LINE
	UNDERGROUND LINE
	PROPERTY LINE (AFTER DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
	CONTOUR LINE

200 0 200 400

SCALE IN FEET

1"=200'

WHEN PRINTED TO SCALE ON 22"x34" SHEET

C-01

R2011-00799 (RCUP201100071)

REGISTERED PROFESSIONAL ENGINEER — JULIE ANN DELANEY — No.C54058 — CIVIL — STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH EC, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
B	8/06/12	REVISIONS FOR COUNTY	JD	SP
A	5/26/12	INITIAL ISSUE	JD	SP

Solar PV System Summary

35MW AC Solar Photovoltaic Generation System

Project Name: American Solar Greenworks 9

Project Address: W Ave. G & 70th St. W Los Angeles County, CA

DRAWING: Site Plan

APPLICANT:
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104
(415) 692-7740

SILVERADO power

AMERICAN SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

44 Montgomery Street, Suite 3065 | San Francisco, CA 94104 | 415.692.7740 main

P:\1438-SILVERADO POWER SOLAR CUP\CAD\SITE PLANS\9-COUNTY SUBMITTAL-R\C-01-SITE-9-A.DWG
PLOT/UPDATE: Aug 7, 2012 11:26:47 AM

APPENDIX B

CORRESPONDENCE AND ENVIRONMENTAL CHECKLIST FORM

From: Szalay, Kim <kszalay@planning.lacounty.gov>
Sent: Thursday, May 17, 2012 4:38 PM
To: DiSano, Michael
Cc: Low, Tara; Blengini, Carolina; Dea, Samuel
Subject: Silverado: I.S. and Aesthetics, etc.
Attachments: Initial_study_wguidelines 4-18-12.docx

Good Afternoon Mike,

Before I respond to your question below, please note that your opening paragraphs on Regulatory Setting section 3.1.3 are not up to date with revised County procedures. Let me clarify that first.

1) With regard to thresholds of significance, generally they are derived from the County of Los Angeles Department of Regional Planning's Initial Study Checklist, which is based on Appendix G of the CEQA Guidelines with County-specific additional items. Please use the attached updated County version.

2) The 2005 County CEQA Guidelines cited are currently in process of revision. Please use attached I.S. and the most recent version (January, 2012) of the State CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387) also available from http://ceres.ca.gov/ceqa/docs/CEQA_Handbook_2012_wo_covers.pdf). It will not be necessary at this time to cite the 2005 County CEQA Guidelines document.

3) We will have to discuss further where to include discussion of relevant Lancaster "Sphere of Influence" information included in Section 3.1.3 City of Lancaster General Plan and Master Environmental Assessment. We do not normally include other non-binding jurisdictional material in the regulatory setting section for Projects solely within County jurisdiction.

With regard to your question below, does the visual analysis you provided include the expanded analysis, or, are you asking if the attached requires an expanded analysis?

Whatever the case may be, please make the necessary changes regarding use of the above-mentioned County and State documents. We will also need to discuss how and where the Lancaster "Sphere of Influence" discussion is to be framed and located within the document.

Kim

Mr. Kim Szalay, AICP
Principal Planner
Special Projects Section
Department of Regional Planning
320 W. Temple Street
Los Angeles, CA 90012
http://planning.lacounty.gov
213-974-4876

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From: DiSano, Michael [mailto:Michael.DiSano@tetratech.com]
Sent: Wednesday, May 16, 2012 4:58 PM
To: Blengini, Carolina
Cc: Szalay, Kim; Low, Tara
Subject: Aesthetics

Carolina,

I was wondering if you think we should expand our technical study in regards to Aesthetics? Attached is the finalized visual document for your reference. I don't think it would be necessary to do a contrast rating but I want to defer to you as the Lead Agency to make that determination.

Regards,

Michael Di Sano | **Assistant Project Manager**
Direct: 949.809.5034 | Main: 949.806.5000 | Fax: 949.809.5004
Michael.DiSano@tetratech.com

Tetra Tech
17885 Von Karman Ave | Irvine, CA 92614-5227 | www.tetratech.com

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Environmental Checklist Form (Initial Study)

County of Los Angeles, Department of Regional Planning

Project title: "Project Name" (if applicable) / Project No. / Case No(s). (All entered text should be Garamond font, size 11 or 12, underlined, single-spaced, and align-justified)

Lead agency name and address: _____

Contact Person and phone number: _____

Project sponsor's name and address: _____

Project location: (Address)
APN: _____ *USGS Quad*: _____

Gross Acreage: _____

General plan designation: _____

Community/Area wide Plan designation: _____

Zoning: (In addition to the zoning designation, indicate which Community Standards District the property is located within, if applicable.)

Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation.)

Surrounding land uses and setting: (Briefly describe the project's surroundings.)

Other public agencies whose approval may be required (e.g., permits, financing approval, or participation agreement):

Public Agency	*Approval Required*
_____	_____
_____	_____

Major projects in the area:

Project/Case No.	*Description and Status*
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Reviewing Agencies: [*See* **CEQA Appendix B** *to help determine which agencies should review your project***]**

Responsible Agencies

- ☐ None
- Regional Water Quality Control Board:
  - ☐ Los Angeles Region
  - ☐ Lahontan Region
- ☐ Coastal Commission
- ☐ Army Corps of Engineers

Special Reviewing Agencies

- ☐ None
- ☐ Santa Monica Mountains Conservancy
- ☐ National Parks
- ☐ National Forest
- ☐ Edwards Air Force Base
- ☐ Resource Conservation District of Santa Monica Mountains Area
- ☐

Regional Significance

- ☐ None
- ☐ SCAG Criteria
- ☐ Air Quality
- ☐ Water Resources
- ☐ Santa Monica Mtns. Area
- ☐

Trustee Agencies

- ☐ None
- ☐ State Dept. of Fish and Game
- ☐ State Dept. of Parks and Recreation
- ☐ State Lands Commission
- ☐ University of California (Natural Land and Water Reserves System)

County Reviewing Agencies

- ☐ DPW:
  (delete those that don't apply)
  - Land Development Division (Grading & Drainage)
  - Geotechnical & Materials Engineering Division
  - Watershed Management Division (NPDES)
  - Traffic and Lighting Division
  - Environmental Programs Division
  - Waterworks Division
  - Sewer Maintenance Division
- ☐ Fire Department
  (delete those that don't apply)
  - Forestry, Environmental Division
  - Planning Division
  - Land Development Unit
  - Health Hazmat
- ☐ Sanitation District
- ☐ Public Health/Environmental Health Division: Land Use Program (OWTS), Drinking Water Program (Private Wells), Toxics Epidemiology Program (Noise)
- ☐ Sheriff Department
- ☐ Parks and Recreation
- ☐ Subdivision Committee
- ☐

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project.

☐ Aesthetics	☐ Greenhouse Gas Emissions	☐ Population/Housing
☐ Agriculture/Forest	☐ Hazards/Hazardous Materials	☐ Public Services
☐ Air Quality	☐ Hydrology/Water Quality	☐ Recreation
☐ Biological Resources	☐ Land Use/Planning	☐ Transportation/Traffic
☐ Cultural Resources	☐ Mineral Resources	☐ Utilities/Services
☐ Energy	☐ Noise	☐ Mandatory Findings of Significance
☐ Geology/Soils		

DETERMINATION: (To be completed by the Lead Department.)
On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature (Prepared by) Date

_____ _____

Signature (Approved by) Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources the Lead Department cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the Lead Department has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level. (Mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced.)

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA processes, an effect has been adequately analyzed in an earlier EIR or negative declaration. (State CEQA Guidelines § 15063(c)(3)(D).) In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of, and adequately analyzed in, an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

7) The explanation of each issue should identify: the significance threshold, if any, used to evaluate each question, and; mitigation measures identified, if any, to reduce the impact to less than significance. Sources of thresholds include the County General Plan, other County planning documents, and County ordinances. Some thresholds are unique to geographical locations.

8) Climate Change Impacts: When determining whether a project's impacts are significant, the analysis should consider, when relevant, the effects of future climate change on : 1) worsening hazardous conditions that pose risks to the project's inhabitants and structures (e.g., floods and wildfires), and 2)

worsening the project's impacts on the environment (e.g., impacts on special status species and public health).

1. AESTHETICS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☐

General Discussion

The purpose of this question is to identify the scenic resources that exist on the project site and in the surrounding area and determine how the proposed project will impact those resources. If your project is directly adjacent to another jurisdiction, ensure it is not affecting any scenic resource in that jurisdiction. Potential impacts could result from obstructing views to or from the scenic resource, degrading the character of a scenic highway, or disrupting a scenic vista. The preparer should identify

- Designated scenic highways adjacent to or in proximity to the project site (State-designated highways are listed in the Stock Language Section below);
- Scenic highways, corridors, and resources designated by the County General Plan and the applicable Area/Community Plan or Local Coastal Program;
- Scenic highways or corridors designated by cities adjacent to or near the project site; and
- Significant ridgelines (major ridgelines on Santa Catalina Island).

If the proposed project is not sited near any designated scenic highways, significant ridgeline, or other identified scenic resources, then it is unlikely that the proposed project would result in any impacts related to having a substantial adverse effect on a scenic vista.

Resources

- GIS-NET Scenic Highways layer (in the "Transportation" folder) and Significant Ridgelines layer (in the "Administrative Layers & Districts" folder)
- State of California CalTrans Scenic Highway Mapping System (Updated 9/7/2011): http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

Potential Mitigation

- Mitigation may include reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors, use of earth tone colors and landscaping.
- Specific mitigation measures will be tailored to each proposed project.

b) Be visible from or obstruct views from a regional riding or hiking trail?	☐	☐	☐	☐

General Discussion

The purpose of this question is to determine how the proposed project would impact riding or hiking trails. Riding trails can include horseback riding, biking, hiking, etc. The preparer should identify:

- Designated or proposed trails traversing, adjacent to, or in proximity to, the project site; and
- Designated trails in cities adjacent to or near the project site.

Impacts would arise from the vacation of a portion of the trail, degrading the scenic character in and around the trail, as well as obstructing expansive views visible from the trial's course but not compromising the trail itself. If the proposed project is not sited near any designated riding or hiking trails, then it would not result in any impacts related to having a substantial adverse effect on these resources. Subdivision trail requirements are imposed through Subdivision Committee Meetings.

Resources

- GIS-NET Trails layer (in the "Transportation" folder) – make sure to cite the map source and year.

Potential Mitigation

- Reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will be tailored to each proposed project.

c) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? ☐ ☐ ☐ ☐

General Discussion

This question is concerned with how the proposed project would impact other scenic resources that are not identified in the first two questions, and specifically, impacts to trees, rock outcroppings, historic buildings, and undisturbed areas. For this question, the preparer should identify:

- Other scenic resources designated by the General Plan and applicable Community or Area plan, or Local Coastal Program in the vicinity of the project site;
- Undeveloped or undisturbed areas either on the project site or in the vicinity of the project site;
- Hillside management areas – impacts from grading, any alteration of topography (indicate the quantity);
- Nationally- or state-designated historic resources on, or in the vicinity of, the project site (the County does not currently have an historic preservation ordinance and thus does not designate any historic resources itself)

Development of on-site, greenfield conditions is likely to result in a significant impact given the previously undisturbed nature of the land. Similarly, previously undisturbed land in the vicinity of the project site may be impacted by the buildout of the proposed project if that land is used for construction staging or in some other phase of project buildout.

Resources

- List of Historic resources and points of interest designated by the State of California in unincorporated Los Angeles County - file://regionalfp1/E-DRIVE/Current%20Planning/Wiki/environmental_doc/Historic_sites.pdf
- California Office of Historic Preservation: http://ohp.parks.ca.gov/
- National Register of Historic Places: http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome
- State Register of Historic Places: http://ceres.ca.gov/geo_area/counties/Los_Angeles/landmarks.html

Potential Mitigation

- Reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will need to be tailored to each proposed project and with regard to their specific project site context.
- Compliance with the Hillside Management Ordinance to mitigate impacts in designated hillside management areas to a less than significant level.
- Regarding historic structures, because they are protected by law, mitigation may include complete project redesign or integration of the historic structure into the proposed project.

d) Substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features? ☐ ☐ ☐ ☐

General Discussion

This question wants to know how well the design of the proposed project would integrate with the visual character of its surroundings and the project's level of visual integration from the perspective of height, bulk, pattern, scale, character, or other features. If site photos are unavailable, perform a site visit and document the visual character of the project site and surroundings. Note that state and local laws do not protect views from private properties through the project site of some scenic resource. However, views of a scenic resource through the project site from public space (such as significant recreation or scenic areas such as the Santa Monica Mountains) or designated scenic highways are protected and should be noted. The preparer should take note of:

- The prevailing building heights (specifically, the height in feet and stories of the tallest structure in the vicinity of the project site), architectural styling, and setbacks;
- Hillside management areas – impacts from grading, any alteration of topography (indicate the quantity); and,
- Views of the project site from nearby vantage points.

It is unlikely that the architectural style employed by the proposed project will negatively impact the surrounding community given the wide variety of architectural styles found throughout southern California. However, the height/bulk of the proposed project could negatively impact the surrounding area. Ultimately, the final impact determination will have to do with how well the proposed project integrates with the surrounding neighborhood.

Resources

- Site photos, Site visits, and Project renderings

Potential Mitigation

- Mitigation may include project redesign, reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will be tailored to each proposed project and with regard to their specific project site context.
- Though already required by law, the preparer should mention compliance with the Hillside Management Ordinance to be used to mitigate impacts in designated hillside management areas to a

less than significant level.

e) Create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area? ☐ ☐ ☐ ☐

General Discussion

The preparer must determine whether or not the proposed project would be a new source of substantial shadows, light, or glare. A substantial amount of shadows is dependent upon a combination of factors including the height of the proposed project, the width of the street on which the proposed project is located, the proposed project's setbacks, and the project site's distance from nearby sensitive uses (residences, schools, parks, etc), and how long any shadows created by the proposed project are cast upon those sensitive uses. A land use survey of sensitive uses around the project site may be needed. If there are no sensitive uses nearby, there will be no shade/shadow impacts. For projects only achieving a couple of floors, it is unlikely that they will generate shadows of sufficient size to be cast upon nearby sensitive uses. However, with taller projects, it is far more likely that shadows will be cast upon nearby sensitive uses, and a shade/shadow modeling may be required. Note that Los Angeles County does not have any significance thresholds for determining potential impacts.

For light or glare, the preparer must take note of the project's surface materials, lighting program, and any signage component. Regarding glare, a project containing large expanses of windows and covered with lots of reflective surfaces could potentially result in a significant impact as light reflecting from the proposed structure may impede views in and around the project site. A project that contains a significant amount of light that is not shielded may significantly impact views in the project vicinity as the light pollution may hinder views of the night sky and other visual elements. However, the proposed project would be unlikely to result in a significant impact regardless of the amount of light generated because it would be required to comply with the County's Dark Skies Ordinance (once adopted). This ordinance would address such things as directing lighting toward the ground and shielding lights to prevent light pollution.

Resources

- Shade/shadow model (if needed)
- Check with Building & Safety
- Note: San Gabriel CSD 45 degree angle clauses related to glare and light

Potential Mitigation

- Since Los Angeles County does not have any adopted significance thresholds, the best way to mitigate any potentially significant shadow impacts would be to break up the shadow as much as possible, which may require that the applicant redesign the project such that the massing is broken up to create passages through which light may pass or that the applicant reorient the proposed structure such that the shadows generated are smaller.
- Potential mitigation for glare impacts may include requirements that all non-glass reflective surfaces be sanded down to reduce the project's reflectivity and on all glass surfaces, that the developer apply a low reflective coating, use of tinted windows or even curtains;
- Potential mitigation for light generation includes compliance with Los Angeles County's Dark Skies Ordinance.

EVALUATION OF ENVIRONMENTAL IMPACTS:

Official State Scenic Highways are designated by the California Department of Transportation (CalTrans). According to CalTrans, "[t]he stated intent (Streets and Highway Code Section 260) of the California Scenic Highway Program is to protect and enhance California's natural beauty and to protect the social and economic values provided by the State's scenic resources" (State of California Department of Transportation, California Scenic Highway Program, website: http://www.dot.ca.gov/dist3/departments/mtce/scenic.htm, accessed October 6, 2011). While there are numerous designated Scenic Highways across the state, the following have been designated in Los Angeles County: Angeles Crest Highway (Route 2) from just north of Interstate 210 to the Los Angeles/San Bernardino County Line, two segments of Mulholland Highway from Pacific Coast Highway to Kanan Dume Road and from west of Cornell road to east of Las Virgenes Road, and Malibu Canyon-Las Virgenes Highway from Pacific Coast Highway to Lost Hills Road.

In addition to scenic highways, unincorporated Los Angeles County identifies ridgelines of significant aesthetic value that are to be preserved in their current state. This preservation is accomplished by limiting the type and amount of development near them. These "Significant Ridgelines" ("Major Ridgelines" on Santa Catalina Island) are designated by the General Plan or applicable Area/Community Plan, Local Coastal Program, or Community Standards District.

Riding and hiking trails have been designated throughout unincorporated Los Angeles County. At present, there are officially adopted trails in the Antelope Valley, the Santa Clarita Valley, and the Santa Monica Mountains designated by the General Plan or applicable Area/Community Plan and Local Coastal Program.

FOR projects in Hillside Management Areas:

The Hillside Management Ordinance (Los Angeles County Code Title 22, Section 22.56.215) is designed to protect designated hillsides from incompatible development. The County of Los Angeles designates two hillside management areas, one urban and one non-urban with both designations applying to properties that have hillsides with a 25 percent grade or greater. The ordinance protects these resources by requiring almost all development on properties with either the urban or non-urban designation to obtain a conditional use permit with the intent of preserving the remaining natural topography.

Briefly describe the proposed project, the environmental and/or regulatory setting related to all of the questions above, and your environmental determination.

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APPENDIX B-1.4

PROJECT 4 ANTELOPE SOLAR GREENWORKS AESTHETIC IMPACTS REPORT

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

ANTELOPE SOLAR GREENWORKS
(CUP GROUP 10A)
AESTHETIC IMPACTS REPORT

Prepared for:

44 Montgomery Street, Suite 3065
San Francisco, CA 94104

Prepared by:

Tetra Tech EC, Inc.
17885 Von Karman Avenue, Site 500
Irvine, CA 92614-6213

August 2012

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1.0 INTRODUCTION

This Aesthetics Impact Report has been prepared for the proposed Antelope Solar Greenworks (CUP 10a) Solar Generation Facility Project (Project) to assess the potential visual impacts resulting from the construction and operation of the Project. The Project is proposed by Silverado Power, LLC, for a 256-acre site approximately 8 miles west of Lancaster, California. The Project is located in unincorporated northern Los Angeles County (Figure 1).

For the purposes of the visual assessment, “Project site” refers to the area within the delineated boundary for the Project components, and “Project area” refers to those landscapes within 15 miles of the Project site.

2.0 PROJECT DESCRIPTION

The proposed Project will have a total generating capacity of 52 megawatts alternating current and be located on 256 acres of primarily unproductive agricultural land (Figure 2). The Project site is comprised of five rectangular parcels; Lancaster Blue Sky Ranch, Central Antelope Dry Farm Ranch, Antelope Solar Greenworks, Halcyon Solar, and Apex Greenworks (Figure 1). The Project site is located approximately 8 miles west of Lancaster, California in unincorporated northern Los Angeles County. The Project site is bounded by 97th Street West to the west, West Avenue H-4 to the north, 85th Street West to the East, and West Avenue J to the south.

The Project will employ a series of photovoltaic (PV) module arrays to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system. The PV modules convert sunlight into low-voltage direct current (DC) power, which is subsequently transformed into alternating current (AC) power through an inverter.

The Project will consist of construction and operation of a solar generation facility that will utilize PV technology on fixed-tilt or tracker mounting supports. The Project will be constructed in phases and operated for a period of 35 years, and will consist of the following elements:

- PV modules
- Module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- Two 2-acre Substations
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing
- Generation tie (gen-tie) line

The Project will not require the construction of an on-site operations and maintenance facility. It is anticipated that the Project will require a Conditional Use Permit from Los Angeles County for the construction and operation of this facility.

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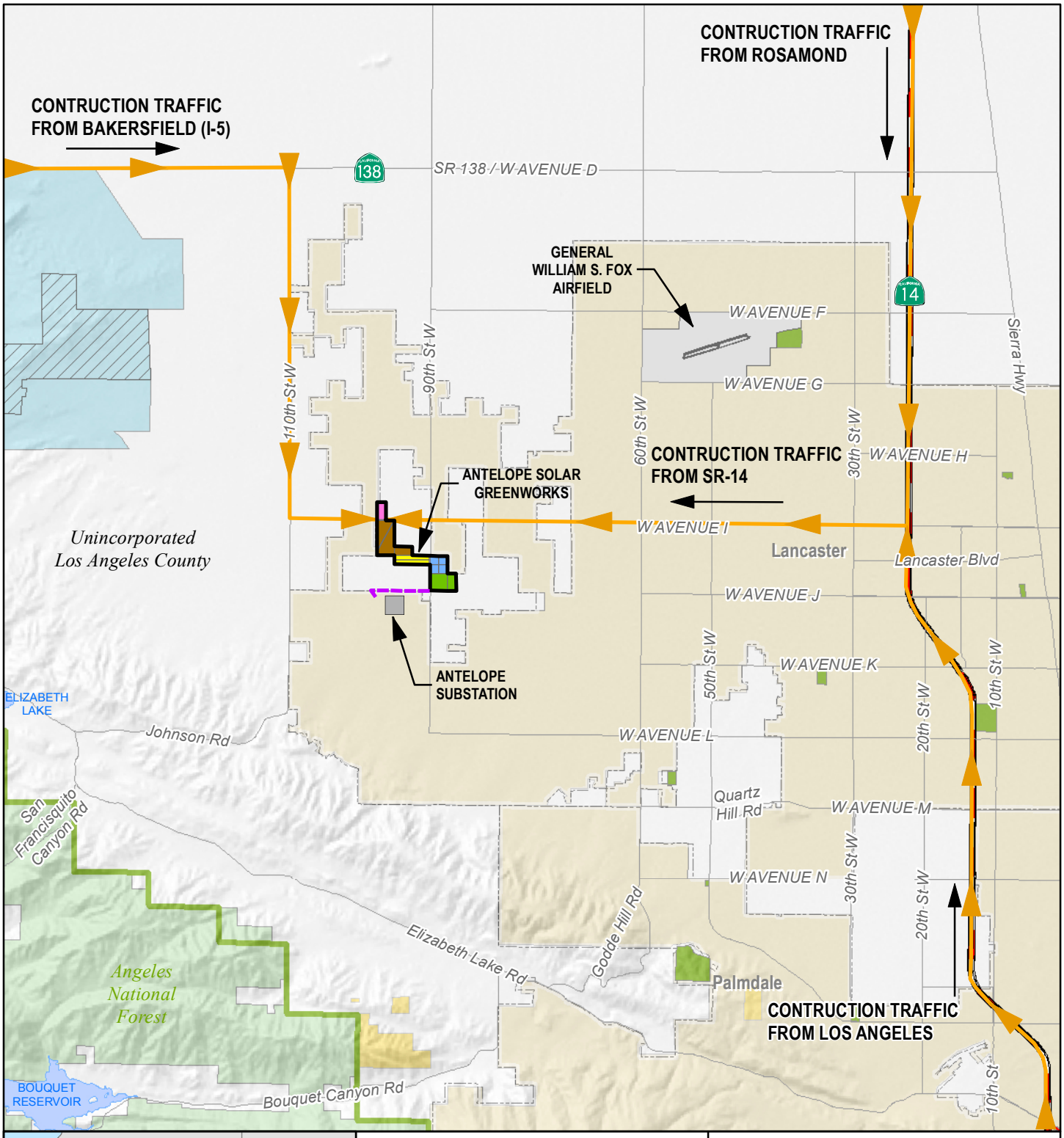

CUP 10A

- Antelope Solar Greenworks (Hassid)
- Apex Greenworks (Stevens)
- Central Antelope Dry Farm Ranch (Investco)
- Halcyon Solar (1100 Edgewater)
- Lancaster Blue Sky Ranch (Dayan)
- Proposed Generation Tie Line

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER
ANTELOPE SOLAR GREENWORKS

FIGURE 1
VICINITY MAP

0 1 2 4
Miles

TETRA TECH EC, INC.

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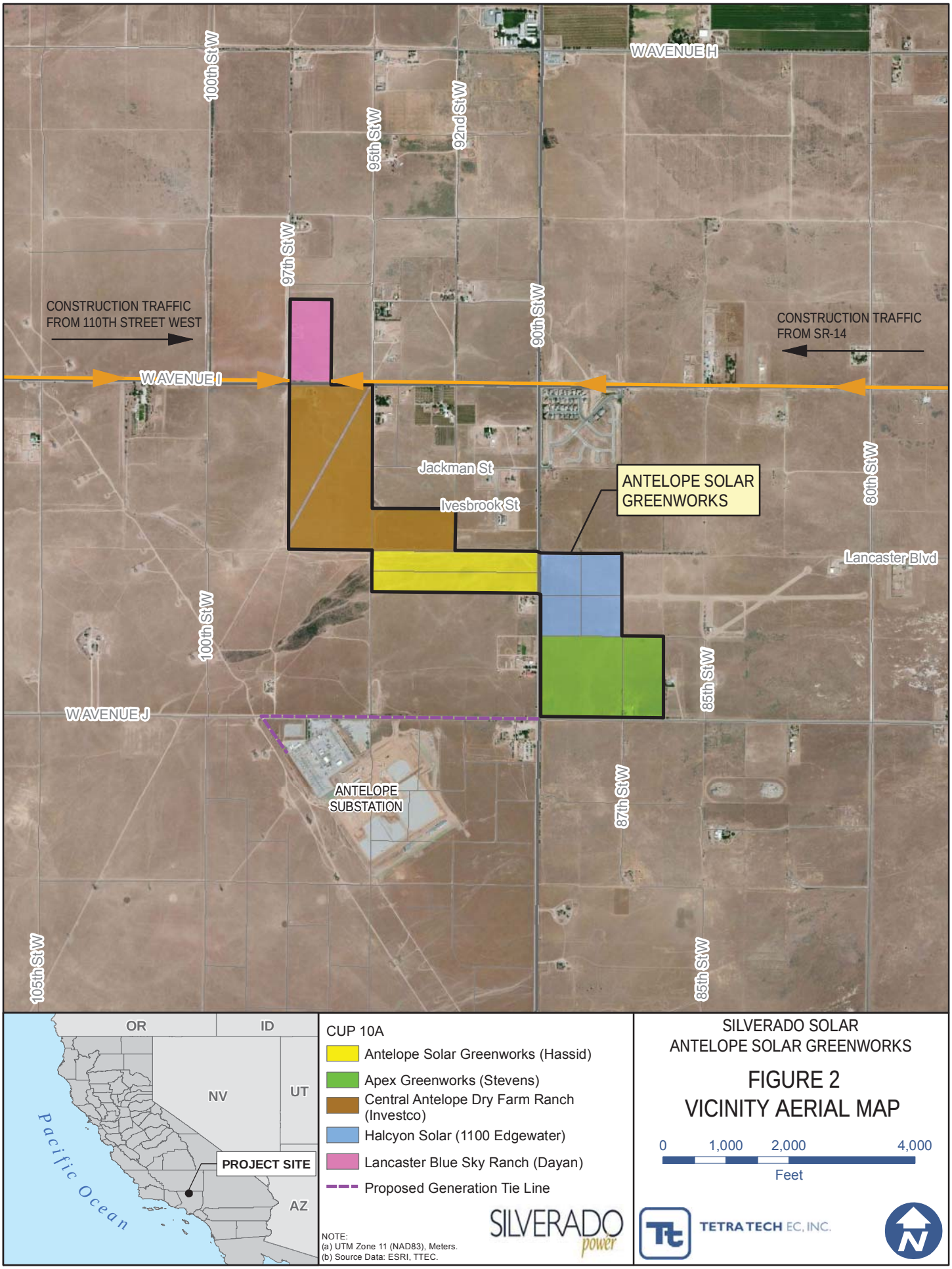

CUP 10A

- Antelope Solar Greenworks (Hassid)
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NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.

SILVERADO power

SILVERADO SOLAR
ANTELOPE SOLAR GREENWORKS

FIGURE 2
VICINITY AERIAL MAP

0 1,000 2,000 4,000
Feet

TETRA TECH EC, INC.

The following sections detail the visual characteristics of major project components.

2.1 Photovoltaic Modules

The solar generation facility will require installation of PV modules. The total number of PV modules required will depend on the technology selected, optimization evaluation, and detailed design. The market conditions, economic considerations, and the environmental factors will be taken into account during the detail design process. The following PV module technologies or equivalent are being considered for incorporation into the Project:

- PV thin-film technology
- PV crystalline silicon technology
- Fixed-tilt configuration

The modules configured with a fixed tilt will be oriented toward the south and angled at a degree that will optimize solar resource efficiency. Modules will be non-reflective and highly absorptive.

The PV modules will be thin rectangular blocks, mounted in multiple rows aligned from east to west. The front of each module will appear in varying shades of dark blue and purple, depending on the angle of the sun and brightness of the sky. The backs of the modules will be colored either white or a very light gray. The modules will be mounted on light gray steel support structures. The modules will be arranged at a fixed angle (i.e., tilted) of 45 degrees towards the sun. Depending on the final design, the assembled PV modules will have a typical height of approximately 6.5 feet above the ground, based on the orientation of the racks.

A site plan is provided in Appendix A to show the arrangement of the PV arrays. The Project will consist of PV array blocks measuring approximately 559 feet by 337 feet (covering approximately 4.3 acres each). Each block will contain rows of PV arrays and an inverter/electrical equipment pad, which will consist of equipment enclosed in a gray-colored box approximately 9-feet tall, and a small parking area.

During construction of the PV facilities, the proposed Project site will be cleared of vegetation, graded to remove localized mounds or valleys, and internal roads finished with a layer of aggregate to allow for various construction activities to take place. These activities will include trenching for installation of gathering lines, pouring of the support structure foundations, delivery of the PV module components, and PV module installation. Disturbance areas will appear as large patches of fine, buff-colored rock and soil. Construction activities may produce visible dust but impacts will be mitigated to less than significant with implementation of the fugitive dust plan.

2.2 Generation Tie-Line

The power generated by the Project will be connected to the existing transmission network with the voltage transformation equipment and system safety equipment constructed on the site. The collector system cables will be located underground, and will connect to a generator step-up transformer. The main collector cables will rise into the low-voltage busbar and protection equipment that will be enclosed together with the generator step-up transformer. The primary switchgear includes the main circuit breaker and utility metering equipment, and it will be

enclosed together with the generator step-up transformer. Both the generator step-up transformer and the primary switchgear will stand approximately 87 inches in height.

The output of the switchgear will be the start of the gen-tie line. The gen-tie will consist of three phases of overhead conductor and a disconnect switch on 55-foot wood poles. Electricity will be delivered to the existing Southern California Edison 66 kilovolt (kV) transmission line adjacent to the southern border of the Central Antelope Dry Farm Ranch parcel.

2.3 Substation

Two 2-acre substations are proposed to serve the Project site. One substation will be located in the southeast corner of the Central Antelope Dry Farm Ranch parcel. The other substation will be located in southern portion of the Apex Greenworks parcel. Locations for the proposed substations are shown in the Site Plan in Appendix A.

The substation sites will be appropriately graded and excavated to accommodate transformer equipment. A concrete foundation will be constructed for the substation, and structural components include transformers, switchgear, and safety systems, as well as footings and oil containment system for the transformers. The equipment will appear similar to other substations in the Project area, including the Antelope Substation (but on a smaller scale). In general, substations are characterized by many long, thin cylinders of bluish-gray steel, arranged in a geometric pattern of vertical and horizontal lines. Multiple short geometric blocks housing various electrical monitoring components will be present on the substation site. Some pieces of equipment will be constructed with a smooth stainless steel finish that will be moderately reflective under certain light conditions. The ground surface of each substation site will be finished with a light tan to buff-colored covering of small stones and gravel.

2.4 Other Infrastructure Elements

A series of internal access roads and driveways will extend throughout the proposed Project site between the PV arrays and will be characterized by approximately 20-foot-wide bands of light tan and buff-colored aggregate.

The perimeter of the Lancaster Blue Sky Ranch, Central Antelope Dry Farm Ranch, and Antelope Solar Greenworks parcels will each be enclosed by a galvanized chain link fence topped with a three-strand barbed wire section. The Apex Greenworks and Halcyon Solar parcels will be enclosed with the same type of fence together. The total height of the fence will be 8 feet. The light gray fence posts will be spaced at approximately 10-foot intervals. The 40-foot long driveways from the street to the gates will be 24 feet wide. A 10,000 gallon fire water tank will be located at the each gate. Portable toilets will be provided during construction, but no other sanitary facilities will be onsite. Lighting at specific locations for nighttime security purposes will be fence or structure-mounted and will be directed downwards.

Access gates will be provided as followed, and as shown in the Site Plan in Appendix A:

- For the Lancaster Blue Sky Ranch parcel – one access gate located along West Avenue I;

- For the Central Antelope Dry Farm Ranch parcel – three access gates will be provided; one along West Avenue I, one along 95th Street West, and one along Lancaster Blvd (pending expansion of the road);
- For the Antelope Solar Greenworks parcel – Two access gates will be provided; one along Lancaster Blvd (pending expansion of the road, and the other along 90th Street West); and
- For the Halcyon Solar and Apex Greenworks parcels – Two access gates will be provided; one along 90th Street West, and the other along West Avenue J.

3.0 REGULATORY SETTING

3.1 California Environmental Quality Act

A Conditional Use Application was filed with Los Angeles County in June 2011 for construction and operation of the Project. Los Angeles County is responsible for implementing the requirements of the California Environmental Quality Act (CEQA) for projects proposed for unincorporated Los Angeles County, in accordance with the California Public Resources Code, Section 21000 et. seq. (CEQA). Appendix G of the 2012 State CEQA guidelines (Association of Environmental Professionals 2012) contains four questions relating to visual resources and aesthetics.

a) Would the project have a substantial adverse effect on a scenic vista?

b) Would the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

c) Would the proposed project substantially degrade the existing visual character or quality of the site and its surroundings?

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

In addition, the Los Angeles County currently utilizes the Environmental Checklist Form (Initial Study) to provide thresholds of significance for potential impacts to resources including aesthetics (Correspondence and Environmental Checklist Form provided in Appendix B). The following five questions relating to visual resources and aesthetics are provided;

a) Would the project have a substantial adverse effect on a scenic vista?

According to the Environmental Checklist Form, a scenic vista may include designated scenic highways, scenic highways or resources designated by local land use plans, scenic highways or corridors designated by cities adjacent to or near the project site, or significant ridgelines. If the proposed project is not sited near any designated scenic highways, significant ridgelines, or other identified scenic resources, it is unlikely to result in impacts related to having as substantial adverse effect on a scenic vista.

b) Would the project be visible from or obstruct views from a regional riding or hiking trail?

Impacts may arise from the vacation of a portion of a trail, degradation of the scenic character in and around the trail, or obstruction of expansive views visible from the trail's course but not compromising the trail itself.

c) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

According to the Environmental Checklist Form, this question is concerned with not only trees, rock outcroppings, and historic buildings, but also undisturbed areas and hillside management areas. The question required identification of "undeveloped" or "undisturbed" areas either on the project site or in the vicinity of the project site. According to the form, development of on-site greenfield conditions is likely to result in a significant impact given the previously undisturbed nature of the land.

d) Would the project substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?

This checklist question evaluates how well the design of the proposed project would integrate with the visual character of its surroundings and the project's level of visual integration from the perspective of height, bulk, pattern, scale, character, or other features. According to the checklist, the height/bulk of a project could negatively impact the surrounding area. Ultimately, the final impact determination will have to do with how well the proposed project integrates with the surrounding neighborhood.

e) Would the project create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area?

Whether a project will produce a substantial amount of shadows is dependent upon a combination of factors including height of the project, width, setbacks, and the length of shadows cast upon potentially sensitive uses. Light or glare is dependent on a project's surface materials, lighting program, and signage. Projects involving large expanses of reflective surfaces may potentially result in a significant impact if reflected light (glare) impedes views in and around the project site. The checklist states that projects must comply with Los Angeles County's Dark Skies Ordinance, however at the time of this report, the Dark Skies Ordinance had not been officially adopted.

The county checklist questions are largely based on the state checklist, with the County's questions requiring additional detail. This Aesthetics Impacts Study therefore uses the County checklist and associated guidance to determine if the Project will potentially impact visual resources, and whether those impacts are less than significant, less than significant with mitigation, or significant.

3.2 Local Land Use Plans and Guidance

Development in the Project area is guided by county and local land use plans. Land use plans reviewed for relevant guidelines and policies include the Los Angeles County General Plan, the Antelope Valley Area Plan, and the City of Lancaster General Plan.

3.2.1 Los Angeles County General Plan

The Los Angeles County General Plan (Los Angeles County 1980) included the following policy relevant to visual resources:

- *General Goals and Policies, Goal 15:* Protect areas that have significant natural resources and scenic values, including significant ecological areas, the coastal zone, and prime agricultural lands.
- *Conservation and Open Space Goals and Policies, Policy 15:* Protect the visual quality of scenic areas including ridgelines and scenic views from public roads, trails, and key vantage points.

The Los Angeles County General Plan also identifies officially designated scenic highways, and divides proposed scenic highways into first- and second-priority proposed scenic highways. First priority routes recommended for further study include the Antelope Valley Freeway, located approximately 1 mile east of the Project site. There are no second-priority routes in the vicinity of the proposed Project site.

3.2.2 Antelope Valley Area Plan

The Project site is located within the boundaries of the planning area for the Antelope Valley Areawide General Plan (Los Angeles County 1986). The areawide plan contains the following policy relevant to visual resources:

- *Policy 22:* Minimize environmental degradation by enforcing controls on sources of pollutants (including visual pollution) and noise.

Visual pollution is not defined by the general plan, but typically includes dust, smog, trash, or visual clutter.

3.2.3 Los Angeles County Hillside Management Ordinance

The Hillside Management Ordinance (Los Angeles County Code Title 22, Section 22.56.215) designates hillside management areas in urban and non-urban areas that have hillsides with a 25 percent grade or greater. The ordinance requires development on properties covered by the hillside management ordinance to obtain a conditional use permit with the intent of preserving remaining natural topography.

4.0 SITE VISIT METHODOLOGY

4.1 Identification of Potential Scenic Areas

Potential scenic areas were identified prior to the field visit so they could be evaluated and photographed. Potential scenic areas were identified from review of maps, local land use plans, county land use plans, and relevant guidance as described in Section 3.0.

As detailed in Section 3.1, the Los Angeles County Environmental Checklist Form (Appendix B) identifies other aesthetic considerations and categories of scenic resources that must be addressed. The following categories of scenic resources are addressed in this report:

- Scenic highways
- Scenic highways or resources designated by local land use plans
- Scenic highways or corridors designated by cities adjacent to or near the Project site
- Significant Ridgelines
- Hillside Management Areas
- Riding and Hiking Trails
- Trees, Rock Outcroppings, and historic buildings within a state scenic highway
- Undisturbed land on the Project site or in the vicinity of the Project site

Guidance contained in question (a) in the Aesthetics Section of the Environmental Checklist requires consideration of scenic resources designated by local land use plans or by cities adjacent to or near the project site. The City of Lancaster's Master Environmental Assessment (MEA) (2009b) and the City of Lancaster's General Plan (2009a) were used to identify specific scenic resources in the area. Although the Project is located in unincorporated Los Angeles County outside municipal boundaries, it is inside the "Sphere of Influence" identified in the MEA. Scenic resources are defined by the MEA as "those unique visual features that provide attractive views either into or from the study area" (City of Lancaster 2009b). Five scenic areas were identified in the Sphere of Influence identified in the MEA, which included areas beyond the city of Lancaster's municipal boundaries: the Foothills Area, Little Buttes, Quartz Hill, Piute Ponds, and Little Rock Wash:

- The Foothills Area is the northern edge of the San Gabriel Mountains. The area between the Angeles National Forest and the Antelope Valley provides many trails for hiking and biking. Trails along the California Aqueduct provide access for hiking, biking, and fishing. These trails provide visitors with expansive views of the surrounding mountains and Antelope Valley. The MEA identifies a visual buffer area extending from the foothills area into the valley, but does not provide specific direction for management of the visual buffer area.
- Little Buttes is located approximately 7.5 miles west of the Antelope Valley Freeway, and 1.5 miles north of West Avenue D. Little Buttes is a butte (hill) rising from the flat desert landscape, and is crossed by a number of undesignated hiking trails.
- Quartz Hill is a hill surrounded by residential development within the unincorporated community of Quartz Hill immediately south of the City of Lancaster. Quartz Hill rises over 200 feet above the surrounding community and is located approximately 2.7 miles west of the Antelope Valley Freeway along West Avenue M/Columbia Way.

- The Piute Ponds area is located on Edwards Air Force Base east of the Antelope Valley Freeway. Access is restricted, and special permission is required to enter the area. The Piute Ponds consist of several shallow amorphous ponds on the southern edge of Rosamond Dry Lake. These ponds form a series of interconnected impoundments that receive wastewater from the Lancaster Water Reclamation Plant as well as seasonal runoff from washes that cross the valley floor (University of California-Santa Barbara 2009). Recreational activities in the Piute Ponds area include hiking and wildlife watching.
- Little Rock Wash, located approximately 11 miles southeast of the proposed Project site and one of the larger washes in the Project area, is dry most of the year. According to the MEA (City of Lancaster 2009a), Little Rock Wash is the most significant natural desert wash within the study area in terms of plant diversity and biological value. Little Rock Wash is considered a Significant Ecological Area. Trails and proposed trails exist in the area of Little Rock Wash. The MEA identifies a visual buffer area surrounding the wash, but does not provide specific direction for management of the visual buffer area.

The MEA also mentions the scenic value of the Antelope Valley California Poppy Reserve, a state natural reserve, located west of the Sphere of Influence. The Poppy Reserve receives the majority of its visitors during the spring and early summer months when the poppy flowers that are common to the area are in bloom.

The MEA mentions the Joshua tree as the most well-known desert plant in the Antelope Valley, with desert and desert woodland plant communities being of significant local and regional value. The Lancaster General Plan identifies local views of the surrounding buttes, Quartz Hill, and long distance panoramas of the San Gabriel Mountains and desert expanses as visual/scenic resources.

The MEA also identifies several roadways that could potentially serve as scenic routes in the future, but currently have no formal designation. These include the following:

- Antelope Valley Freeway, for long-range views of the San Gabriel Mountains to the southwest, south, and southeast, and far-off views of the San Bernardino Mountains to the southeast and the Tehachapi Mountains to the northwest. To the north this route provides close-in views of open desert lands.
- Avenue K between 110th Street West and 90th Street West, for views of the San Gabriel Mountains to the south and of the Portal Ridge foothills to the southwest.
- Avenue M between the Antelope Valley Freeway and 60th Street West, for views of the San Gabriel Mountains to the south and Quartz Hill.
- 60th Street West between Avenues K and M, for views of Portal Ridge to the west and the San Gabriel foothills to the south.
- 90th Street West, for long-range views of the San Gabriel Mountains to the south and southwest, close-in views of the open desert in the northern portion of the valley and of the Tehachapi Mountains to the northwest.

4.2 Field Visit

In an effort to properly assess the existing visual character of the landscapes in the Project area, a two-day visit to the proposed Project site and the surrounding Project area was conducted on Tuesday, January 24th and Wednesday, January 25, 2012 by Tetra Tech visual resource specialist Tara Low. On Tuesday, January 24, 2012, photos were taken near the

Project site between 1:00 PM and 4:00 PM. The weather was a mix of sun and clouds, becoming more overcast over the course of the site visit. On Wednesday, January 25, 2012, photos were taken near the Project site between 9:00 AM and 11:00 AM. The weather was clear and sunny with only a few widely-scattered clouds.

A Nikon D90 digital single lens reflex camera (dSLR) equipped with a 35-millimeter (mm) lens was used to take the photographs. When used with a 1.5x cropped-sensor camera such as the D90, a 35-mm lens is considered a "52-mm equivalent lens." A 52-mm equivalent lens is considered a "normal lens" that closely approximates the field of vision of the human eye. In photos taken using the combination of the D90 and a 35-mm lens, the size and scale objects in the background and foreground are depicted realistically, and are not distorted.

The Nikon D90 dSLR was also equipped with a Global Positioning System (GPS) device manufactured by Promote Systems. This GPS device records the latitude, longitude, and elevation of each photograph as it is taken and embeds this information in the .jpg itself. This feature allows one to upload the Project area photos to a Google Earth .kmz, which displays both the photos themselves and the locations where each photo was taken on an interactive representation of the earth. Other relevant project information, such as Project boundaries, existing transmission infrastructure, and jurisdiction boundaries can be displayed simultaneously in the .kmz along with the photo locations.

Each location where photographs were taken is referred to as a "photo point" in this report. At each photo point, a panorama, or an overlapping series of photos, is captured. After the conclusion of the field visit, each of these panoramas was created using a panorama creation program called PTGui. These panoramas were then added to a Google Earth .kmz file, where the locations of each panorama were displayed on an interactive representation of the earth. A map showing the locations of each of the photo points visited during the field visit can be seen in Figure 3. Panoramic photos taken during the field visit relevant to the Project site and this analysis are provided in Appendix C.

Photo points were captured at the proposed Project site from locations along adjacent roads and intersections near the Project site (Figure 3). During this site visit, the following locations were visited and photographed:

- The proposed Project site, and other sites proposed for solar development for separate permitting processes
- Locations in representative landscapes in the Project area where the Project may be seen
- Potentially sensitive viewing areas where the Project may be seen, which can include residential areas, community facilities such as parks, open space areas, fairgrounds, or playgrounds, or highways or well-travelled roads
- Scenic areas identified in the City of Lancaster's MEA, including the Poppy Reserve, Foothills Area, Little Buttes, and Quartz Hill.

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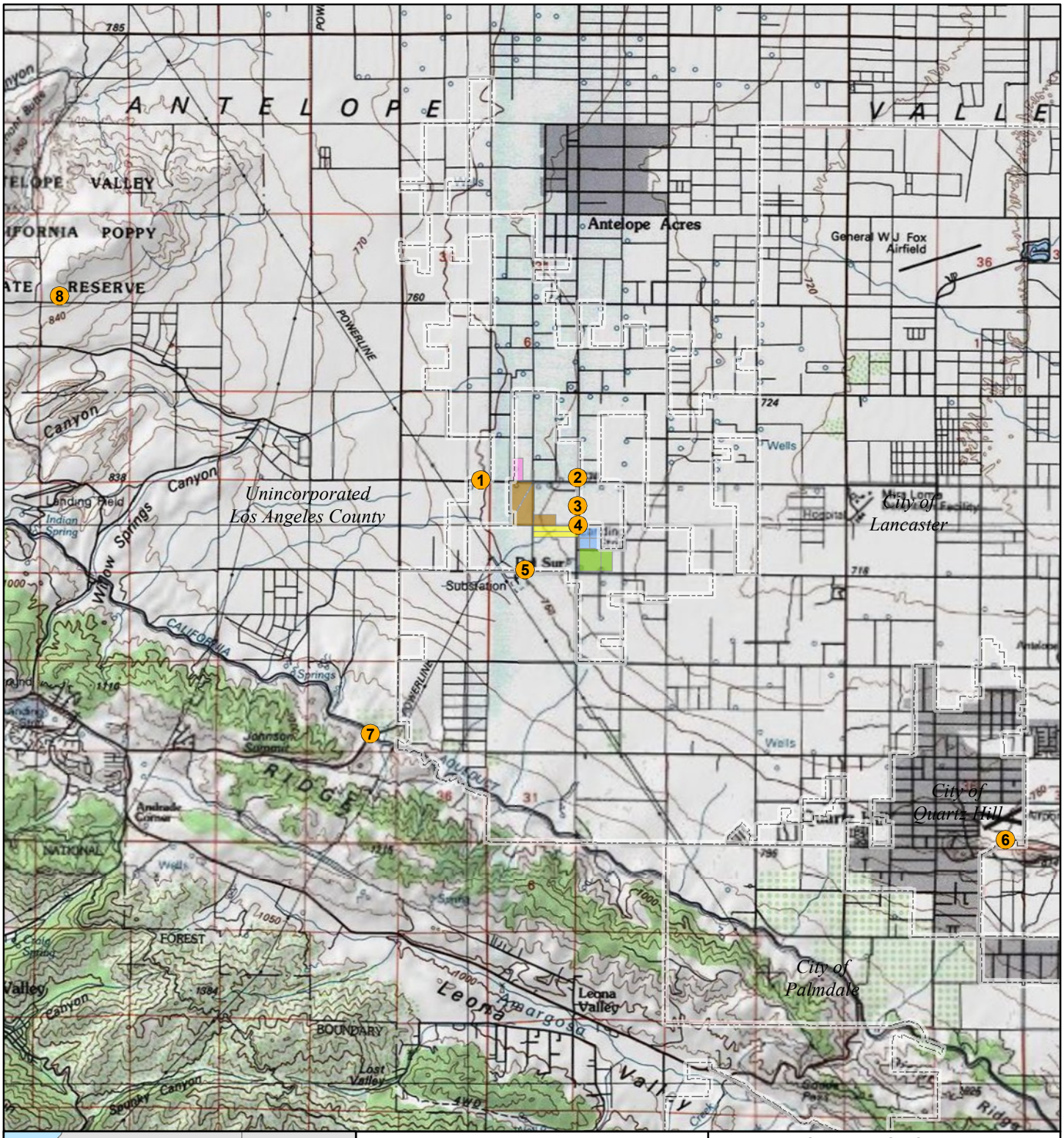

CUP 10A

- Antelope Solar Greenworks (Hassid)
- Apex Greenworks (Stevens)
- Central Antelope Dry Farm Ranch (Investco)
- Halcyon Solar (1100 Edgewater)
- Lancaster Blue Sky Ranch (Dayan)
- Photo Locations

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Del Sur 7.5' Topographic DRG.

SILVERADO power

SILVERADO POWER
ANTELOPE SOLAR GREENWORKS

FIGURE 3
PHOTO LOCATION MAP

0 4,150 8,300 16,600
Feet

TETRA TECH EC, INC.

Photos were not taken from Piute Ponds and Little Rock Wash, both located east of the Antelope Valley Freeway for the purpose of this visual assessment. The Piute Ponds area is located on Edwards Air Force Base approximately 14 miles northeast of the Project site, and special permission is required to enter the area. The Project site will not be visible from Piute Ponds due to distance. The visual resource specialist drove around the Little Rock Wash area, located approximately 12 miles southeast of the Project site, to observe the regional setting. The Project site is not visible from the Little Rock Wash area due to the distance of the Project site from Little Rock Wash, and the location of development associated with the City of Lancaster between Little Rock Wash and the Project site.

4.3 Photographic Simulations and Contrast Ratings

When assessing the potential visual impacts of the proposed Project, it is important to compare the visual characteristics of existing landscapes in the Project area with the visual characteristics of specific Project components that will be visible in those landscapes. The BLM's visual contrast rating process (*Handbook 8431-1 Visual Resource Contrast Rating*) was used as the basis for reviewing potential impacts to visual resources. Because the proposed Project is on private land and not subject to BLM regulations, a form adapted from the BLM's Visual Contrast Rating Worksheet (BLM Form 8400-4) was used to assess the degree of contrast the proposed project will introduce to the existing landscape.

The visual contrast rating worksheet uses landscape character elements and distance zones to describe the landforms (including water), vegetation, and man-made features (structures) that currently exist in the landscape using the basic landscape character elements of form, line, color, and texture:

- Form—The shape and mass of landforms or structures
- Line—The edge of shapes or masses, silhouettes, or bands
- Color—The property of reflecting light of a particular intensity of wavelength that the eye can see
- Texture—The nature of the surface of landforms, vegetation, or structures

When the visual resources in an area are described, the distance between objects or landforms and any potential viewer has a direct influence on that description. Objects or features that are closer to a viewer's location will appear more detailed and more dominant than those that are further away. The following distance zones are used in landscape descriptions:

- Foreground/Middleground—Areas immediately in front of to 5 miles away from an observer
- Background—Areas from 5 to 15 miles away from an observer
- Seldom Seen—Beyond background or can't see

Descriptions of the existing landscape and of the landscape after a proposed project is implemented are compared to identify the level of contrast a project's components may introduce. Photographic simulations are often created to help visualize the impacts to the existing landscape and to aid in the description of the proposed Project components. These simulations are created using a combination of Geographic Information Systems (GIS) and current 3D software to ensure accuracy in the locations of the proposed Project components.

5.0 AFFECTED ENVIRONMENT

5.1 Regional Landscapes

The proposed Project site is located in the Antelope Valley, which is part of the Mojave Desert basin. The Antelope Valley is broad and relatively flat, with few variations in topography. The valley is shaped like a sideways letter "V," sloping northward toward the Tehachapi Mountains and southward toward the San Gabriel Mountains. The western portion of the valley slopes upward toward the point where these two mountain ranges come together at the junction of the San Andreas and the Garlock faults. In the Project area, these mountain ranges are characterized by many complex and well-eroded hills rising approximately 2,000 to 5,000 feet above the valley floor. Many small valleys and drainage complexes are visible in the foothills that border the valley.

Surface water is rarely observed in the Antelope Valley. There are many washes that meander across the valley; however, these streams are dry for the majority of the year and only fill with water during the spring snow melt originating from the nearby mountains and after major rain events. Conversely, concrete-lined aqueducts, which include the California Aqueduct and the Los Angeles Aqueduct, parallel the natural contours of the foothills of the San Gabriel and Tehachapi Mountains. Recreational trails line the California Aqueduct, which is located approximately 2.7 miles south of the Project site.

Several high-voltage transmission lines are located in the local Project area, many of which are connected to the Antelope Substation, located approximately 0.4 mile southeast of the Project site. Several high-voltage transmission lines and electric distribution lines converge at the Antelope Substation.

The desert woodland vegetation native to the Mojave Desert and includes tall, irregular Joshua Trees, and round Juniper shrubs ranging from 4 to 10 feet tall (City of Lancaster 2009b). In most of the Project area, the native woodland vegetation has been cleared for agricultural use. Irrigated agricultural areas appear as square, rectangular, or circular green shapes on the brown-toned desert landscape. Root vegetables and fruit trees, as well as alfalfa, hay, and grapes are grown in the valley. In portions of the Project area where agriculture has yet to be developed or has been abandoned, a mixture of short grasses, wildflowers, and low desert scrub bushes are common. During the spring bloom, wildflowers cover the valley in brilliant displays of orange, yellow, and purple wildflowers (City of Lancaster 2009b). On the slopes of the foothills to the north and south, low woody vegetation is common, and includes scrub oak, sagebrush, Creosote, and Juniper bushes. During the spring and early summer, this vegetation appears in varying shades of dark and light green. During the fall and winter, patches of dark brown and grayish red hues are visible.

There are several well-developed cities in the Project area. Both Lancaster and Palmdale, located approximately 8 and 14 miles east/southeast of the proposed Project site respectively, each have a population of more than 100,000. The nearby city of Quartz Hill (approximately 6 miles southeast of the Project site) has a population of more than 10,000. The Project site is located west/northwest of densely developed areas associated with Quartz Hill, Palmdale and Lancaster.

Development proximate to the Project site is mostly rural in nature. There are several rural ranch residences located directly adjacent to, or within a mile of the Project site. Several of the ranch residences have trees planted around them that will provide some degree of vegetative screening from the proposed Project. A 35-acre subdivision is located approximately 0.25 miles north and 0.5 miles east of the Project site (visible in Figure 2). The subdivision contains 32 homes, several homes under construction, as well as empty lots. The entire subdivision is surrounded by a brick wall approximately 6 feet in height.

5.2 Project Site Description

The Project site is located in the west/central portion of the Antelope Valley, and it is very flat, sloping gradually downwards from southwest to northeast. Portal Ridge, which is part of the San Gabriel Mountains foothills, is prominent in views to the south from the site. This ridge is characterized by a jagged, horizontal line of coarse hills and complex drainages rising approximately 1,200 feet above the proposed Project site. Views to the north and east reveal a predominantly flat landscape, and very little topographic variation is visible. The jagged ridgeline of the Tehachapi Mountains is visible in the distance in views to the north from the proposed Project site. Views of the San Gabriel Mountains foothills, which are located approximately 3.5 miles south of the Project site, are dominant to the south.

Photos 1 to 5 in Appendix C show various views towards the Project site from local roads surrounding the area. The Project site slopes slightly southeast with an elevation change of approximately 45 feet, but appears very flat. Parcels that compose the overall Project site are mostly fallow agricultural land, and mostly vacant. A ranch home compound is located at the corner of West Avenue J and 87th Street West. Man-made features on the project site include two-track and dirt roads.

The Project site is located within a half-mile of the Antelope Substation, an approximately 90-acre substation located at West Avenue J and 95th Street West. The Antelope Substation is a major substation, and several high-voltage transmission lines and electric distribution lines connected to the Antelope Substation are located in the vicinity of the Project site. A 66 kV transmission line crosses the Central Antelope Dry Farm Ranch Parcel from northeast to southwest. The transmission line is constructed from a mixture of H-Frame and lattice towers approximately 75 feet in height. Electric distribution lines are located along West Avenue I, Lancaster Blvd, 95th Street West, West Avenue J, and 90th Street West.

Much of the Project site was previously used for agricultural production, and there is little vegetation. Trees are limited to field lines and roadways. Vegetation communities in each of the parcels comprising the Project site are described below.

- Lancaster Blue Sky Ranch Parcel – This parcel is a fallow, previously disturbed agricultural site comprised primarily of Non-Native Annual Grasslands. Non-Native Annual Grassland consists of a dense to sparse cover of annual grasses such as oats (*Avena spp.)*, bromes (*Bromus spp.)*, and ryegrass (*Lolium spp.)* with flowering culms up to 3 feet in height. This community is often associated with numerous species of native annual wildflowers such as the California poppy (*Eschscholzia californica)*, lupines (*Lupinus spp.)*, and goldfields (*Lasthenia spp.)* especially in years of favorable rainfall. Typically, plants are dead through the summer-fall dry season. Tamarisk Scrub is also

present along the western and southwestern boundaries of the parcel, where salt cedar (*Tamarix ramosissima)* lines the roadways. A disturbed area is located along the western boundary.

- Central Antelope Dry Farm Ranch Parcel – This parcel consists of disturbed, fallow agricultural lands. The site consists primarily of non-native annual grassland. A small amount of Rubber Rabbitbrush Scrub is present within the northern portion of the project site. This vegetation type is characterized by rubber rabbitbrush (*Chrysothamnus nauseosus)*, usually approximately 3 feet in height with regularly-spaced gray-green shrubs that bloom in late summer/early fall. Disturbed areas/access roads with no established vegetation occur in the northwestern corner of the site, and the southern portion of the site.
- Antelope Solar Greenworks Parcel - This parcel consists of disturbed, fallow agricultural lands. The site is primarily composed of non-native annual grassland with a small amount of rubber rabbitbrush scrub throughout the eastern portion of the site. Disturbed areas/access roads with no established vegetation run east-west in the northern portion of the site.
- Halcyon Solar Parcel – This parcel is classified as Tamarisk Scrub, Non-native Annual Grassland, and Ruderal. The site is primarily composed of non-native grasslands. Tamarisk scrub is present on the northwestern border of the project site where tamarisk are located along 90th Street West. A thin section along the northeastern boundary of the site is classified as Ruderal, dominated by pioneering herbasceous species that readily colonize disturbed ground. Ruderal species found on the site include tumble mustard (*Sisymbrium altissimum),* Russian thistle, and yellow pincushion (*Chaenactis glabriuscula)*. Access roads with no established vegetation cross the site along the northern boundary.
- Apex Greenworks Parcel – This parcel consists of previously disturbed, fallow agricultural fields. The site is primarily composed of non-native grasslands. Developed areas are present within the southeast portion of the Project site and include a ranch compound and associated development. Tamarisk scrub is present on the project site on field lines west/northwest and south/southeast of the ranch compound. The tamarisk trees may serve as a windbreak for ranch buildings or as screening from West Avenue J.

5.3 Scenic Resources

Section 4.1 of this report identifies categories of scenic resources located within the Project area. The following sections identify which of those scenic resources may be potentially impacted by the proposed Project.

5.3.1 Scenic Vistas

Figure 3 shows the location of scenic resources in relation to the proposed Project site. The Project will not be visible from Piute Ponds or Little Rock Wash, which are both located over 10 miles away from the Project site. It is highly unlikely that the Project will be discernible from Little Buttes or Quartz Hill, which are both located over 6 miles from the Project site. Even though viewpoints from Little Buttes and Quartz Hill are at higher elevations than the Project site, from this distance the proposed Project will fade into the flat landscape. Photo 6 in Appendix C shows a view from Quartz Hill in the direction of the Project. As is seen from the photo, which was taken from an elevated location, areas beyond the residential developments in Lancaster are not visible.

The Project is not likely to be discernible from the California Poppy Reserve, located approximately 6 miles west/northwest from the Project site. Photo 8 in Appendix C shows a view towards the Project site from the top of the Valley Vista Trail in the Poppy Reserve. The Antelope Substation, an approximately 90-acre facility just south of the Project site, is not discernible from this location. It is highly unlikely therefore, that the Project itself will be discernible from this distance. Instead, it will fade into the flat landscape.

The Project will be visible from certain locations in the Foothills Area, including portions of the California Aqueduct trails. Photo 7 in Appendix C provides a view from a picnic shelter located along the California Aqueduct, adjacent to Johnson Road.

5.3.2 Scenic Highways or Corridors

Paved roads that serve as primary travel routes in the area adjacent to the Project site include West Avenue I, West Avenue J, and 90th Street West. Traffic on these roads consists of a combination of local residents, tourists going to and from the Poppy Reserve, and business traffic. These three roads are two-lane paved roadways, characterized by dark to light grey concrete/asphalt. Other minor roads adjacent to the Project site are light tan/gray dirt/gravel roads that primarily serve local residents.

The City of Lancaster's MEA (City of Lancaster 2009b) identifies 90th Street West and West Avenue K (between 90th Street West and 110th Street West) as potential scenic routes. These roadways have no official designation as scenic routes at this time. 90th Street West is located adjacent to the Project site, and West Avenue K is located approximately 1 mile south of the Project site.

5.3.3 Significant Ridgelines and Hillside Management Areas

No designated significant ridgelines are located within the Project area. The Project site is flat with a grade of less than 25 percent, and therefore the Hillside Management Ordinance does not apply to the Project site.

5.3.4 Riding and Hiking Trails

Riding and hiking trails in the vicinity of the Project site include trails in the Foothills area (including the California Aqueduct Trail) and trails in the California Poppy Reserve.

5.3.5 Undisturbed Land

The proposed Project is located on land that is vacant, but is not undisturbed. Disturbance is evident on the Project site as well as in lands surrounding the Project Site. The Project site and surrounding land is primarily unproductive agricultural land dominated by non-native vegetation species. Cultural modifications to the landscape include farms, rural residences, agricultural fields, high-voltage power lines, electrical distribution lines, roadways, and a large substation (the Antelope Substation).

6.0 VISUAL IMPACT ANALYSIS

Using the CEQA checklist criteria provided in the County of Los Angeles' Environmental Checklist Form (included in Appendix B), the visual impacts from the proposed Project were assessed:

(a) Will the project have a substantial adverse effect on a scenic vista?

Recommended Rating: LESS THAN SIGNIFICANT

According to the Los Angeles County Environmental Checklist form, potential impacts could result from obstructing views to or from the scenic resource, degrading the character of a scenic highway, or disrupting a scenic vista.

Because of the low profile of the solar modules, the Project would not obstruct views to or from any scenic resources. Of the scenic resources in the Project area, the proposed Project will be visible from the Foothills Area. Other scenic resources identified by the City of Lancaster (the California Poppy Reserve, Little Buttes, Piute Ponds, Little Rock Wash, and Quartz Hill) are located a sufficient distance away such that the Project will fade into the horizon line and not be visible. The Antelope Valley is extremely flat, which limits the visibility of the Project unless the viewer is located in a superior position (at an elevation higher from the object/location being viewed). Even from a superior viewing position at Quartz Hill or the Poppy Reserve, a viewer is not likely to be able to distinguish the Project site from 8 miles away from the Project site.

A photographic simulation was completed from a viewpoint in the Foothills Area, and is provided in Figure 4. The photograph was taken from a picnic area along the California Aqueduct Trail, east of Johnson Road and approximately 2.8 miles southwest of the Project site. A contrast rating was conducted from the viewpoint shown in Figure 4 to assess the level of contrast that would be introduced by the proposed Project from the scenic area. The contrast rating form is provided in Appendix D. The overall level of contrast introduced by the proposed Project was evaluated as low from this viewpoint. No noticeable modifications to landforms are anticipated. The removal of vegetation (the shrubs on the south side of the road) would introduce a weak level of contrast compared with existing conditions. The introduction of solar modules would create a low contrast in form, line, color, and texture from existing conditions. The solar field would appear slightly darker than the surrounding landscape, but the form of the solar field and the lines created by the edges of the solar field mimic the appearance of an agricultural field in from this distance and vantage point. The Project will not dominate views from the Foothills area given the degree of cultural modifications that have already been introduced to the landscape, including roads, electrical infrastructure (transmission lines, substations, and distribution lines), and agricultural fields.

The MEA also identifies several roadways that could potentially serve as scenic routes in the future, but currently have no formal designation, including 90th Street West and Avenue K between 90th Street West and 110th Street West. The proposed Project components will be located directly adjacent to 90th Street West, but will not be dominant in motorists' views unless directly adjacent to the Project site. The photo simulation provided in Figure 5 was taken approximately 0.5 miles north of the Project site, from the southbound lane of 90th Street West just north of the 90th Street West/West Avenue I intersection. A contrast rating was conducted from the viewpoint shown in Figure 5 to assess the level of contrast that would be introduced by

Simulation. Post-construction photographic simulation from picnic shelter along the California Aqueduct Trail in the Foothills Area.

Existing. Existing conditions from picnic shelter along the California Aqueduct Trail in the Foothills Area.

Figure 4. Photo Simulation

Simulation. Post-construction photographic simulation from the southbound lane of 90th Street West.

Existing. Existing conditions from the southbound lane of 90th Street West.

Figure 5. Photo Simulation

the proposed Project. The contrast rating form is provided in Appendix D. The overall level of contrast introduced by the proposed Project was evaluated as low from this viewpoint. From this distance and viewpoint, the solar modules are barely visible as thin lines on the horizon, and are mostly blocked by residential buildings and vegetation. The lines and colors created by the solar modules at this distance are not dissimilar to other lines and colors that exist in the landscape.

The proposed Project is directly adjacent to 90th Street West for approximately 0.5 miles, less than 0.4 miles northeast of the Antelope Substation. Because the Antelope Substation already exists in this landscape, and because the low profiles of the solar modules will not block views towards the mountains, impacts to views from 90th Street West are not significant.

The Project will likely be visible from eastbound West Avenue K between 90th Street and 110th Street. West Avenue K is valued for its views to the south of the San Gabriel Mountains and Portal Ridge foothills. Because the proposed Project is located at least one mile north of West Avenue K, it will not impede views to the south of Portal Ridge. Also, the Antelope Substation and high-voltage transmission lines are situated in between West Avenue K and the proposed Project. Impacts to views along West Avenue K are therefore not significant.

(b) Would the project be visible from or obstruct views from a regional riding or hiking trail?

Recommended Rating: LESS THAN SIGNIFICANT IMPACT

According to the Los Angeles County Environmental Checklist Form, impacts would arise from the vacation of a portion of the trail, degrading the scenic character in or around the trail, or obstructing expansive views visible from the trail's course.

No trails are located on the Project site, therefore the Project would not cause the vacation of any portion of any trail nor would it obstruct expansive views from any trails.

The proposed Project may be visible from elevated portions of riding or hiking trails that are not screened by terrain, including portions of the California Aqueduct trails, and from other trails in the Foothills Area. A photographic simulation and contrast rating were conducted from a view point in the Foothills Area (see Figure 4, and Contrast Rating evaluation in Appendix D). As discussed in question (a), the level of contrast that would be introduced by the proposed Project from the scenic area is low. The introduction of solar modules would create a low level of contrast in form, line, color, and texture from existing conditions. The solar field would appear slightly darker than the surrounding landscape, but the form of the solar field and the lines created by the edges of the solar field mimic the appearance of an agricultural field from this distance and vantage point. The Project will not dominate views from the Foothills area given the degree of cultural modifications that have already been introduced to the landscape, including roads, electrical infrastructure, and agricultural fields.

(c) Will the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

Recommended Rating: NO IMPACT

According to the Los Angeles County Environmental Checklist, impacts may occur from development of undisturbed lands on-site or in the vicinity of the Project area. All development

and staging would occur on the Project site or on already disturbed areas. As described in Section 5.3.5, the Project site is disturbed land and is surrounded by cultural modifications.

As described in Question (a), the proposed Project is not located along or in proximity to any designated scenic highways. The proposed Project will not substantially damage or impact scenic resources such as trees (including Joshua Trees) or rock outcroppings, and there are no historic buildings located in the proposed Project site.

(d) Will the proposed project substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?

Recommended Rating: LESS THAN SIGNIFICANT

According to the Los Angeles County Environmental Checklist, the height/bulk of a proposed project could negatively impact the surrounding area depending on how well the design of the proposed project integrates with the visual character of its surroundings from the perspective of height, bulk, pattern, scale, character, or other features.

The existing site is mostly open land in a rural area, and is typical of the surrounding landscape. The visual quality of the Project site is low. The Project site itself does not have unique or rare features, or hold special significance. The topography is uniform and flat. Vegetation is uniform and consists of grasses and short shrubs. No permanent water features occur on the site, and there are no features or characteristics that set the Project site apart from the surrounding desert landscape. Viewers such as nearby residents and travelers on the West Avenue I will still experience views of the open desert lands around the Project site after the solar facility is constructed.

Even where visible, the proposed Project components will not be a dominant element in the landscape unless the viewer was directly adjacent to the facility. The solar facility will not significantly impact views from residences in the Westview Estates Subdivision because of screening provided adjacent homes and the privacy wall surrounding the subdivision. From viewing points further than approximately 0.25 mile from the solar field, at approximately the same elevation, the solar facility will fade into the flat landscape and not dominate the view. Other electric infrastructure, including the Antelope Substation and several high-voltage transmission lines, are also located within 0.5 miles of the Project site.

Even though the Project components are out-of-character with the directly adjacent land (which is primarily rural residential), the Project is not out-of-character when considering the context of the surrounding landscape. Cultural modifications are common in the landscape around the site, which is situated approximately 0.4 miles north/northeast of the Antelope Substation. The electrical infrastructure associated with this substation is more complex with varying heights and shapes of equipment, while the proposed Project will appear very uniform throughout the Project site. Several distribution lines and high-voltage transmission lines converge at the Antelope Substation. Other cultural modifications to the landscape include farms and residences. In the larger Project area, electrical infrastructure such as PV solar fields, transmission lines, and substations are common.

Because other cultural modifications structures are common in the vicinity of the Project site and in the larger Project area, and because the Project site itself is not characterized by high visual quality, the visual impact of the Project on the existing visual character of the proposed Project site and its surroundings will be less than significant.

(e) Will the project create a new source of substantial light or glare which will adversely affect day or nighttime views in the area?

Recommended Rating: LESS THAN SIGNIFICANT

According to the County of Los Angeles' Environmental Checklist Form, the impacts may occur if shadows are cast upon nearby sensitive uses, or if reflective light or glare impeded views in and around the Project site.

Because of the low profile of the solar modules, no significant shadows will be cast upon nearby sensitive land uses. Impacts from new sources of light or glare are expected to be less than significant. The Project will not create a significant source of light. Light sources associated with the Project will be minimal, and will be restricted to that required for nighttime safety and security according to county requirements. Lighting will be installed and directed downward and shielded to avoid light trespass. The amount of light generated by the security lights will be consistent with existing sources produced by man-made structures adjacent to the proposed Project site, including residences, the Westview Estates subdivision, roadway lights, and the Antelope Substation.

Project components will introduce minimal amounts of glare to the existing landscape. The Project PV modules are designed to absorb sunlight, and the glass modules that protect the PV surface are typically formulated glass designed to allow sunlight to pass with minimal reflection.

7.0 CONCLUSIONS

Implementation of the proposed Project is expected to have a less than significant impact on scenic resources and aesthetic values.

The following mitigation measures that will minimize visual impacts are incorporated into the Project design:

Construction Phase:

- Implement a Fugitive Dust Control Plan to minimize dust (visual pollution).
- The Project site will be maintained free of debris, trash, and waste during construction.

Operations Phase:

- The proposed structures onsite will be neutral colors (grays) and non-reflective.
- A landscape plan will be developed prior to Project construction that shows detail of any proposed earthwork or vegetation intended to screen the Project visually from area residents or travelers on nearby roadways.
- Lighting will be pointed downwards to minimize light trespass, and mounted on essential infrastructure rather than on separate light poles

8.0 REFERENCES

Association of Environmental Professionals. 2012. 2012 California Environmental Quality Act (CEQA) Statute and Guidelines. Available online at: http://ceres.ca.gov/ceqa/docs/CEQA_Handbook_2012_wo_covers.pdf (Accessed June 20, 2012).

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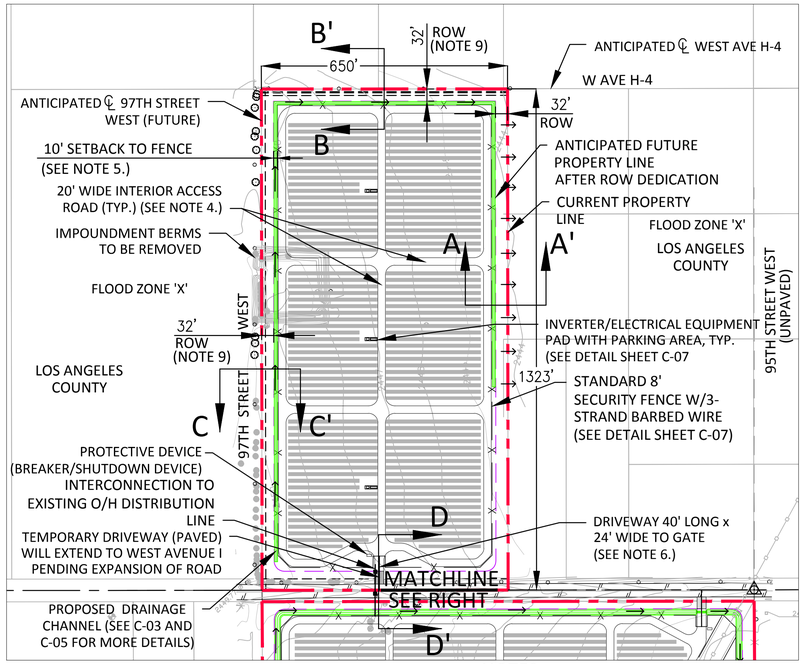
Los Angeles County. 1986. *Antelope Valley Areawide General Plan.* Available online at: http://planning.lacounty.gov/assets/upl/data/tnc_avap.pdf. (Accessed February 22, 2012).

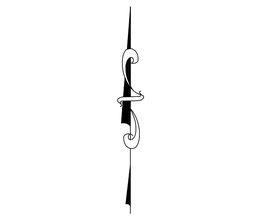
Los Angeles County. 1980. County of Los Angeles General Plan. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_web80-introduction.pdf. (Accessed February 22, 2012).

University of California, Santa Barbara. *Management Recommendations for Piute Ponds Edwards Air Force Base, California.* 2009. Available online at: http://ees.bren.ucsb.edu/research/documents/Piute_Brief.pdf. (Accessed February 20, 2012).

APPENDIX A

SITE PLAN





200 0 200 400

SCALE IN FEET

1'=200'

WHEN PRINTED TO SCALE ON 22"x34" SHEET

LEGEND:

TYP.	TYPICAL
MIN	MINIMUM
O/H	OVERHEAD LINES
ROW	RIGHT OF WAY
℄	CENTERLINE
x — x	FENCE LINE
	EXISTING OVERHEAD LINE
	OVERHEAD LINE
	PROPERTY LINE (AFTER DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
	FLOOD ZONE DESIGNATION
2444	CONTOUR LINE
	DRAINAGE DEVICE

	=	SURVEY CONTROL MONUMENT AS NOTED	
	=	LOS ANGELES COUNTY BENCHMARK AS NOTED	
	=	TREE 12" & 24"	
	=	LARGE BUSH	
	=	PADDLE MARKER POST	
	=	POWER POLE	
	=	GUY WIRE	
	=	MAILBOX	
	=	TELEPHONE RISER	
	=	POST	
	=	STANDPIPE	
	=	EDGE OF PAVEMENT	
	=	FENCE	
TW	=	TOP OF WALL	
EP	=	EDGE OF PAVEMENT	
⑤	=	EASEMENT IDENTIFIER	

NOTES:

1. 'ZONE X' AS SHOWN ON PANEL 0150F OF FLOOD INSURANCE RATE MAP NO. 06037C0400F. ZONE "X" DESIGNATED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN. ZONE "A" DESIGNATED AS, "NO BASE FLOOD ELEVATIONS DETERMINED".

2. FIRE DEPARTMENT ACCESS DEVICE AND EMERGENCY CONTACT PLACARD LOCATED AT ALL ENTRANCE GATES.

3. PORTABLE TOILETS WILL BE PROVIDED DURING CONSTRUCTION AND MAINTENANCE ACTIVITIES. NO OTHER SANITARY FACILITIES WILL BE ON SITE.

4. INTERIOR ACCESS ROADS WILL BE 20' WIDE, COMPACTED TO 90%, WITH 22 FOOT TURNING RADIUS AT INNER EDGE.

5. IN AREAS WITHOUT DRAINAGE FEATURES (CHANNEL OR CONVEYANCE), FENCELINE IS SETBACK 10 FT. FROM PROPERTY LINE FOLLOWING DEDICATION. THAT AREA WILL INCLUDE 10 FT. EASEMENT FOR DRAINAGE. IN AREAS WITH DRAINAGE FEATURES, FENCELINE WILL BE SET INWARDS OF THE DRAINAGE FEATURE.

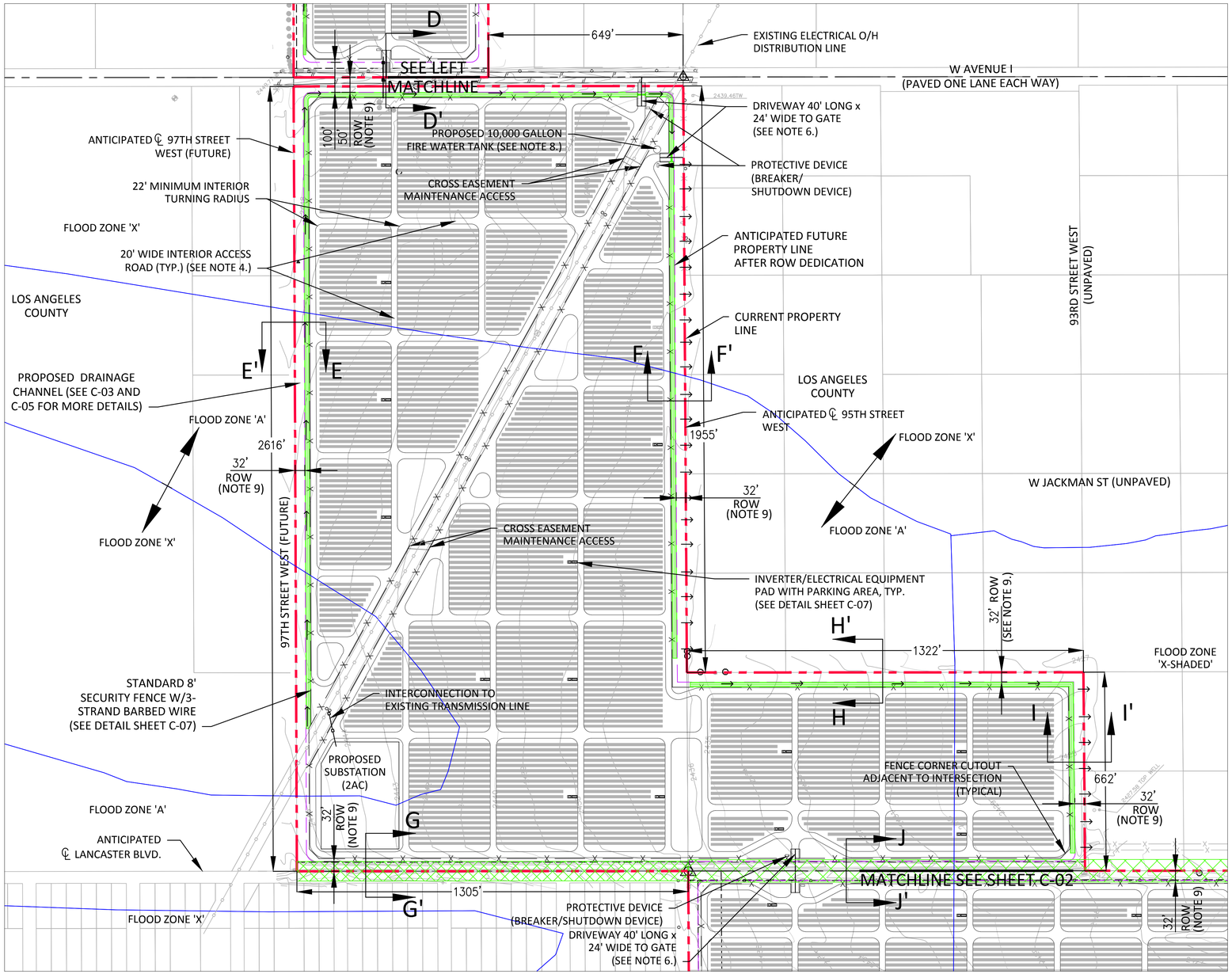
6. DRIVEWAY ACCESS GATES TO BE SET 40 FEET BACK FROM EDGE OF PROPERTY. DRIVEWAY WILL BE 24 FEET WIDE.

7. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION DURING DETAILED DESIGN.

8. TANK CONNECTIONS PER LOS ANGELES COUNTY FIRE DEPARTMENT.

9. ANTICIPATED ROW SETBACK/DEDICATION FOR FUTURE ROAD DEVELOPMENT. REFER TO SHEETS C-08, C-09, AND C-10 FOR SECTIONS AND ROW DETAILS.

10. CONTOURS SHOWN ARE BASED ON TOPOGRAPHIC MAP PREPARED BY ALL VALLEY SURVEYING.



R2011-00807 (RCUP201100076) C-01

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10:37:00 AM
Mar 8, 2012
JULIE.DELANEY

EXHIBIT PREPARER:

TETRA TECH EC, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
B	3/01/12	REVISIONS FOR COUNTY	JD	SP
A	5/19/11	INITIAL ISSUE	TWC	SP

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System (10A)

Project Name:
ANTELOPE SOLAR GREENWORKS

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

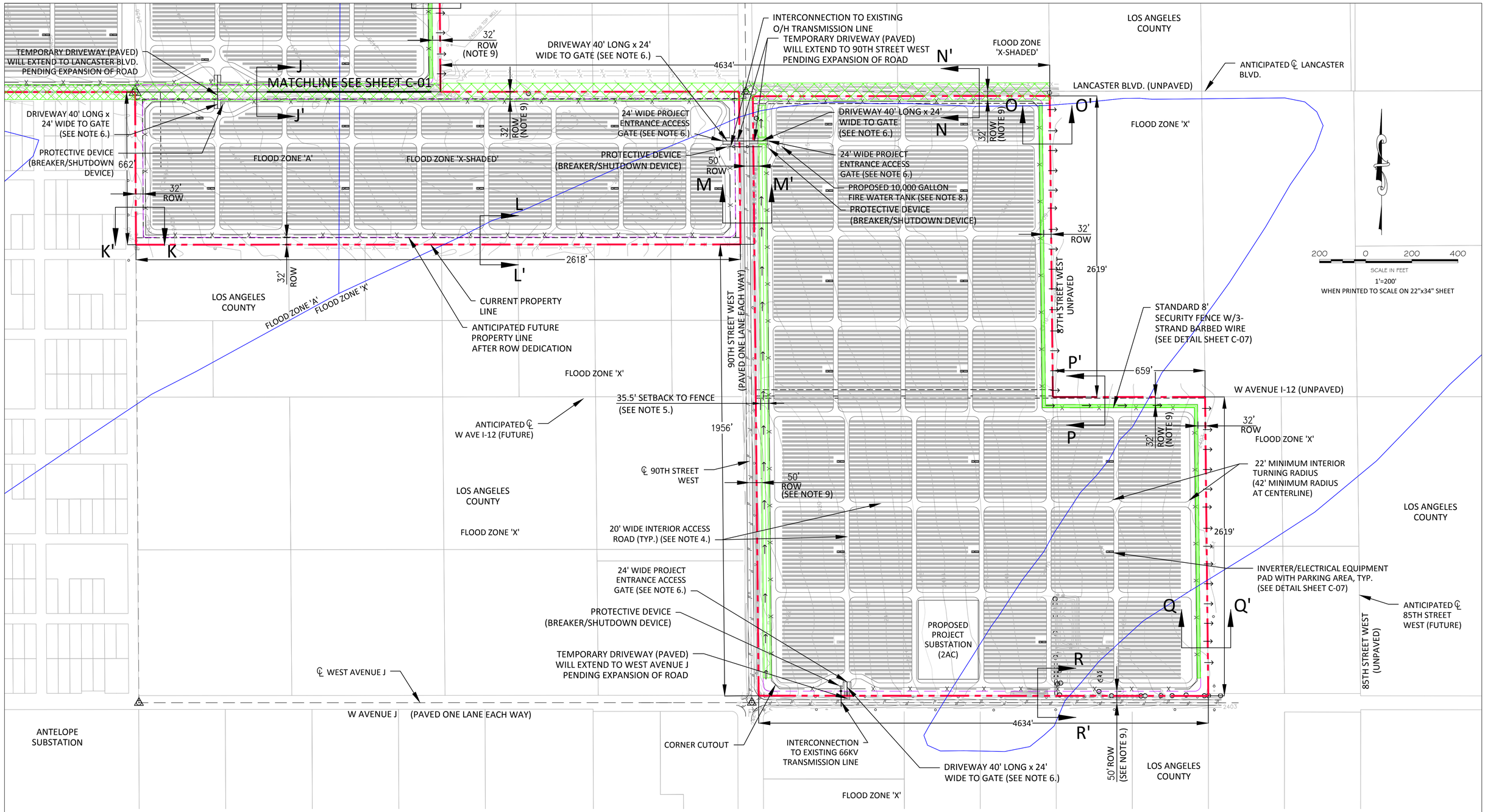
DRAWING: SITE PLAN-NORTH

APPLICANT:
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104
(415) 692-7740

SILVERADO power

ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

44 Montgomery Street, Suite 3065 | San Francisco, CA 94104 | 415.692.7740 main



R2011-00807 (RCUP201100076) C-02

REGISTERED PROFESSIONAL ENGINEER JULIE ANN DELANEY No.C54558 CIVIL STATE OF CALIFORNIA

EXHIBIT PREPARER:

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17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
B	3/01/12	REVISIONS FOR COUNTY	JD	SP
A	5/19/11	INITIAL ISSUE	TWC	SP

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System (10A)

Project Name:
ANTELOPE SOLAR GREENWORKS

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

DRAWING: SITE PLAN-SOUTH

APPLICANT:
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104
(415) 692-7740

SILVERADO power

ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

44 Montgomery Street, Suite 3065 | San Francisco, CA 94104 | 415.692.7740 main

C:\USERS\JULIE.DELANEY\DESKTOP\10A COUNTY SUBMITTAL-R\C-01-SITE PLAN-10A.DWG
PLOT/UPDATE: Mar 6, 2012 10:37:00 AM

APPENDIX B

CORRESPONDENCE AND ENVIRONMENTAL CHECKLIST FORM

From: Szalay, Kim <kszalay@planning.lacounty.gov>
Sent: Thursday, May 17, 2012 4:38 PM
To: DiSano, Michael
Cc: Low, Tara; Blengini, Carolina; Dea, Samuel
Subject: Silverado: I.S. and Aesthetics, etc.
Attachments: Initial_study_wguidelines 4-18-12.docx

Good Afternoon Mike,

Before I respond to your question below, please note that your opening paragraphs on Regulatory Setting section 3.1.3 are not up to date with revised County procedures. Let me clarify that first.

1) With regard to thresholds of significance, generally they are derived from the County of Los Angeles Department of Regional Planning's Initial Study Checklist, which is based on Appendix G of the CEQA Guidelines with County-specific additional items. Please use the attached updated County version.

2) The 2005 County CEQA Guidelines cited are currently in process of revision. Please use attached I.S. and the most recent version (January, 2012) of the State CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387) also available from http://ceres.ca.gov/ceqa/docs/CEQA_Handbook_2012_wo_covers.pdf). It will not be necessary at this time to cite the 2005 County CEQA Guidelines document.

3) We will have to discuss further where to include discussion of relevant Lancaster "Sphere of Influence" information included in Section 3.1.3 City of Lancaster General Plan and Master Environmental Assessment. We do not normally include other non-binding jurisdictional material in the regulatory setting section for Projects solely within County jurisdiction.

With regard to your question below, does the visual analysis you provided include the expanded analysis, or, are you asking if the attached requires an expanded analysis?

Whatever the case may be, please make the necessary changes regarding use of the above-mentioned County and State documents. We will also need to discuss how and where the Lancaster "Sphere of Influence" discussion is to be framed and located within the document.

Kim

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Principal Planner
Special Projects Section
Department of Regional Planning
320 W. Temple Street
Los Angeles, CA 90012
http://planning.lacounty.gov
213-974-4876

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From: DiSano, Michael [mailto:Michael.DiSano@tetratech.com]
Sent: Wednesday, May 16, 2012 4:58 PM
To: Blengini, Carolina
Cc: Szalay, Kim; Low, Tara
Subject: Aesthetics

Carolina,

I was wondering if you think we should expand our technical study in regards to Aesthetics? Attached is the finalized visual document for your reference. I don't think it would be necessary to do a contrast rating but I want to defer to you as the Lead Agency to make that determination.

Regards,

Michael Di Sano | **Assistant Project Manager**
Direct: 949.809.5034 | Main: 949.806.5000 | Fax: 949.809.5004
Michael.DiSano@tetratech.com

Tetra Tech
17885 Von Karman Ave | Irvine, CA 92614-5227 | www.tetratech.com

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Think Green - Not every email needs to be printed.

Environmental Checklist Form (Initial Study)

County of Los Angeles, Department of Regional Planning

Project title: "Project Name" (if applicable) / Project No. / Case No(s). (All entered text should be Garamond font, size 11 or 12, underlined, single-spaced, and align-justified)

Lead agency name and address: _____

Contact Person and phone number: _____

Project sponsor's name and address: _____

Project location: (Address)
APN: _____ *USGS Quad*: _____

Gross Acreage: _____

General plan designation: _____

Community/Area wide Plan designation: _____

Zoning: (In addition to the zoning designation, indicate which Community Standards District the property is located within, if applicable.)

Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation.)

Surrounding land uses and setting: (Briefly describe the project's surroundings.)

Other public agencies whose approval may be required (e.g., permits, financing approval, or participation agreement):

Public Agency	*Approval Required*
_____	_____
_____	_____

Major projects in the area:

Project/Case No.	*Description and Status*
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Reviewing Agencies: [*See* **CEQA Appendix B** *to help determine which agencies should review your project***]**

Responsible Agencies

- ☐ None
- Regional Water Quality Control Board:
  - ☐ Los Angeles Region
  - ☐ Lahontan Region
- ☐ Coastal Commission
- ☐ Army Corps of Engineers

Special Reviewing Agencies

- ☐ None
- ☐ Santa Monica Mountains Conservancy
- ☐ National Parks
- ☐ National Forest
- ☐ Edwards Air Force Base
- ☐ Resource Conservation District of Santa Monica Mountains Area
- ☐

Regional Significance

- ☐ None
- ☐ SCAG Criteria
- ☐ Air Quality
- ☐ Water Resources
- ☐ Santa Monica Mtns. Area
- ☐

Trustee Agencies

- ☐ None
- ☐ State Dept. of Fish and Game
- ☐ State Dept. of Parks and Recreation
- ☐ State Lands Commission
- ☐ University of California (Natural Land and Water Reserves System)

County Reviewing Agencies

- ☐ DPW:
  (delete those that don't apply)
  - Land Development Division (Grading & Drainage)
  - Geotechnical & Materials Engineering Division
  - Watershed Management Division (NPDES)
  - Traffic and Lighting Division
  - Environmental Programs Division
  - Waterworks Division
  - Sewer Maintenance Division
- ☐ Fire Department
  (delete those that don't apply)
  - Forestry, Environmental Division
  - Planning Division
  - Land Development Unit
  - Health Hazmat
- ☐ Sanitation District
- ☐ Public Health/Environmental Health Division: Land Use Program (OWTS), Drinking Water Program (Private Wells), Toxics Epidemiology Program (Noise)
- ☐ Sheriff Department
- ☐ Parks and Recreation
- ☐ Subdivision Committee
- ☐

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project.

☐ Aesthetics	☐ Greenhouse Gas Emissions	☐ Population/Housing
☐ Agriculture/Forest	☐ Hazards/Hazardous Materials	☐ Public Services
☐ Air Quality	☐ Hydrology/Water Quality	☐ Recreation
☐ Biological Resources	☐ Land Use/Planning	☐ Transportation/Traffic
☐ Cultural Resources	☐ Mineral Resources	☐ Utilities/Services
☐ Energy	☐ Noise	☐ Mandatory Findings of Significance
☐ Geology/Soils		

DETERMINATION: (To be completed by the Lead Department.)
On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature (Prepared by) Date

_____ _____

Signature (Approved by) Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources the Lead Department cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the Lead Department has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level. (Mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced.)

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA processes, an effect has been adequately analyzed in an earlier EIR or negative declaration. (State CEQA Guidelines § 15063(c)(3)(D).) In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of, and adequately analyzed in, an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

7) The explanation of each issue should identify: the significance threshold, if any, used to evaluate each question, and; mitigation measures identified, if any, to reduce the impact to less than significance. Sources of thresholds include the County General Plan, other County planning documents, and County ordinances. Some thresholds are unique to geographical locations.

8) Climate Change Impacts: When determining whether a project's impacts are significant, the analysis should consider, when relevant, the effects of future climate change on : 1) worsening hazardous conditions that pose risks to the project's inhabitants and structures (e.g., floods and wildfires), and 2)

worsening the project's impacts on the environment (e.g., impacts on special status species and public health).

1. AESTHETICS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☐

General Discussion

The purpose of this question is to identify the scenic resources that exist on the project site and in the surrounding area and determine how the proposed project will impact those resources. If your project is directly adjacent to another jurisdiction, ensure it is not affecting any scenic resource in that jurisdiction. Potential impacts could result from obstructing views to or from the scenic resource, degrading the character of a scenic highway, or disrupting a scenic vista. The preparer should identify

- Designated scenic highways adjacent to or in proximity to the project site (State-designated highways are listed in the Stock Language Section below);
- Scenic highways, corridors, and resources designated by the County General Plan and the applicable Area/Community Plan or Local Coastal Program;
- Scenic highways or corridors designated by cities adjacent to or near the project site; and
- Significant ridgelines (major ridgelines on Santa Catalina Island).

If the proposed project is not sited near any designated scenic highways, significant ridgeline, or other identified scenic resources, then it is unlikely that the proposed project would result in any impacts related to having a substantial adverse effect on a scenic vista.

Resources

- GIS-NET Scenic Highways layer (in the "Transportation" folder) and Significant Ridgelines layer (in the "Administrative Layers & Districts" folder)
- State of California CalTrans Scenic Highway Mapping System (Updated 9/7/2011): http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

Potential Mitigation

- Mitigation may include reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors, use of earth tone colors and landscaping.
- Specific mitigation measures will be tailored to each proposed project.

b) Be visible from or obstruct views from a regional riding or hiking trail?	☐	☐	☐	☐

General Discussion

The purpose of this question is to determine how the proposed project would impact riding or hiking trails. Riding trails can include horseback riding, biking, hiking, etc. The preparer should identify:

- Designated or proposed trails traversing, adjacent to, or in proximity to, the project site; and
- Designated trails in cities adjacent to or near the project site.

Impacts would arise from the vacation of a portion of the trail, degrading the scenic character in and around the trail, as well as obstructing expansive views visible from the trial's course but not compromising the trail itself. If the proposed project is not sited near any designated riding or hiking trails, then it would not result in any impacts related to having a substantial adverse effect on these resources. Subdivision trail requirements are imposed through Subdivision Committee Meetings.

Resources

- GIS-NET Trails layer (in the "Transportation" folder) – make sure to cite the map source and year.

Potential Mitigation

- Reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will be tailored to each proposed project.

c) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? ☐ ☐ ☐ ☐

General Discussion

This question is concerned with how the proposed project would impact other scenic resources that are not identified in the first two questions, and specifically, impacts to trees, rock outcroppings, historic buildings, and undisturbed areas. For this question, the preparer should identify:

- Other scenic resources designated by the General Plan and applicable Community or Area plan, or Local Coastal Program in the vicinity of the project site;
- Undeveloped or undisturbed areas either on the project site or in the vicinity of the project site;
- Hillside management areas – impacts from grading, any alteration of topography (indicate the quantity);
- Nationally- or state-designated historic resources on, or in the vicinity of, the project site (the County does not currently have an historic preservation ordinance and thus does not designate any historic resources itself)

Development of on-site, greenfield conditions is likely to result in a significant impact given the previously undisturbed nature of the land. Similarly, previously undisturbed land in the vicinity of the project site may be impacted by the buildout of the proposed project if that land is used for construction staging or in some other phase of project buildout.

Resources

- List of Historic resources and points of interest designated by the State of California in unincorporated Los Angeles County - file://regionalfp1/E-DRIVE/Current%20Planning/Wiki/environmental_doc/Historic_sites.pdf
- California Office of Historic Preservation: http://ohp.parks.ca.gov/
- National Register of Historic Places: http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome
- State Register of Historic Places: http://ceres.ca.gov/geo_area/counties/Los_Angeles/landmarks.html

Potential Mitigation

- Reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will need to be tailored to each proposed project and with regard to their specific project site context.
- Compliance with the Hillside Management Ordinance to mitigate impacts in designated hillside management areas to a less than significant level.
- Regarding historic structures, because they are protected by law, mitigation may include complete project redesign or integration of the historic structure into the proposed project.

d) Substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features? ☐ ☐ ☐ ☐

General Discussion

This question wants to know how well the design of the proposed project would integrate with the visual character of its surroundings and the project's level of visual integration from the perspective of height, bulk, pattern, scale, character, or other features. If site photos are unavailable, perform a site visit and document the visual character of the project site and surroundings. Note that state and local laws do not protect views from private properties through the project site of some scenic resource. However, views of a scenic resource through the project site from public space (such as significant recreation or scenic areas such as the Santa Monica Mountains) or designated scenic highways are protected and should be noted. The preparer should take note of:

- The prevailing building heights (specifically, the height in feet and stories of the tallest structure in the vicinity of the project site), architectural styling, and setbacks;
- Hillside management areas – impacts from grading, any alteration of topography (indicate the quantity); and,
- Views of the project site from nearby vantage points.

It is unlikely that the architectural style employed by the proposed project will negatively impact the surrounding community given the wide variety of architectural styles found throughout southern California. However, the height/bulk of the proposed project could negatively impact the surrounding area. Ultimately, the final impact determination will have to do with how well the proposed project integrates with the surrounding neighborhood.

Resources

- Site photos, Site visits, and Project renderings

Potential Mitigation

- Mitigation may include project redesign, reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will be tailored to each proposed project and with regard to their specific project site context.
- Though already required by law, the preparer should mention compliance with the Hillside Management Ordinance to be used to mitigate impacts in designated hillside management areas to a

less than significant level.

e) Create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area? ☐ ☐ ☐ ☐

General Discussion

The preparer must determine whether or not the proposed project would be a new source of substantial shadows, light, or glare. A substantial amount of shadows is dependent upon a combination of factors including the height of the proposed project, the width of the street on which the proposed project is located, the proposed project's setbacks, and the project site's distance from nearby sensitive uses (residences, schools, parks, etc), and how long any shadows created by the proposed project are cast upon those sensitive uses. A land use survey of sensitive uses around the project site may be needed. If there are no sensitive uses nearby, there will be no shade/shadow impacts. For projects only achieving a couple of floors, it is unlikely that they will generate shadows of sufficient size to be cast upon nearby sensitive uses. However, with taller projects, it is far more likely that shadows will be cast upon nearby sensitive uses, and a shade/shadow modeling may be required. Note that Los Angeles County does not have any significance thresholds for determining potential impacts.

For light or glare, the preparer must take note of the project's surface materials, lighting program, and any signage component. Regarding glare, a project containing large expanses of windows and covered with lots of reflective surfaces could potentially result in a significant impact as light reflecting from the proposed structure may impede views in and around the project site. A project that contains a significant amount of light that is not shielded may significantly impact views in the project vicinity as the light pollution may hinder views of the night sky and other visual elements. However, the proposed project would be unlikely to result in a significant impact regardless of the amount of light generated because it would be required to comply with the County's Dark Skies Ordinance (once adopted). This ordinance would address such things as directing lighting toward the ground and shielding lights to prevent light pollution.

Resources

- Shade/shadow model (if needed)
- Check with Building & Safety
- Note: San Gabriel CSD 45 degree angle clauses related to glare and light

Potential Mitigation

- Since Los Angeles County does not have any adopted significance thresholds, the best way to mitigate any potentially significant shadow impacts would be to break up the shadow as much as possible, which may require that the applicant redesign the project such that the massing is broken up to create passages through which light may pass or that the applicant reorient the proposed structure such that the shadows generated are smaller.
- Potential mitigation for glare impacts may include requirements that all non-glass reflective surfaces be sanded down to reduce the project's reflectivity and on all glass surfaces, that the developer apply a low reflective coating, use of tinted windows or even curtains;
- Potential mitigation for light generation includes compliance with Los Angeles County's Dark Skies Ordinance.

EVALUATION OF ENVIRONMENTAL IMPACTS:

Official State Scenic Highways are designated by the California Department of Transportation (CalTrans). According to CalTrans, "[t]he stated intent (Streets and Highway Code Section 260) of the California Scenic Highway Program is to protect and enhance California's natural beauty and to protect the social and economic values provided by the State's scenic resources" (State of California Department of Transportation, California Scenic Highway Program, website: http://www.dot.ca.gov/dist3/departments/mtce/scenic.htm, accessed October 6, 2011). While there are numerous designated Scenic Highways across the state, the following have been designated in Los Angeles County: Angeles Crest Highway (Route 2) from just north of Interstate 210 to the Los Angeles/San Bernardino County Line, two segments of Mulholland Highway from Pacific Coast Highway to Kanan Dume Road and from west of Cornell road to east of Las Virgenes Road, and Malibu Canyon-Las Virgenes Highway from Pacific Coast Highway to Lost Hills Road.

In addition to scenic highways, unincorporated Los Angeles County identifies ridgelines of significant aesthetic value that are to be preserved in their current state. This preservation is accomplished by limiting the type and amount of development near them. These "Significant Ridgelines" ("Major Ridgelines" on Santa Catalina Island) are designated by the General Plan or applicable Area/Community Plan, Local Coastal Program, or Community Standards District.

Riding and hiking trails have been designated throughout unincorporated Los Angeles County. At present, there are officially adopted trails in the Antelope Valley, the Santa Clarita Valley, and the Santa Monica Mountains designated by the General Plan or applicable Area/Community Plan and Local Coastal Program.

FOR projects in Hillside Management Areas:

The Hillside Management Ordinance (Los Angeles County Code Title 22, Section 22.56.215) is designed to protect designated hillsides from incompatible development. The County of Los Angeles designates two hillside management areas, one urban and one non-urban with both designations applying to properties that have hillsides with a 25 percent grade or greater. The ordinance protects these resources by requiring almost all development on properties with either the urban or non-urban designation to obtain a conditional use permit with the intent of preserving the remaining natural topography.

Briefly describe the proposed project, the environmental and/or regulatory setting related to all of the questions above, and your environmental determination.

APPENDIX C

PROJECT AREA PHOTOGRAPHS

Photo 1. PP24 – Taken from eastbound lane of West Avenue I, approximately 400 feet west of 100th Street West and 0.3 miles east of the Project site, looking east to southeast.

Photo 2. PP28 – Taken from northwest side of 90th Street West/West Avenue I Intersection approximately 0.5 miles north and 0.5 miles east of the Project site, looking south to southwest.

Photo 3. PP19 – Taken from southbound lane of 90th Street West approximately 0.1 mile north of the Project site, looking south to southwest.

Photo 4. PP30 – Taken from the intersection of 90th Street West and Lancaster Blvd., immediately adjacent to the Project site, looking south to southwest.

Photo 5. PP23 – Taken from eastbound West Avenue J, across the street from the Antelope Substation, approximately 0.4 miles south and 0.6 miles west of the Project Site.

Photo 6. PP02 – Taken from Quartz Hill, looking west to northwest, approximately 5.5 miles southeast of the Project site, looking northwest

Photo 7. PP04 – Taken from Picnic Site at the California Aqueduct adjacent to Johnson Road (110th Street W) approximately 3 miles southwest of the Project site, looking northeast.

Photo 8. PP16 – Taken from the top of the Valley Vista Trail in the Antelope Valley California Poppy Reserve, approximately 5.8 miles northwest of the Project site.

APPENDIX D

CONTRAST RATING FORM

TETRA TECH EC, INC.

Visual Contrast Rating Worksheet For KOPs on Non-NFS/BLM Lands

Section A: Project Information

Project Name	Key Observation Point	Latitude / Longitude	Notes
Antelope Solar Greenworks (CUP Group 10A)	PP 04	34 39'44.86"N, 118 19'45.79"W	View northeast towards the project from a picnic area by the California Aqueduct, east of Johnson Road.

Section B: Characteristic Landscape Description

	Land / Water	Vegetation	Structures
Form	Foreground/Middleground (FG/MG): Gently sloped to rolling to flat and level Background (BG): Low, horizontal, strip	FG/MG: Low, conical (evergreen trees); Convex (deciduous trees); Low, small, rounded (shrubs); Low, horizontal strips (trees) BG: Indistinguishable	FG/MG: Low, rectangular (guard posts); Thin, strips (guard rail/road); Horizontal and vertical (fence posts, transmission poles); Geometric (canal): Tall, geometric, transparent (transmission/substation) BG: Indistinguishable
Line	FG/MG: Diagonal, level to gently undulating in immediate foreground; Flat, horizontal, straight BG: Horizontal, irregular, gently undulating	FG/MG: Straight and curving abut edges (along roads); Irregular, broken (deciduous trees); Low, straight, horizontal BG: Indistinguishable	FG/MG: Curving band (guard rail/road); Thin, regular, parallel (fence); Straight, vertical, thin horizontal (transmission towers/conductors); Complex angular, triangular, transparent (lattice structures); BG: indistinguishable
Color	FG/MG: Tan BG: Tans and browns	FG/MG: Dull, gray-green, golden, red (shrubs and grasses); Olive and dark green (trees) BG: Indistinguishable	FG/MG: Brown, gray (guardrail/fence); Gray, light gray (transmission towers) BG: Indistinguishable
Texture	FG/MG: Fine BG: Fine	FG/MG: Medium, dense; Fine BG: Indistinguishable	FG/MG: Medium to coarse BG: Indistinguishable

Section C: Proposed Activity Description

Has Photo Simulation Been Created for KOP? ☒ Yes ☐ No If Yes, Figure Number: Figure 4

	Land / Water	Vegetation	Structures
Form	No change	MG: Vegetation (shrubs) would be removed creating more geometric patches	MG: Low, narrow, strip (solar panels)
Line	No change	MG: Straight, butt edges along the perimeter of the solar field, creating horizontal and diagonal lines	MG: Horizontal, straight, diagonal, thin band
Color	No change	MG: Vegetation (shrubs) would be removed, removing some of the grayish-green and tan vegetation (shrubs and grasses)	MG: Light and dark gray, matted (solar panels)
Texture	No change	MG: Vegetation (shrubs/grasses) would be removed, removing some of the fine texture they create	MG: Fine

Section D: Contrast Rating

Features

Elements: Degree of Contrast	Land/Water				Vegetation				Structures			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Form				x			x				x	
Line				x			x				x	
Color				x			x				x	
Texture				x			x				x	

Overall Level of Contrast: Low

Section E: Viewer Sensitivity

Viewer Expectations	Duration of View	Use Volume	Overall Sensitivity
Moderate	Medium	Medium	Medium

Additional Comments:
The low-profile of the solar panels does not block background views of the Tehachapi Mountains. The darker color of the solar panels creates some contrast within the landscape; however, the configuration of the facility helps it to blend with the surrounding patchwork of vegetation created by rural development.

Evaluators Names: Lori Davidson

Date: June 19, 2012

TETRA TECH EC, INC.

Visual Contrast Rating Worksheet For KOPs on Non-NFS/BLM Lands

Section A: Project Information

Project Name	Key Observation Point	Latitude / Longitude	Notes
Antelope Solar Greenworks (CUP Group 10A)	PP 28	34 42'15.67"N, 118 17'22.13"W	View southwest towards the project from 90th Street, north of Avenue I.

Section B: Characteristic Landscape Description

	Land / Water	Vegetation	Structures
Form	Foreground/Middleground (FG/MG): Flat, level; Gently sloping bajada leading up to a long, low, horizontal foothills	FG/MG: Conical, tall, irregular (trees/evergreens); Low, amorphous patches (grasses and shrubs)	FG/MG: Wide, long band (roads); Geometric (buildings/fences); Tall, narrow, regular (distribution poles); Complex, geometric, transparent (substation/transmission lines)
Line	FG/MG: Straight, horizontal; Diagonal, convex (slopes of foothills); Gently undulating ridge line	FG/MG: Straight butt edges (along roads); Broken, angular (trees); Irregular butt edge along the base of the foothill	FG/MG: Straight horizontal/diagonal (roads), vertical (distribution poles); Angular, rectangular (buildings); Geometric (signs); Complex, angular, triangular, horizontal, vertical (substation/transmission towers)
Color	FG/MG: Tan and browns	FG/MG: Green, dark green, tans and golden (grasses)	FG/MG: Brown (distribution poles), gray (roads); Brown, tan, reddish-brown (buildings); Gray (substation/transmission lines)
Texture	FG/MG: Fine (plains/bajada) to medium (foothills)	FG/MG: Fine (grasses); Coarse, sparse (trees), stipple	FG/MG: Simple, uniform, ordered (transmission lines); Medium to coarse (buildings); Coarse, dense (substation/transmission lines)

Section C: Proposed Activity Description

Has Photo Simulation Been Created for KOP? ☒ Yes ☐ No If Yes, Figure Number: 5

	Land / Water	Vegetation	Structures
Form	No change	No change	MG: Low, narrow, strip (solar panels)
Line	No change	No change	MG: Horizontal, straight, diagonal, thin band
Color	No change	No change	MG: Light and dark gray, matted (solar panels)
Texture	No change	No change	MG: Fine

Section D: Contrast Rating

Features

Elements	Degree of Contrast	Land/Water				Vegetation				Structures			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
	Form				x				X			x	
	Line				x				x			x	
	Color				x				X			x	
	Texture				x				X			x	

Overall Level of Contrast: Low

Section E: Viewer Sensitivity

Viewer Expectations	Duration of View	Use Volume	Overall Sensitivity
Low	Short	Low	Low

Additional Comments:
The low-profile of the solar panels does not block background views of the Portal Ridge. The long, linear form created by the solar field, would have minimal contrast to the complex forms and colors of existing cultural modifications (e.g. substation and transmission lines).

Evaluators Names: Lori Davidson

Date: June 19, 2012

APPENDIX B-1.5

PROJECT 5 SILVER SUN GREENWORKS AESTHETIC IMPACTS REPORT

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

SILVER SUN GREENWORKS
(CUP GROUP 11)
AESTHETIC IMPACTS REPORT

Prepared for:

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Prepared by:

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September 2013

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1.0 INTRODUCTION

This Aesthetics Impact Report has been prepared for the proposed Silver Sun Greenworks (Site 11) Solar Generation Facility Project (Project) to assess the potential visual impacts resulting from the construction and operation of the Project. The Project is proposed by Silverado Power, LLC, for a 160-acre site approximately 9 miles west of Lancaster, California. The Project is located in unincorporated northern Los Angeles County (Figure 1).

For the purposes of the visual assessment, “Project site” refers to the area within the delineated boundary for the Project components, and “Project area” refers to those landscapes within 15 miles of the Project site.

2.0 PROJECT DESCRIPTION

The proposed Project will have a generating capacity of 20 megawatts alternating current and is located on 160 acres of primarily unproductive agricultural land (Figure 2). The Project site is located approximately 9 miles west of Lancaster, California in unincorporated northern Los Angeles County. The Project site is bounded by West Avenue I to the north, and 120th Street West to the west.

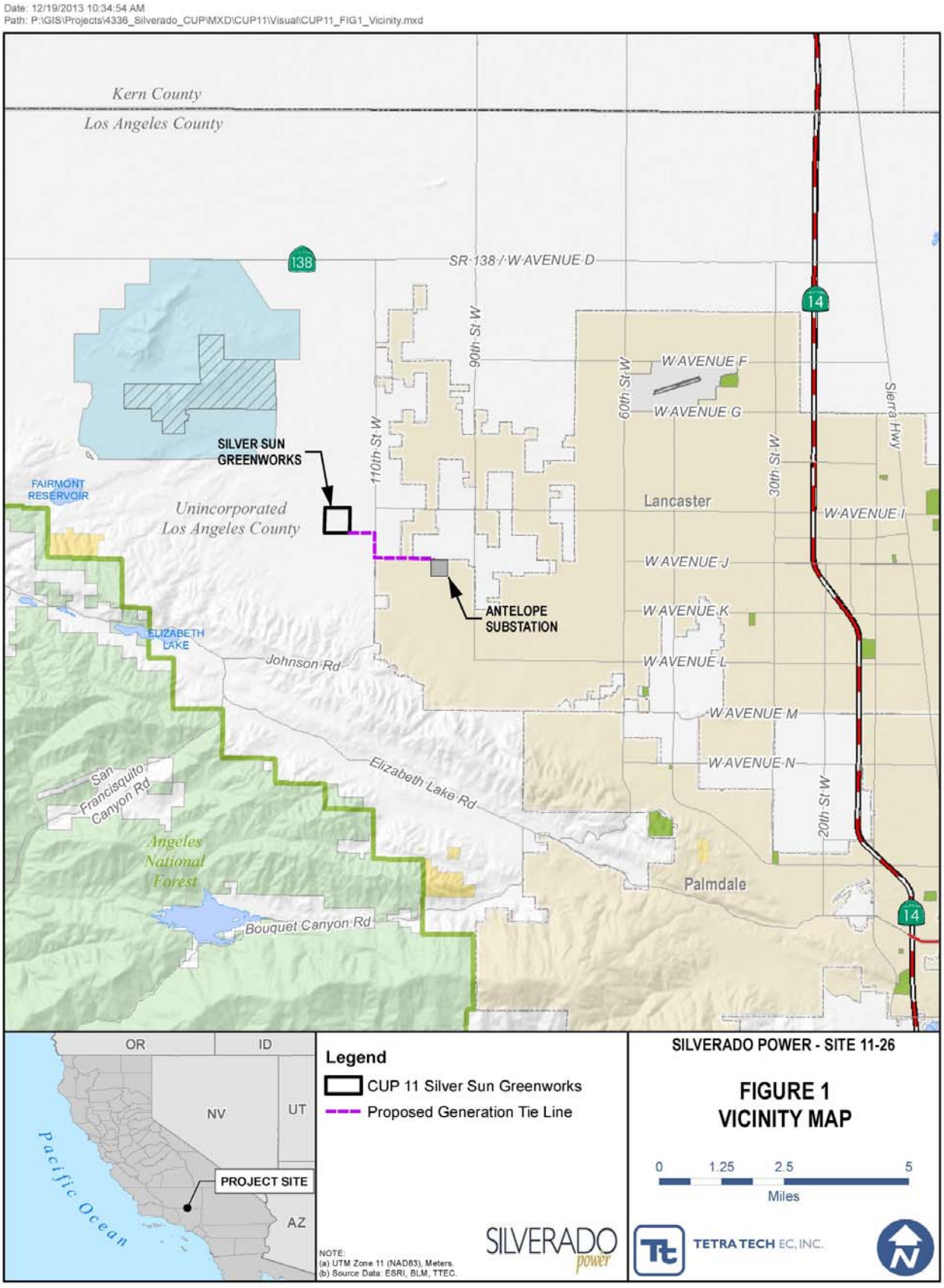
The Project will employ a series of photovoltaic (PV) module arrays to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system. The PV modules convert sunlight into low-voltage direct current power, which is subsequently transformed into alternating current (AC) power through an inverter.

The Project will consist of construction and operation of a solar generation facility that will utilize PV technology on or tracker fixed-tilt mounting supports. The Project will be constructed in phases and operated for a period of approximately 35 years, and will consist of the following elements:

- PV modules
- PV module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing

The Project will not require the construction of an on-site operations and maintenance facility. It is anticipated that the Project would require a Conditional Use Permit from Los Angeles County for the construction and operation of this facility.

The following sections detail the visual characteristics of major project components.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60th St W
30th St W
Sierra Hwy
W AVENUE F
W AVENUE G
W AVENUE I
W AVENUE J
W AVENUE K
W AVENUE L
W AVENUE M
W AVENUE N
SILVER SUN GREENWORKS
ANTELOPE SUBSTATION
FAIRMONT RESERVOIR
Unincorporated Los Angeles County
Lancaster
ELIZABETH LAKE
Johnson Rd
Elizabeth Lake Rd
San Francisquito Canyon Rd
Angeles National Forest
Bouquet Canyon Rd
Palmdale
20th St W
OR
ID
NV
UT
AZ
Pacific Ocean
PROJECT SITE
Legend
CUP 11 Silver Sun Greenworks
Proposed Generation Tie Line
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.
SILVERADO power
SILVERADO POWER - SITE 11-26
FIGURE 1
VICINITY MAP
0 1.25 2.5 5
Miles
TETRA TECH EC, INC.

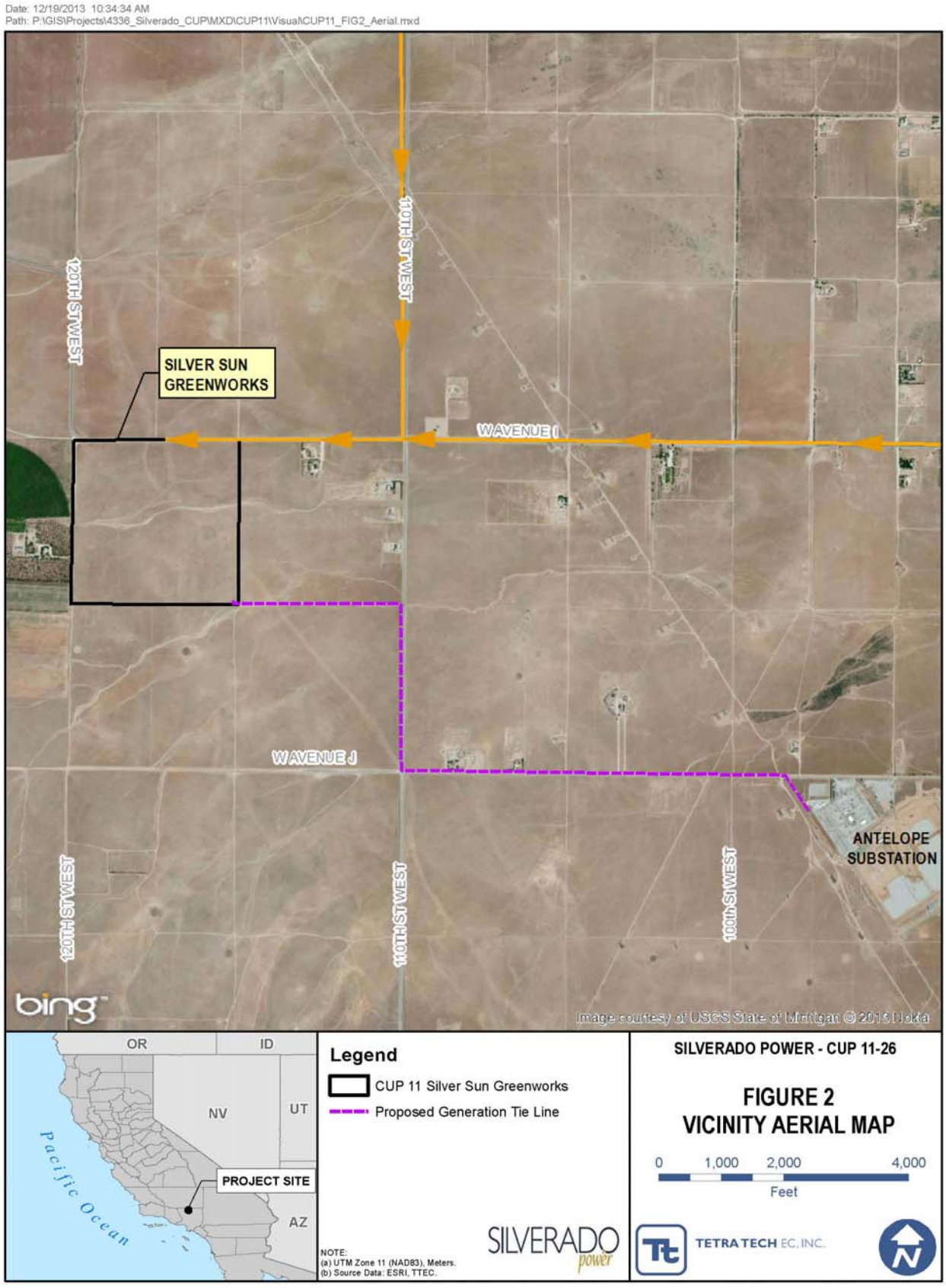
Date: 12/19/2013 10:34:34 AM
Path: P:\GIS\Projects\4336_Silverado_CUP\MXD\CUP11\Visual\CUP11_FIG2_Aerial.mxd
110TH ST WEST
120TH ST WEST
SILVER SUN GREENWORKS
W AVENUE I
W AVENUE J
120TH ST WEST
110TH ST WEST
100th St WEST
ANTELOPE SUBSTATION
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Image courtesy of USGS State of Michigan © 2013 Nokia
OR
ID
NV
UT
AZ
Pacific Ocean
PROJECT SITE
Legend
CUP 11 Silver Sun Greenworks
Proposed Generation Tie Line
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
SILVERADO power
SILVERADO POWER - CUP 11-26
FIGURE 2
VICINITY AERIAL MAP
0 1,000 2,000 4,000
Feet
TETRA TECH EC, INC.

2.1 Photovoltaic Modules

The solar generation facility will require installation of PV modules. The total number of PV modules required will depend on the technology selected, optimization evaluation, and detailed design. The market conditions, economic considerations, and the environmental factors will be taken into account during the detail design process. The following PV module technologies or equivalent are being considered for incorporation into the Project:

- PV thin-film technology
- PV crystalline silicon technology
- Fixed-tilt configuration

The modules configured with a fixed tilt will be oriented toward the south and angled at a degree that will optimize solar resource efficiency. Modules will be non-reflective and highly absorptive.

The PV modules will be thin rectangular blocks, mounted in multiple rows aligned from east to west. The front of each panel will appear in varying shades of dark blue and purple, depending on the angle of the sun and brightness of the sky. The backs of the modules will be colored either white or a very light gray. The modules will be mounted on light gray steel support structures. The modules will be arranged at a fixed angle (i.e., tilted) of 45 degrees towards the sun. Depending on the final design, the assembled PV modules will have a typical height of approximately 6.5 feet above the ground, based on the orientation of the racks.

A site plan is provided in Appendix A to show the arrangement of the PV arrays. The Project will consist of 12 PV array blocks, 11 of which will measure approximately 559 feet by 337 feet (covering approximately 4.3 acres each). The twelfth array block will be smaller to accommodate space for the substation. Each block will contain rows of PV arrays and an inverter/electrical equipment pad, which will consist of equipment enclosed in a gray-colored box approximately 9-feet tall, and a small parking area.

During construction of each of the PV facilities, the proposed Project site will be cleared of vegetation, graded to remove localized mounds or valleys, and internal roads finished with a layer of aggregate to allow for various construction activities to take place. These activities will include trenching for installation of gathering lines, pouring of the support structure foundations, delivery of the PV panel components, and PV panel installation. Disturbance areas will appear as large patches of fine, buff-colored rock and soil. Construction activities may produce visible dust but impacts will be mitigated to less than significant with implementation of the fugitive dust plan.

2.2 Generation Tie-Line

The power generated by the Project will be connected to the existing transmission network with the voltage transformation equipment and system safety equipment constructed on the site, and the generation tie-line will be located underground. No new overhead transmission infrastructure is required.

2.3 Substation

A 0.75-acre substation will be located in the southwest corner of the Project site. The substation site will be appropriately graded and excavated to accommodate transformer equipment. A

concrete foundation will be constructed for the substation, and structural components include transformers, switchgear, and safety systems, as well as footings and oil containment system for the transformers. The equipment will appear similar to other substations in the Project area, including the Antelope Substation (but on a smaller scale). In general, substations are characterized by many long, thin cylinders of bluish-gray steel, arranged in a geometric pattern of vertical and horizontal lines. Multiple short geometric blocks housing various electrical monitoring components will be present on the substation site. Some pieces of equipment will be constructed with a smooth stainless steel finish that will be moderately reflective under certain light conditions. The ground surface of each substation site will be finished with a light tan to buff-colored covering of small stones and gravel.

2.4 Other Infrastructure Elements

A series of internal access roads and driveways will extend throughout the proposed Project site between the PV arrays and will be characterized by approximately 20-foot-wide bands of light tan and buff-colored aggregate. The proposed Project site will have one access point along West Avenue I.

The Project site perimeter will be enclosed by a galvanized chain link fence topped with a three-strand barbed wire section. The total height of the fence will be 8 feet. The light gray fence posts will be spaced at approximately 10-foot intervals. The 40-foot driveway from West Avenue I to the gate will be 24 feet wide. A 10,000 gallon fire water tank will be located at the gate. Portable toilets will be provided during construction, but no permanent sanitary facilities will remain onsite. Lighting at specific locations for nighttime security purposes will be fence or structure-mounted and will be directed downwards.

3.0 REGULATORY SETTING

3.1 California Environmental Quality Act

A Conditional Use Application was filed with Los Angeles County in June 2011 for construction and operation of the Project. Los Angeles County is responsible for implementing the requirements of the California Environmental Quality Act (CEQA) for projects proposed for unincorporated Los Angeles County, in accordance with the California Public Resources Code, Section 21000 et. seq. (CEQA). Appendix G of the 2012 State CEQA guidelines (Association of Environmental Professionals 2012) contains four questions relating to visual resources and aesthetics. These questions are as follows:

a) Would the project have a substantial adverse effect on a scenic vista?

b) Would the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

c) Would the proposed project substantially degrade the existing visual character or quality of the site and its surroundings?

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

In addition, the County of Los Angeles currently utilizes the Environmental Checklist Form (Initial Study) to provide thresholds of significance for potential impacts to resources including aesthetics (Correspondence and Environmental Checklist Form provided in Appendix B). The following five questions relating to visual resources and aesthetics are provided;

a) Would the project have a substantial adverse effect on a scenic vista?

According to the Environmental Checklist Form, a scenic vista may include designated scenic highways, scenic highways or resources designated by local land use plans, scenic highways or corridors designated by cities adjacent to or near the project site, or significant ridgelines. If the proposed project is not sited near any designated scenic highways, significant ridgelines, or other identified scenic resources, it is unlikely to result in impacts related to having as substantial adverse effect on a scenic vista.

b) Would the project be visible from or obstruct views from a regional riding or hiking trail?

Impacts may arise from the vacation of a portion of a trail, degradation of the scenic character in and around the trail, and obstruction of expansive views visible from the trail's course but not compromising the trail itself.

c) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

According to the Environmental Checklist Form, this question is concerned with not only trees, rock outcroppings, and historic buildings, but also undisturbed areas and hillside management areas. The question required identification of "undeveloped" or "undisturbed" areas either on the project site or in the vicinity of the project site. According to the form, development of on-site, greenfield conditions is likely to result in a significant impact given the previously undisturbed nature of the land. Similarly, previously undisturbed land in the vicinity of the project site may be impacted by the buildout of the proposed project if that land is used for construction staging or in some other phase of project buildout.

d) Would the project substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?

This checklist question evaluates how well the design of the proposed project would integrate with the visual character of its surroundings and the project's level of visual integration from the perspective of height, bulk, pattern, scale, character, or other features. According to the checklist, the height/bulk of a proposed project could negatively impact the surrounding area. Ultimately, the final impact determination will have to do with how well the proposed project integrates with the surrounding neighborhood.

e) Would the project create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area?

Whether a project will produce a substantial amount of shadows is dependent upon a combination of factors including height of the project, width, setbacks, and the length of shadows cast upon potentially sensitive uses. Light or glare is dependent on a project's surface materials, lighting program, and signage. Projects involving large expanses of reflective surfaces may potentially result in a significant impact if reflected light (glare) may impede views in and around the project site. The checklist states that projects must comply with Los Angeles County's Dark Skies Ordinance, however at the time of this report, the Dark Skies Ordinance had not been officially adopted.

The county checklist questions are largely based on the state checklist, with some questions requiring additional detail. This Aesthetics Impacts Study therefore uses the County checklist

and associated guidance to determine if the Project will potentially impact visual resources, and whether those impacts are less than significant, less than significant with mitigation, or significant.

3.2 Local Land Use Plans and Guidance

Development in the Project area is guided by county and local land use plans. Land use plans reviewed for relevant guidelines and policies include the Los Angeles County General Plan, the Antelope Valley Area Plan, and the Lancaster General Plan.

3.2.1 Los Angeles County General Plan

The Los Angeles County General Plan (Los Angeles County 1980) included the following goal and policy relevant to visual resources:

- *General Goals and Policies, Goal 15:* Protect areas that have significant natural resources and scenic values, including significant ecological areas, the coastal zone, and prime agricultural lands.
- *Conservation and Open Space Goals and Policies, Policy 15:* Protect the visual quality of scenic areas including ridgelines and scenic views from public roads, trails, and key vantage points.

The Los Angeles County General Plan also identifies officially designated scenic highways, and divides proposed scenic highways into first- and second-priority proposed scenic highways. First priority routes recommended for further study include the Antelope Valley Freeway. There are no second-priority routes in the vicinity of the proposed Project site.

3.2.2 Antelope Valley Area Plan

The Project site is located within the boundaries of the planning area for the Antelope Valley Areawide General Plan (Los Angeles County 1986). The area wide plan contains the following policy relevant to visual resources:

- *Policy 22:* Minimize environmental degradation by enforcing controls on sources of pollutants (including visual pollution) and noise.

Visual pollution is not defined by the general plan, but typically includes dust, smog, trash, or visual clutter.

3.2.3 Los Angeles County Hillside Management Ordinance

The Hillside Management Ordinance (Los Angeles County Code Title 22, Section 22.56.215) designates hillside management areas in urban and non-urban areas that have hillsides with a 25 percent grade or greater. The ordinance requires development on properties covered by the hillside management ordinance to obtain a conditional use permit with the intent of preserving remaining natural topography.

4.0 METHODOLOGY

4.1 Identification of Potential Scenic Areas

Potential scenic areas were identified prior to the field visit so they could be evaluated and photographed. Potential scenic areas were identified from review of maps, local land use plans, county land use plans, and relevant guidance as described in Section 3.0.

As detailed in Section 3.1, the Los Angeles County Environmental Checklist Form (Appendix B) identifies other aesthetic considerations and categories of scenic resources that must be addressed. The following categories of scenic resources are addressed in this report:

- Scenic highways
- Scenic highways or resources designated by local land use plans
- Scenic highways or corridors designated by cities adjacent to or near the project site
- Significant Ridgelines
- Hillside Management Areas
- Riding and Hiking Trails
- Trees, Rock Outcroppings, and historic buildings within a state scenic highway
- Undisturbed land on the Project site or in the vicinity of the Project site

Guidance contained in question (a) in the Aesthetics Section of the Environmental Checklist requires consideration of scenic resources designated by local land use plans or by cities adjacent to or near the project site. The City of Lancaster's Master Environmental Assessment (MEA) (2009a) and the City of Lancaster's General Plan (2009b) were reviewed to identify specific scenic resources in the area. Although the Project is located in unincorporated Los Angeles County outside municipal boundaries, it is inside the "Sphere of Influence" identified in the MEA. Scenic resources are defined by the MEA as "those unique visual features that provide attractive views either into or from the study area" (City of Lancaster 2009a). Five scenic areas were identified in the Sphere of Influence identified in the MEA, which included areas beyond the Lancaster's municipal boundaries: the Foothills Area, Little Buttes, Quartz Hill, Piute Ponds, and Little Rock Wash:

- The Foothills Area is the northern edge of the San Gabriel Mountains. The area between the Angeles National Forest and the Antelope Valley provides many trails for hiking and biking. Trails along the California Aqueduct provide access for hiking, biking, and fishing. These trails provide visitors with expansive views of the surrounding mountains and Antelope Valley. The MEA identifies a visual buffer area extending from the foothills area into the valley, but does not provide specific direction for management of the visual buffer area.
- Little Buttes is located approximately 7.5 miles west of the Antelope Valley Freeway, and 1.5 miles north of West Avenue D. Little Buttes is a butte (hill) rising from the flat desert landscape, and is crossed by a number of undesignated hiking trails.
- Quartz Hill is a hill surrounded by residential development within the unincorporated community of Quartz Hill immediately south of the City of Lancaster. Quartz Hill rises over 200 feet above the surrounding community and is located approximately 2.7 miles west of the Antelope Valley Freeway along West Avenue M/Columbia Way.

- The Piute Ponds area is located on Edwards Air Force Base east of the Antelope Valley Freeway. Access is restricted, and special permission is required to enter the area. The Piute Ponds consist of several shallow amorphous ponds on the southern edge of Rosamond Dry Lake. These ponds form a series of interconnected impoundments that receive wastewater from the Lancaster Water Reclamation Plant as well as seasonal runoff from washes that cross the valley floor (University of California, Santa Barbara 2009). Recreational activities in the Piute Ponds area include hiking and wildlife watching.
- Little Rock Wash, located approximately 11 miles southeast of the proposed Project site and one of the larger washes in the Project area, is dry most of the year. According to the MEA (City of Lancaster 2009a), Little Rock Wash is the most significant natural desert wash within the study area in terms of plant diversity and biological value. Little Rock Wash is considered a Significant Ecological Area. Trails and proposed trails exist in the area of Little Rock Wash. The MEA identifies a visual buffer area surrounding the wash, but does not provide specific direction for management of the visual buffer area.

The MEA also mentions the scenic value of the Antelope Valley California Poppy Reserve, a state natural reserve, located west of the Sphere of Influence. The Poppy Reserve receives the majority of its visitors during the spring and early summer months when the poppy flowers that are common to the area are in bloom.

The MEA mentions the Joshua tree as the most well-known desert plant in the Antelope Valley, with desert and desert woodland plant communities being of significant local and regional value. The Lancaster General Plan identifies local views of the surrounding buttes, Quartz Hill, and long distance panoramas of the San Gabriel Mountains and desert expanses as visual/scenic resources.

The MEA also identifies several roadways that could potentially serve as scenic routes in the future, but currently have no formal designation. These include the following:

- Antelope Valley Freeway, for long-range views of the San Gabriel Mountains to the southwest, south, and southeast, and far-off views of the San Bernardino Mountains to the southeast and the Tehachapi Mountains to the northwest. To the north this route provides close-in views of open desert lands.
- Avenue K between 110th Street West and 90th Street West, for views of the San Gabriel Mountains to the south and of the Portal Ridge foothills to the southwest.
- Avenue M between the Antelope Valley Freeway and 60th Street West, for views of the San Gabriel Mountains to the south and Quartz Hill.
- 60th Street West between Avenues K and M, for views of Portal Ridge to the west and the San Gabriel foothills to the south.
- 90th Street West, for long-range views of the San Gabriel Mountains to the south and southwest, close-in views of the open desert in the northern portion of the valley and of the Tehachapi Mountains to the northwest.

4.2 Field Visit

In an effort to properly assess the existing visual character of the landscapes in the Project area, a two-day visit to the proposed Project site and the surrounding Project area was conducted on Tuesday January 24 and Wednesday January 25, 2012 by Tetra Tech visual resource specialist Tara Low. On Tuesday, January 24, 2012, photos were taken near the Project site between 8:00AM and 11:00AM. The weather was mostly clear and sunny with only a few widely-scattered clouds.

A Nikon D90 digital single lens reflex camera (dSLR) equipped with a 35-millimeter (mm) lens was used to take the photographs. When used with a 1.5x cropped-sensor camera such as the D90, a 35-mm lens is considered a "52-mm equivalent lens." A 52-mm equivalent lens is considered a "normal lens" that most closely approximates the field of vision of the human eye. In photos taken using the combination of the D90 and a 35-mm lens, the size and scale objects in the background and foreground are depicted realistically, and are not distorted.

The Nikon D90 dSLR was also equipped with a Global Positioning System (GPS) device manufactured by Promote Systems. This GPS device records the latitude, longitude, and elevation of each photograph as it is taken and embeds this information in the .jpg itself. This feature allows one to upload the Project area photos to a Google Earth .kmz, which displays both the photos themselves and the locations where each photo was taken on an interactive representation of the earth. Other relevant project information, such as Project boundaries, existing transmission infrastructure, and jurisdiction boundaries can be displayed simultaneously in the .kmz along with the photo locations.

Each location where photographs were taken is referred to as a "photo point" in this report. At each photo point, a panorama, or an overlapping series of photos, is captured. After the conclusion of the field visit, each of these panoramas was created using a panorama creation program called PTGui. These panoramas were then added to a Google Earth .kmz file, where the locations of each panorama were displayed on an interactive representation of the earth. A map showing the locations of each of the photo points visited during the field visit can be seen in Figure 3. Panoramic photos taken during the field visit relevant to the Project site and this analysis are provided in Appendix C.

Photo points were captured at the proposed Project site from locations along adjacent roads and intersections near the Project site (Figure 3). During this site visit, the following locations were visited and photographed:

- The proposed Project site, and other sites proposed for solar development for separate permitting processes
- Locations in representative landscapes in the Project area where the Project may be seen
- Potentially Sensitive viewing areas where the Project may be seen, which can include residential areas, community facilities such as parks, open space areas, fairgrounds, or playgrounds, or highways or well-travelled roads
- Scenic areas identified in the City of Lancaster's Master Environmental Assessment, including the Poppy Reserve, Foothills Area, Little Buttes, and Quartz Hill.

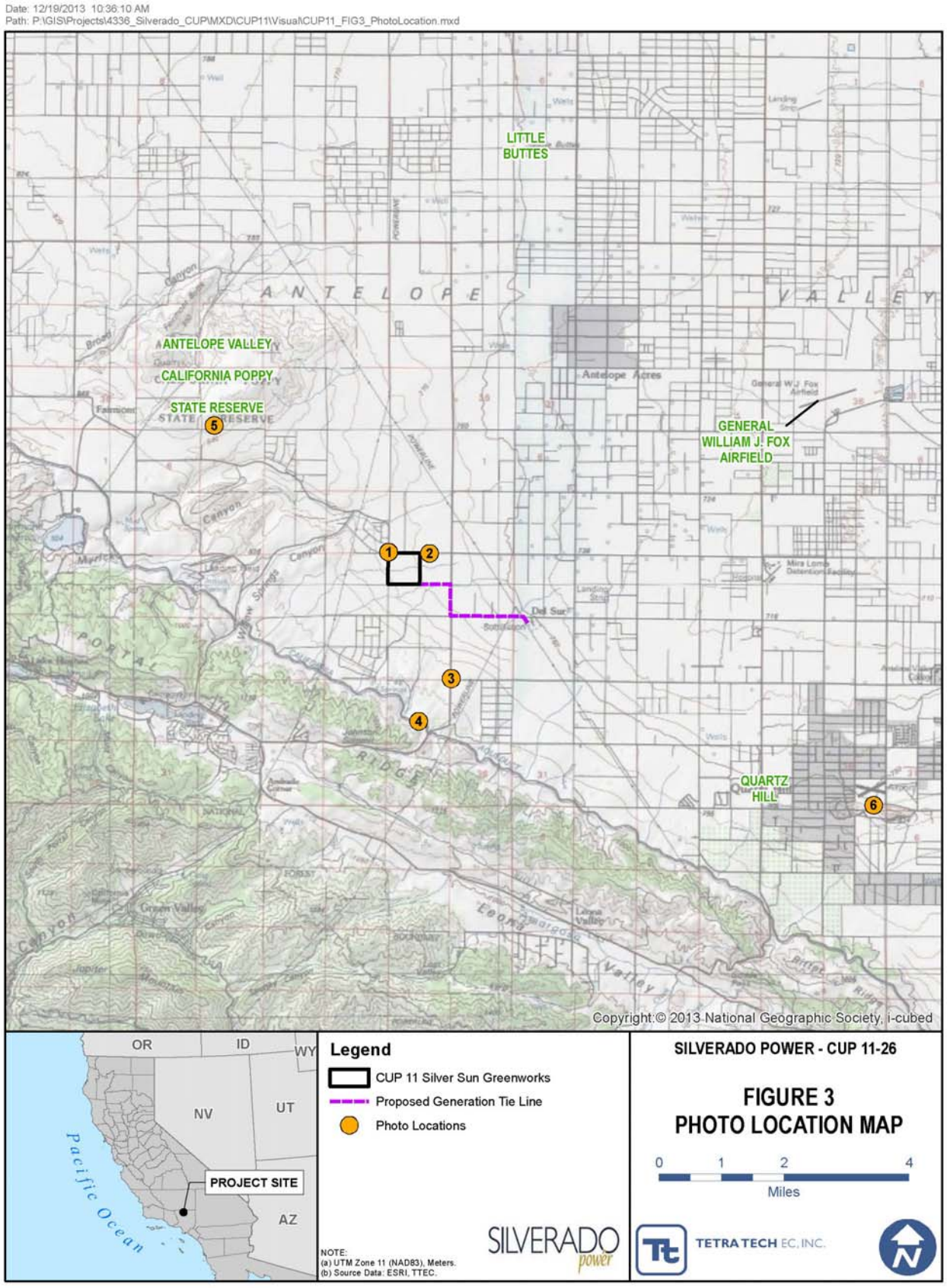
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Photo Locations
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
SILVERADO POWER - CUP 11-26
FIGURE 3
PHOTO LOCATION MAP
0 1 2 4
Miles
TETRA TECH EC, INC.

Photos were not taken from Piute Ponds and Little Rock Wash, both located east of the Antelope Valley Freeway, for the purpose of this visual assessment. The Piute Ponds area is located on Edwards Air Force Base approximately 14 miles northeast of the Project site, and special permission is required to enter the area. The Project site will not be visible from Piute Ponds due to distance. The visual resource specialist drove around the Little Rock Wash area, located approximately 12 miles southeast of the Project site, to observe the regional setting. The Project site is not visible from the Little Rock Wash area due to the distance of the Project site from Little Rock Wash, and the location of development associated with Lancaster between Little Rock Wash and the Project site.

4.3 Photographic Simulations and Contrast Ratings

When assessing the potential visual impacts of the proposed Project, it is important to compare the visual characteristics of existing landscapes in the Project area with the visual characteristics of specific Project components that will be visible in those landscapes. The BLM's visual contrast rating process (*Handbook 8431-1 Visual Resource Contrast Rating*) was used as the basis for reviewing potential impacts to visual resources. Because the proposed Project is on private land and not subject to BLM regulations, a form adapted from the BLM's Visual Contrast Rating Worksheet (BLM Form 8400-4) was used to assess the degree of contrast the proposed project will introduce to the existing landscape.

The visual contrast rating worksheet uses landscape character elements and distance zones to describe the landscape. When describing visual resources, landforms (including water), vegetation, and man-made features currently in the landscape are analyzed using the basic landscape character elements of form, line, color, and texture. Descriptions of each character element are listed below:

- Form—The shape and mass of landforms or structures
- Line—The edge of shapes or masses, silhouettes, or bands
- Color—The property of reflecting light of a particular intensity of wavelength that the eye can see
- Texture—The nature of the surface of landforms, vegetation, or structures

When the visual resources in an area are described, the distance between objects or landforms and any potential viewer has a direct influence on that description. Objects or features that are closer to a viewer's location will appear more detailed and more dominant than those that are further away.

- Foreground/Middleground—Areas immediately in front of to 5 miles away from an observer
- Background—Areas from 5 to 15 miles away from an observer
- Seldom Seen—Beyond background or can't see

Descriptions of the existing landscape, and of the landscape after a proposed project is implemented, are completed and compared to identify the level of contrast a project's components may introduce. A photographic simulation was created to help visualize the impacts to the existing landscape and to aid in the description of the proposed Project components. These simulations are created using a combination of Geographic Information Systems (GIS)

and current 3D software to ensure accuracy in the locations of the proposed Project components.

5.0 AFFECTED ENVIRONMENT

5.1 Regional Landscapes

The proposed Project site is located in the Antelope Valley, which is part of the Mojave Desert basin. The Antelope Valley is broad and relatively flat, with few variations in topography. The valley is shaped like a sideways letter "V," sloping northward toward the Tehachapi Mountains and southward toward the San Gabriel Mountains. The western portion of the valley slopes upward toward the point where these two mountain ranges come together at the junction of the San Andreas and the Garlock faults. In the Project area, these mountain ranges are characterized by many complex and well-eroded hills rising approximately 2,000 to 5,000 feet above the valley floor. Many small valleys and drainage complexes are visible in the foothills that border the valley.

Surface water is rarely observed in the Antelope Valley. There are many washes that meander across the valley; however, these streams are dry for the majority of the year and only fill with water during the spring snow melt originating from the nearby mountains and after major rain events. Conversely, concrete-lined aqueducts, which include the California Aqueduct and the Los Angeles Aqueduct, parallel the natural contours of the foothills of the San Gabriel and Tehachapi Mountains. Recreational trails line the California Aqueduct, which is located approximately 1.7 miles south of the Project site.

Several high-voltage transmission lines are located in the local Project area, many of which are connected to the Antelope Substation, a large substation located approximately 1.9 miles southeast of the Project site. A high-voltage transmission line with lattice towers runs north/south along the east boundary of the Project site, and two additional high-voltage transmission lines run southwest/northeast approximately 0.6 miles west of the Project site. Another high-voltage transmission corridor with several lines is located approximately one mile east of the Project site.

Desert woodland vegetation native to the Mojave Desert includes tall, irregular Joshua Trees, and round Juniper shrubs ranging from 4 to 10 feet tall (City of Lancaster 2009b). In most of the Project area, the native woodland vegetation has been cleared for agricultural use. Irrigated agricultural areas appear as square, rectangular, or circular green shapes on the brown-toned desert landscape. Root vegetables and fruit trees, as well as alfalfa, hay, and grapes are grown in the Antelope Valley. In portions of the Project area where agriculture has yet to be developed or has been abandoned, a mixture of short grasses, wildflowers, and low desert scrub bushes are common. During the spring bloom, wildflowers cover the valley in brilliant displays of orange, yellow, and purple wildflowers (City of Lancaster 2009b). On the slopes of the foothills to the north and south, low woody vegetation is common, and includes scrub oak, sagebrush, Creosote, and Juniper bushes. During the spring and early summer, this vegetation appears in varying shades of dark and light green. During the fall and winter, patches of dark brown and grayish red hues are visible.

There are several well-developed cities in the Project area. Both Lancaster and Palmdale, located approximately 9 and 15 miles east/southeast of the proposed Project site respectively, have a population of more than 100,000. Quartz Hill has a population of more than 10,000. Development proximate to the Project site is rural in nature. The closest residence is associated

with a farm located approximately 380 feet to the west of the Project site along 120th Street West. The residence building is surrounded by tall trees, and symmetrical rows of planted trees occur between the residence and 120th Street West. There are several other rural residences located within one mile of the Project site along local roads. Most residences have a restricted view of the Project site because of surrounding vegetation. Other residences, including some east of the Project site along 110th Street West, will not have full vegetative screening from the Project.

The Project site is located approximately 5 miles west of densely developed areas associated with Quartz Hill. Because of the distance between the densely developed areas, and because numerous rural residences, transmission lines, and a large substation are located between the Project site and Quartz Hill, the Project is not likely to be visible from these areas. The Project site may be visible from some residential areas located at higher elevation near the foothills.

5.2 Project Site Description

The Project site itself is located in the west/central portion of the Antelope Valley, and it is very flat, sloping gradually downwards from southwest to northeast. Portal Ridge, which is part of the San Gabriel Mountains foothills, is prominent in views to the south from the site. This ridge is characterized by a jagged, horizontal line of coarse hills and complex drainages rising approximately 1,200 feet above the proposed Project site. Views to the east and west are of a predominantly flat landscape, and very little topographic variation is visible. The jagged ridgeline of the Tehachapi Mountains is visible in the distance in views to the north from the proposed Project site.

Photos 1 to 3 in Appendix C show various views towards the Project site from local roads surrounding the area. The Project site is fallow agricultural land, and is currently vacant. The existing site is currently open land in a rural area, and is typical of the surrounding landscape. The visual quality of the Project site is low. The Project site itself does not have unique or rare features, or hold special significance. The topography is uniform and flat. Vegetation is uniform and consists of grasses and short shrubs. No permanent water features occur on the site, and there are no features or characteristics that set the Project site apart from the surrounding landscape. Two man-made drainage features were observed. A wash runs east/west down the center of the Project site. Two-track marks are visible on aerial photographs on the Project site. No trees are present. An electric distribution line is located across the street from the Project site, on the north side of West Avenue I. A high-voltage transmission line with lattice towers is located adjacent to the Project site's eastern boundary.

Several vegetation communities occur on the Project site. The Project site is dominated by the Grazed Non-Native Annual Grassland, which is characterized by dense to sparse cover of annual grasses such as oats, bromes, and ryegrass. This community is often associated with the numerous species of native annual wildflowers such as California poppy (*Eschscholzia californica),* lupines (*Lupinus spp.)*, and goldfields (*Lasthenia spp),* especially in years of favorable rainfall. Plants bloom in the spring and die off (becoming tan-colored) for the dry season, including during the time when the site visit was conducted. Pockets of Non-Native Annual Grassland also occur onsite, which are similar to Grazed non-native annual grassland in plants species. Rubber Rabbitbrush Scrub also occurs near West Avenue I and the drainage feature in the center of the Project site. This community is dominated by rubber rabbitbrush (*Chrysothamnus nauseosus)*, usually approximately 3 feet in height with regularly-spaced gray-green shrubs that bloom in the late summer or early fall. Small pockets of Valley Needlegrass

Grassland (including Grazed Valley Needlegrass Grassland) also occur within western half of the Project site. This vegetation type is characterized by mid-height (up to 2 feet) grassland dominated by perennial tussock-forming purple needlegrass (*Nassella pulchra).* No trees were present onsite.

5.3 Scenic Resources

Section 4.1 of this report identifies categories of scenic resources located within the Project area. The following sections identify which of those scenic resources may be potentially impacted by the proposed Project.

5.3.1 Scenic Vistas

Figure 3 shows the location of scenic resources in relation to the proposed Project site. The Project will not be visible from Piute Ponds or Little Rock Wash due to distance: Both sites are located over 10 miles away from the Project site. It is highly unlikely that the Project will be visible from Little Buttes or Quartz Hill, which are both located over 8 miles from the Project site. Even though viewpoints from Little Buttes and Quartz Hill are at higher elevations than the Project site, from this distance the proposed Project will fade into the flat landscape. Photo 6 in Appendix C shows a view from Quartz Hill in the direction of the Project. As is seen from the photo, which was taken from an elevated location, individual features and patterns beyond the residential developments in Lancaster are not discernible.

The Project will be visible from certain locations in the Foothills Area, including portions of the California Aqueduct trails, and may be visible from the California Poppy Reserve. A representative photograph of the Foothills Area looking towards the Project site is provided in Photo 4. The California Poppy Reserve is located approximately 2.6 miles northwest of the proposed Project site. Photo 5 was taken from the top of the Valley Vista Trail, in the center of the reserve.

5.3.2 Scenic Highways or Corridors

The Project site is bordered by West Avenue I to the north, and 120th Street West to the west. Both West Avenue I and 120th Street West are visible in Photo 1 in Appendix C. 120th Street West is a tan/buff colored dirt road, and West Avenue I is a two-lane light to medium gray roadway. 120th Street West and other dirt roads in the area of the Project site are lightly travelled by area residents. West Avenue I provides access from the Lancaster area to the California Poppy Reserve and the western edge of the Antelope Valley. Travelers on West Avenue I represent the majority of potential viewers of the proposed Project. Travelers along West Avenue I may include local residents, tourists, recreational travelers, business travelers, and commercial drivers.

There are no designated scenic highways in the Project area. The Project may be visible from 90th Street West and Avenue K between 90th Street West and 110th Street West, which are identified as potential scenic routes in the City of Lancaster's MEA. 90th Street West is located 2.5 miles east of the Project site at approximately the same elevation. West Avenue K is situated at a slightly higher elevation (approximately 130 feet) than the Project site, and approximately 1.6 miles southeast.

5.3.3 Significant Ridgelines and Hillside Management Areas

No designated significant ridgelines are located within the Project area. The Project site is flat with a grade of less than 25 percent, and therefore the Hillside Management Ordinance does not apply to the Project site.

5.3.4 Riding and Hiking Trails

Riding and hiking trails in the vicinity of the Project site include trails in the Foothills Area (including the California Aqueduct Trail) and trails in the California Poppy Reserve. As shown in Photos 4 and 5 in Appendix C, the Project site will be visible from some portions of these trails, but topography will screen the Project site from view in other locations.

5.3.5 Undisturbed Land

The Project site is located on land that is vacant, but is not undisturbed. Disturbance is evident on the Project site as well as in lands surrounding the Project Site. The Project site and surrounding land is primarily unproductive agricultural land dominated by non-native vegetation species. Cultural modifications to the landscape include farms, rural residences, agricultural fields, high-voltage power lines, electrical distribution lines, roadways, and a large substation (the Antelope Substation)

6.0 VISUAL IMPACT ANALYSIS

Using the CEQA checklist criteria provided in the County of Los Angeles' Environmental Checklist Form (included in Appendix B), the visual impacts from the proposed Project were assessed:

(a) Would the project have a substantial adverse effect on a scenic vista?

Recommended Rating: LESS THAN SIGNIFICANT

According to the Los Angeles County Environmental Checklist Form, potential impacts could result from obstructing views to or from a scenic resource, degrading the character of a scenic highway, or disrupting a scenic vista.

Of the scenic resources locations identified by the City of Lancaster in the Project area, the proposed Project will be visible from the Foothills Area, and may be visible from higher elevations in the California Poppy Reserve where views are not blocked by terrain. Other scenic resources identified by the City of Lancaster are located a sufficient distance away such that the Project will fade into the horizon line and not be visible. The Antelope Valley is extremely flat, which limits the visibility of the project unless the viewer is located in a superior position (at an elevation higher from the object/location being viewed). Even from a superior viewing position at Quartz Hill, a viewer is not likely to be able to distinguish the Project site at a distance of 8 miles away from the Project site. If the Project was visible from that distance, it will not appear dissimilar to an agricultural field or the Antelope Substation in size and shape.

The proposed Project would not impact any designated scenic byways. The proposed Project may be visible from sections of 90th Street West and West Avenue K, which are identified by the Lancaster as potential scenic routes. Vegetation and infrastructure (including high-voltage transmission lines, residences/farms, and the Antelope Substation) are located in between the Project site and 90th Street West and will provide some degree of visual screening. Views from 90th Street West to the mountains will not be impeded. The Project may be visible from West

Avenue K between 90th Street West and 110th Street West. West Avenue K is considered a potential scenic route for views to the south of the San Gabriel Mountains and Portal Ridge foothills, and the Project will not impede these views. High-voltage transmission lines and ranches/farms are located in between Avenue K and the Project site and will provide some degree of visual screening. Because of the distance, even if the Project is visible from this section of Avenue K, it will not be prominent in the landscape.

Even where visible, the proposed Project components will not be a dominant element in the landscape unless the viewer was directly adjacent to the facility, as shown in Figure 4. At 8 feet tall, the PV modules are relatively short, and given their design, which absorbs sunlight instead of reflecting it, the modules will not be highly reflective. From viewing points not directly adjacent to the Project site and at approximately the same elevation as the solar facility, it will fade into the flat landscape and not dominate the view. In addition, other electric infrastructure, including the Antelope Substation and several high-voltage transmission lines, are also located within 2 miles of the Project site. Because this existing electrical infrastructure is also visible from scenic vistas such as the Foothills area, the proposed Project will not significantly degrade views from nearby scenic vistas.

(b) Would the project be visible from or obstruct views from a regional riding or hiking trail?

Recommended Rating: LESS THAN SIGNIFICANT IMPACT

According to the Los Angeles County Environmental Checklist Form, impacts would arise from the vacation of a portion of the trail, degrading the scenic character in or around the trail, or obstructing expansive views visible from the trail's course.

No trails are located on the Project site; therefore the Project would not cause the vacation of any portion of any trail. The proposed Project may be visible from elevated portions of trails that are not screened by terrain, including portions of the California Aqueduct trails, other trails in the Foothills Area, and the California Poppy Reserve. Even where visible, the proposed Project components will not be a dominant element in the landscape unless the viewer is directly adjacent to the facility. No regional hiking or riding trails were identified directly adjacent to the proposed facility. As the viewing distance increases, the facility will become less prominent and eventually fade in the flat landscape. From elevated viewpoints the Project site will as an outline or shape on flat landscape horizon. Although the proposed Project may be visible from regional trails, from these distances the proposed Project will appear as a rectangular pattern on the landscape, not dissimilar in form and size to other rectangular shaped land uses such as agricultural fields and the Antelope Substation. The proposed Project will not obstruct views from trails because of the low profile of the solar modules. Because the landscape around the Project site has already experienced extensive cultural modification, the proposed Project would not significantly degrade the scenic character around trails, even if it is visible from that trail.

(c) Would the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

Recommended Rating: NO IMPACT

According to the Los Angeles County Environmental Checklist Form, impacts may occur from development of undisturbed lands on-site or in the vicinity of the Project area. All development and staging would occur on the Project site or on already disturbed areas. As described in Section 5.3.5, the Project site is disturbed land and is surrounded by cultural modifications.

Simulation.

Existing.

Figure 4. Photo Simulation

As described in Question (a), the proposed Project is not located along or in proximity to a state scenic highway. The proposed Project will not substantially damage or impact scenic resources such as trees (including Joshua Trees) or rock outcroppings, and there are no historic buildings located in the proposed Project site.

(d) Would the proposed project substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?

Recommended Rating: LESS THAN SIGNIFICANT

According to the Los Angeles County Environmental Checklist, the height/bulk of a proposed project could negatively impact the surrounding area depending on how well the design of the proposed project integrates with the visual character of its surroundings from the perspective of height, bulk, pattern, scale, character, or other features.

A photographic simulation was created to help visualize the potential impacts to the existing landscape. Figure 4 shows photographs of the existing conditions and post-construction photographic simulation from a photo point approximately 200 feet northwest of the Project site, at the intersection of Lancaster Road/West Avenue I, and Fairmont/Neenach Road. This location was selected because most viewers of the proposed Project would be travelers along West Avenue I.

A contrast rating was conducted from the viewpoint shown in Figure 4 to assess the level of contrast that would be introduced by the proposed Project to landform, vegetation, or structures in terms of major landform characteristics (form, line, color, and texture). The height, bulk, pattern, and scale of proposed Project features are considerations in the contrast rating process. The contrast rating form is provided in Appendix D. From this viewpoint, the overall level of contrast introduced by the proposed Project was evaluated as moderate. No noticeable modifications to landforms are anticipated. The removal of vegetation (the shrubs on the south side of the road) would introduce a weak level of contrast compared with existing conditions. The introduction of solar modules would create a moderate level of contrast compared with existing conditions. Although the solar modules would introduce a new infrastructure element to the landscape, the colors of the modules already exist in the environment, and the horizontal lines created by the rows of solar modules mimic the naturally flat lines of the foreground landscape.

Viewers such as nearby residents and travelers on the West Avenue I will still experience views of the open desert lands around the Project site after the solar facility is constructed. The residence located closest to the solar facility (along 120th Street West) is separated from the Project site by rows of planted trees. The solar facility will not significantly impact views from this residence because of screening provided by the vegetation.

The Project is not out-of-character with the surrounding landscape when considering the context of the larger Project area. Cultural modifications are common in the landscape around the site. The Project site is situated approximately 1.9 miles west of the Antelope Substation, which has a footprint that is a similar size and shape compared to the proposed Project site. The electrical infrastructure on the Antelope Substation is much more complex with varying heights and shapes of equipment, while the proposed Project will appear very uniform throughout the Project site. Several distribution lines and high-voltage transmission lines converge at the Antelope Substation. Other cultural modifications in the landscape include farms and

residences. In the larger Project area, electrical infrastructure such as PV solar fields, transmission lines, and substations are common.

Because other cultural modifications are common in the vicinity of the Project site and in the larger Project area, and because the Project site itself is not characterized by high visual quality, the visual impact of the Project on the existing visual character of the proposed Project site and its surroundings will be less than significant.

I (e) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Recommended Rating: LESS THAN SIGNIFICANT

According to the County of Los Angeles Environmental Checklist, the impacts may occur if shadows are cast upon nearby sensitive uses, or if reflective light or glare impeded views in and around the Project site.

Because of the low profile of the solar modules, no significant shadows will be cast upon nearby sensitive land uses. Impacts from new sources of light or glare are expected to be less than significant. The Project will not create a significant source of light. Light sources associated with the Project will be minimal, and will be restricted to that required for nighttime safety and security according to county requirements. Lighting will be installed and directed downward and shielded to avoid light trespass. The amount of light generated by the security lights will be consistent with existing sources produced by man-made structures adjacent to the proposed Project site, including residences, roadway lights, and the Antelope Substation.

Project components will introduce minimal amounts of glare to the existing landscape. The Project PV modules are designed to absorb sunlight, and the glass modules that protect the PV surface are typically formulated glass designed to allow sunlight to pass with minimal reflection.

7.0 CONCLUSIONS

Implementation of the proposed Project is expected to have a less than significant impact on scenic resources and aesthetic values.

The following mitigation measures that will minimize visual impacts are incorporated into the Project design:

Construction Phase:

- Implement a Fugitive Dust Control Plan to minimize dust (visual pollution).
- The Project site will be maintained free of debris, trash, and waste during construction.

Operations Phase:

- The proposed structures onsite will be neutral colors (grays) and non-reflective.
- A landscape plan will be developed prior to Project construction that shows detail of any proposed earthwork or vegetation intended to screen the Project visually from area residents or travelers on nearby roadways.
- Lighting will be pointed downwards to minimize light trespass, and mounted on essential infrastructure rather than on separate light poles

8.0 REFERENCES

Association of Environmental Professionals. 2012. 2012 California Environmental Quality Act (CEQA) Statute and Guidelines. Available online at: http://ceres.ca.gov/ceqa/docs/CEQA_Handbook_2012_wo_covers.pdf (Accessed June 20, 2012).

Lancaster, City of. 2009a.General Plan 2030 Master Environmental Assessment. Available online at: http://www.cityoflancasterca.org/Modules/ShowDocument.aspx?documentid=11352 (Accessed February 18, 2012.)

Lancaster, City of. 2009b. General Plan 2030. Available online at: http://www.cityoflancasterca.org/index.aspx?page=427 (Accessed February 18, 2012.)

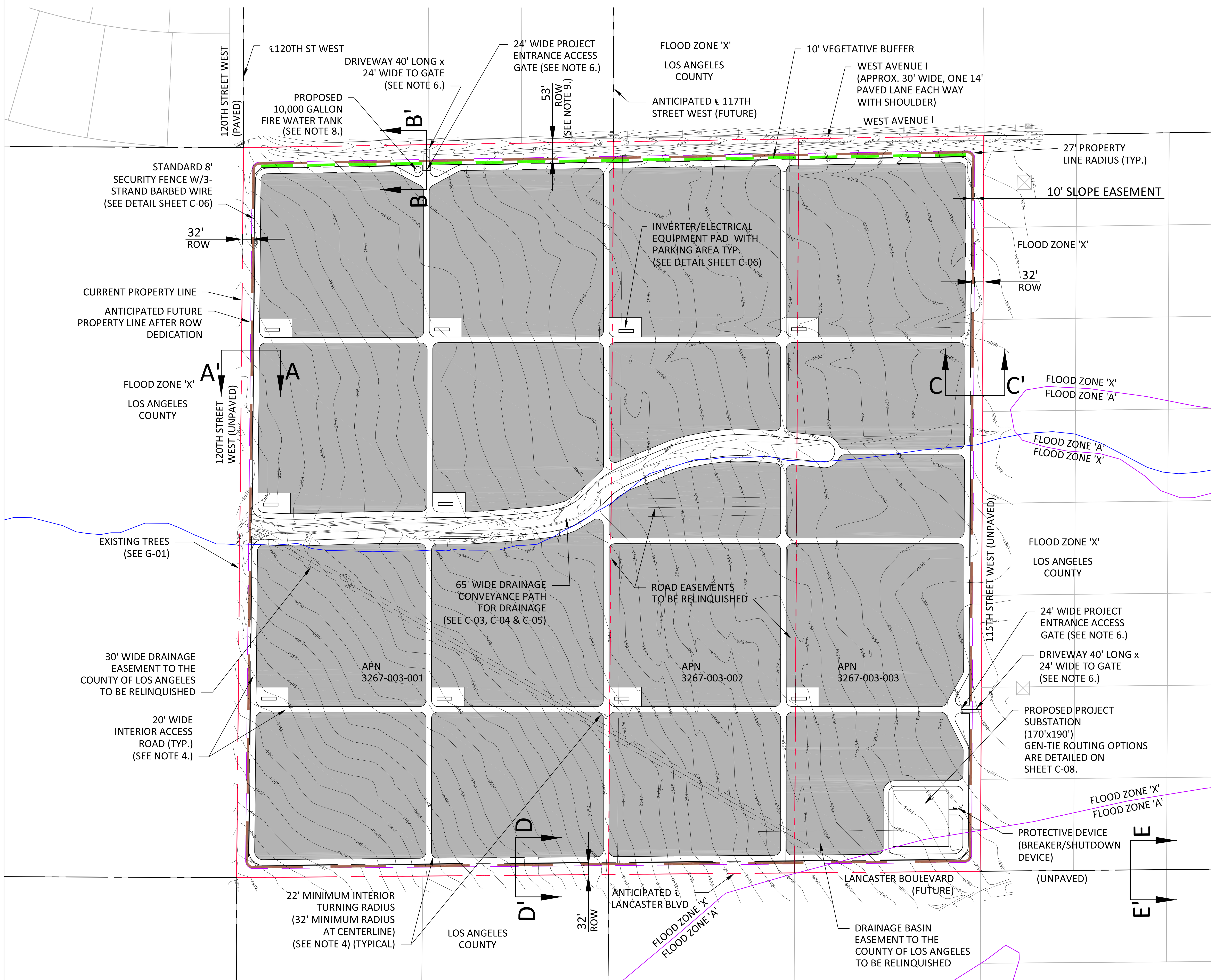
Los Angeles County. 1986. *Antelope Valley Areawide General Plan.* Available online at: http://planning.lacounty.gov/assets/upl/data/tnc_avap.pdf. (Accessed February 22, 2012).

Los Angeles County. 1980. County of Los Angeles General Plan. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_web80-introduction.pdf. (Accessed February 22, 2012).

University of California, Santa Barbara. 2009. *Management Recommendations for Piute Ponds Edwards Air Force Base, California.* Available online at: http://ees.bren.ucsb.edu/research/documents/Piute_Brief.pdf. (Accessed February 20, 2012).

APPENDIX A

SITE PLAN



PROJECT SITE:

PROJECT SITE IS 160 ACRES (NET)

NOTES:

1. 'ZONE X' AND 'ZONE A' AS SHOWN ON PANEL 0150F OF FLOOD INSURANCE RATE MAP NO. 06037C0400F. ZONE "X" DESIGNATED AS, "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN". ZONE "A" DESIGNATED AS, "NO BASE FLOOD ELEVATIONS DETERMINED".

2. FIRE DEPARTMENT ACCESS DEVICE AND EMERGENCY CONTACT PLACARD LOCATED AT ENTRANCE GATE.

3. MOBILE SANITATION FACILITY, AS DEFINED BY THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH, CAN BE LOCATED AT ALL PARKING LOCATIONS AND WILL BE LOCATED AT THE NEAREST LOCATION TO CONSTRUCTION AND OPERATIONAL WORKERS ACTIVITY. THE FACILITIES WILL BE KEPT TO LOS ANGELES COUNTY CODE, TITLE 11 - HEALTH & SAFETY, AND CAL-OSHA SANITATION STANDARDS IN SECTION 3360, TITLE 8, CALIFORNIA CODE OF REGULATIONS. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-06.

4. INTERIOR ACCESS ROADS WILL BE 20' WIDE, COMPACTED TO 90%, WITH 32 FOOT TURNING RADIUS AT CENTER LINE. THE INNER RADIUS WILL BE 22' AND THE OUTER RADIUS WILL BE 42'. INTERIOR ACCESS ROADS WILL BE PROVIDED TO INVERTER/ELECTRICAL EQUIPMENT PADS AND AROUND THE PERIMETER OF THE PROJECT. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-06.

5. 10 FOOT WIDE SLOPE EASEMENT WILL BE PROVIDED AROUND PERIMETER.

6. DRIVEWAY ACCESS GATES TO BE SET 40 FEET BACK FROM EDGE OF PROPERTY. DRIVEWAY WILL BE 24 FEET WIDE.

7. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION DURING DETAILED DESIGN.

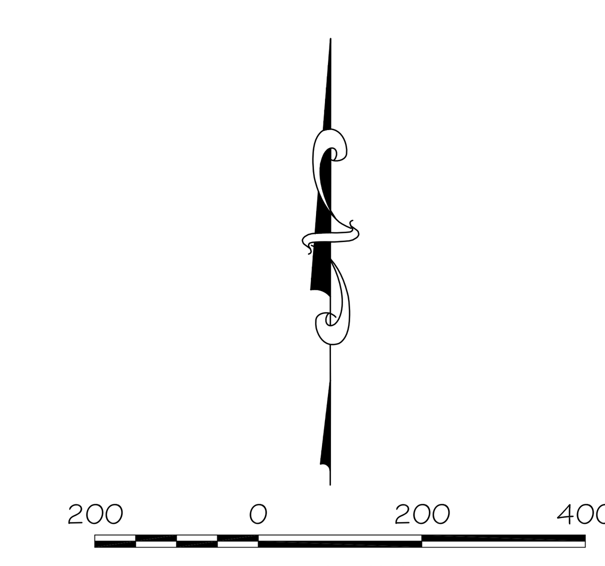
8. TANK CONNECTIONS PER LOS ANGELES COUNTY FIRE DEPARTMENT.

9. ANTICIPATED ROW SETBACK/DEDICATION FOR FUTURE ROAD DEVELOPMENT.

10. CONTOURS SHOWN ON SITE PLAN, C-01, ARE BASED ON SURVEY BY ALL VALLEY SURVEYING.

LEGEND:

	TREE AS NOTED
	POWER POLE
TYP.	TYPICAL
MIN	MINIMUM
ROW	RIGHT OF WAY
℄	CENTERLINE
—x—x—	FENCE LINE
	OVERHEAD LINE
	UNDERGROUND LINE
	PROPERTY LINE (AFTER DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
2470	CONTOUR LINE
	EASEMENT (SEE SHEETS G-01 AND G-02)
	BLUELINE STREAM (FROM USGS)
	FLOOD ZONE BOUNDARY DELINEATION
	SOLAR ARRAY FIELD
	10' WIDE VEGETATIVE BUFFER
	10' WIDE SLOPE EASEMENT
	12' WIDE DEDICATION FOR LITTLE BUTTES TRAIL



1'=200'
WHEN PRINTED TO SCALE ON 22"x34" SHEET

R2011-00801 (RCUP201100072) C-01

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APP'D BY
C	09/05/13	EXPANDED SITE	JD	SP
B	02/15/12	REVISIONS FOR COUNTY	JD	SP
A	05/18/11	INITIAL SUBMITTAL	TWC	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs: 3267-003-001, 3267-003-002 & 3267-003-003

SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks

Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

DRAWING: SITE PLAN

APPLICANT:

Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN
GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

APPENDIX B

CORRESPONDENCE AND LOS ANGELES COUNTY ENVIRONMENTAL CHECKLIST FORM

Correspondence with Los Angeles County/ Environmental Checklist Form

Good Afternoon Mike,

Before I respond to your question below, please note that your opening paragraphs on Regulatory Setting section 3.1.3 are not up to date with revised County procedures. Let me clarify that first.

1) With regard to thresholds of significance, generally they are derived from the County of Los Angeles Department of Regional Planning's Initial Study Checklist, which is based on Appendix G of the CEQA Guidelines with County-specific additional items. Please use the attached updated County version.

2) The 2005 County CEQA Guidelines cited are currently in process of revision. Please use attached I.S. and the most recent version (January, 2012) of the State CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387) also available from http://ceres.ca.gov/ceqa/docs/CEQA_Handbook_2012_wo_covers.pdf). It will not be necessary at this time to cite the 2005 County CEQA Guidelines document.

3) We will have to discuss further where to include discussion of relevant Lancaster "Sphere of Influence" information included in Section 3.1.3 City of Lancaster General Plan and Master Environmental Assessment. We do not normally include other non-binding jurisdictional material in the regulatory setting section for Projects solely within County jurisdiction.

With regard to your question below, does the visual analysis you provided include the expanded analysis, or, are you asking if the attached requires an expanded analysis?
Whatever the case may be, please make the necessary changes regarding use of the above-mentioned County and State documents. We will also need to discuss how and where the Lancaster "Sphere of Influence" discussion is to be framed and located within the document.
Kim

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Principal Planner
Special Projects Section
Department of Regional Planning
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Los Angeles, CA 90012
http://planning.lacounty.gov
213-974-4876

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From: DiSano, Michael [mailto:Michael.DiSano@tetratech.com]
Sent: Wednesday, May 16, 2012 4:58 PM
To: Blengini, Carolina
Cc: Szalay, Kim; Low, Tara
Subject: Aesthetics

Carolina,

I was wondering if you think we should expand our technical study in regards to Aesthetics? Attached is the finalized visual document for your reference. I don't think it would be necessary to do a contrast rating but I want to defer to you as the Lead Agency to make that determination.

Regards,

Michael Di Sano | **Assistant Project Manager**
Direct: 949.809.5034 | Main: 949.806.5000 | Fax: 949.809.5004
Michael.DiSano@tetratech.com

Tetra Tech
17885 Von Karman Ave | Irvine, CA 92614-5227 | www.tetratech.com

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Environmental Checklist Form (Initial Study)

County of Los Angeles, Department of Regional Planning

Project title: "Project Name" (if applicable) / Project No. / Case No(s). (All entered text should be Garamond font, size 11 or 12, underlined, single-spaced, and align-justified)

Lead agency name and address: _____

Contact Person and phone number: _____

Project sponsor's name and address: _____

Project location: (Address)
APN: _____ *USGS Quad*: _____

Gross Acreage: _____

General plan designation: _____

Community/Area wide Plan designation: _____

Zoning: (In addition to the zoning designation, indicate which Community Standards District the property is located within, if applicable.)

Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation.)

Surrounding land uses and setting: (Briefly describe the project's surroundings.)

Other public agencies whose approval may be required (e.g., permits, financing approval, or participation agreement):

Public Agency	*Approval Required*
_____	_____
_____	_____

Major projects in the area:

Project/Case No.	*Description and Status*
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Reviewing Agencies: **[***See* **CEQA Appendix B** *to help determine which agencies should review your project***]**

Responsible Agencies

- ☐ None
- Regional Water Quality Control Board:
  - ☐ Los Angeles Region
  - ☐ Lahontan Region
- ☐ Coastal Commission
- ☐ Army Corps of Engineers

Special Reviewing Agencies

- ☐ None
- ☐ Santa Monica Mountains Conservancy
- ☐ National Parks
- ☐ National Forest
- ☐ Edwards Air Force Base
- ☐ Resource Conservation District of Santa Monica Mountains Area
- ☐

Regional Significance

- ☐ None
- ☐ SCAG Criteria
- ☐ Air Quality
- ☐ Water Resources
- ☐ Santa Monica Mtns. Area
- ☐

Trustee Agencies

- ☐ None
- ☐ State Dept. of Fish and Game
- ☐ State Dept. of Parks and Recreation
- ☐ State Lands Commission
- ☐ University of California (Natural Land and Water Reserves System)

County Reviewing Agencies

- ☐ DPW: (delete those that don't apply)
  - Land Development Division (Grading & Drainage)
  - Geotechnical & Materials Engineering Division
  - Watershed Management Division (NPDES)
  - Traffic and Lighting Division
  - Environmental Programs Division
  - Waterworks Division
  - Sewer Maintenance Division
- ☐ Fire Department (delete those that don't apply)
  - Forestry, Environmental Division
  - Planning Division
  - Land Development Unit
  - Health Hazmat
- ☐ Sanitation District
- ☐ Public Health/Environmental Health Division: Land Use Program (OWTS), Drinking Water Program (Private Wells), Toxics Epidemiology Program (Noise)
- ☐ Sheriff Department
- ☐ Parks and Recreation
- ☐ Subdivision Committee
- ☐

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project.

- ☐ Aesthetics
- ☐ Agriculture/Forest
- ☐ Air Quality
- ☐ Biological Resources
- ☐ Cultural Resources
- ☐ Energy
- ☐ Geology/Soils
- ☐ Greenhouse Gas Emissions
- ☐ Hazards/Hazardous Materials
- ☐ Hydrology/Water Quality
- ☐ Land Use/Planning
- ☐ Mineral Resources
- ☐ Noise
- ☐ Population/Housing
- ☐ Public Services
- ☐ Recreation
- ☐ Transportation/Traffic
- ☐ Utilities/Services
- ☐ Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Department.)
On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature (Prepared by) Date

_____ _____

Signature (Approved by) Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources the Lead Department cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the Lead Department has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level. (Mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced.)

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA processes, an effect has been adequately analyzed in an earlier EIR or negative declaration. (State CEQA Guidelines § 15063(c)(3)(D).) In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of, and adequately analyzed in, an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

7) The explanation of each issue should identify: the significance threshold, if any, used to evaluate each question, and; mitigation measures identified, if any, to reduce the impact to less than significance. Sources of thresholds include the County General Plan, other County planning documents, and County ordinances. Some thresholds are unique to geographical locations.

8) Climate Change Impacts: When determining whether a project's impacts are significant, the analysis should consider, when relevant, the effects of future climate change on : 1) worsening hazardous conditions that pose risks to the project's inhabitants and structures (e.g., floods and wildfires), and 2) worsening the project's impacts on the environment (e.g., impacts on special status species and public health).

1. AESTHETICS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☐

General Discussion

The purpose of this question is to identify the scenic resources that exist on the project site and in the surrounding area and determine how the proposed project will impact those resources. If your project is directly adjacent to another jurisdiction, ensure it is not affecting any scenic resource in that jurisdiction. Potential impacts could result from obstructing views to or from the scenic resource, degrading the character of a scenic highway, or disrupting a scenic vista. The preparer should identify

- Designated scenic highways adjacent to or in proximity to the project site (State-designated highways are listed in the Stock Language Section below);
- Scenic highways, corridors, and resources designated by the County General Plan and the applicable Area/Community Plan or Local Coastal Program;
- Scenic highways or corridors designated by cities adjacent to or near the project site; and
- Significant ridgelines (major ridgelines on Santa Catalina Island).

If the proposed project is not sited near any designated scenic highways, significant ridgeline, or other identified scenic resources, then it is unlikely that the proposed project would result in any impacts related to having a substantial adverse effect on a scenic vista.

Resources

- GIS-NET Scenic Highways layer (in the "Transportation" folder) and Significant Ridgelines layer (in the "Administrative Layers & Districts" folder)
- State of California CalTrans Scenic Highway Mapping System (Updated 9/7/2011): http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

Potential Mitigation

- Mitigation may include reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors, use of earth tone colors and landscaping.
- Specific mitigation measures will be tailored to each proposed project.

b) Be visible from or obstruct views from a regional riding or hiking trail?	☐	☐	☐	☐

General Discussion

The purpose of this question is to determine how the proposed project would impact riding or hiking trails. Riding trails can include horseback riding, biking, hiking, etc. The preparer should identify:

- Designated or proposed trails traversing, adjacent to, or in proximity to, the project site; and
- Designated trails in cities adjacent to or near the project site.

Impacts would arise from the vacation of a portion of the trail, degrading the scenic character in and around the trail, as well as obstructing expansive views visible from the trial's course but not compromising the trail itself. If the proposed project is not sited near any designated riding or hiking trails, then it would not result in any impacts related to having a substantial adverse effect on these resources. Subdivision trail requirements are imposed through Subdivision Committee Meetings.

Resources

- GIS-NET Trails layer (in the "Transportation" folder) – make sure to cite the map source and year.

Potential Mitigation

- Reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will be tailored to each proposed project.

c) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? ☐ ☐ ☐ ☐

General Discussion

This question is concerned with how the proposed project would impact other scenic resources that are not identified in the first two questions, and specifically, impacts to trees, rock outcroppings, historic buildings, and undisturbed areas. For this question, the preparer should identify:

- Other scenic resources designated by the General Plan and applicable Community or Area plan, or Local Coastal Program in the vicinity of the project site;
- Undeveloped or undisturbed areas either on the project site or in the vicinity of the project site;
- Hillside management areas – impacts from grading, any alteration of topography (indicate the quantity);
- Nationally- or state-designated historic resources on, or in the vicinity of, the project site (the County does not currently have an historic preservation ordinance and thus does not designate any historic resources itself)

Development of on-site, greenfield conditions is likely to result in a significant impact given the previously undisturbed nature of the land. Similarly, previously undisturbed land in the vicinity of the project site may be impacted by the buildout of the proposed project if that land is used for construction staging or in some other phase of project buildout.

Resources

- List of Historic resources and points of interest designated by the State of California in unincorporated Los Angeles County - file://regionalfp1/E-DRIVE/Current%20Planning/Wiki/environmental_doc/Historic_sites.pdf
- California Office of Historic Preservation: http://ohp.parks.ca.gov/

- National Register of Historic Places: http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome
- State Register of Historic Places: http://ceres.ca.gov/geo_area/counties/Los_Angeles/landmarks.html

Potential Mitigation

- Reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will need to be tailored to each proposed project and with regard to their specific project site context.
- Compliance with the Hillside Management Ordinance to mitigate impacts in designated hillside management areas to a less than significant level.
- Regarding historic structures, because they are protected by law, mitigation may include complete project redesign or integration of the historic structure into the proposed project.

d) Substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features? ☐ ☐ ☐ ☐

General Discussion

This question wants to know how well the design of the proposed project would integrate with the visual character of its surroundings and the project's level of visual integration from the perspective of height, bulk, pattern, scale, character, or other features. If site photos are unavailable, perform a site visit and document the visual character of the project site and surroundings. Note that state and local laws do not protect views from private properties through the project site of some scenic resource. However, views of a scenic resource through the project site from public space (such as significant recreation or scenic areas such as the Santa Monica Mountains) or designated scenic highways are protected and should be noted. The preparer should take note of:

- The prevailing building heights (specifically, the height in feet and stories of the tallest structure in the vicinity of the project site), architectural styling, and setbacks;
- Hillside management areas – impacts from grading, any alteration of topography (indicate the quantity); and,
- Views of the project site from nearby vantage points.

It is unlikely that the architectural style employed by the proposed project will negatively impact the surrounding community given the wide variety of architectural styles found throughout southern California. However, the height/bulk of the proposed project could negatively impact the surrounding area. Ultimately, the final impact determination will have to do with how well the proposed project integrates with the surrounding neighborhood.

Resources

- Site photos, Site visits, and Project renderings

Potential Mitigation

- Mitigation may include project redesign, reduced structure height, re-siting of the proposed

project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will be tailored to each proposed project and with regard to their specific project site context.
- Though already required by law, the preparer should mention compliance with the Hillside Management Ordinance to be used to mitigate impacts in designated hillside management areas to a less than significant level.

e) Create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area? ☐ ☐ ☐ ☐

General Discussion

The preparer must determine whether or not the proposed project would be a new source of substantial shadows, light, or glare. A substantial amount of shadows is dependent upon a combination of factors including the height of the proposed project, the width of the street on which the proposed project is located, the proposed project's setbacks, and the project site's distance from nearby sensitive uses (residences, schools, parks, etc), and how long any shadows created by the proposed project are cast upon those sensitive uses. A land use survey of sensitive uses around the project site may be needed. If there are no sensitive uses nearby, there will be no shade/shadow impacts. For projects only achieving a couple of floors, it is unlikely that they will generate shadows of sufficient size to be cast upon nearby sensitive uses. However, with taller projects, it is far more likely that shadows will be cast upon nearby sensitive uses, and a shade/shadow modeling may be required. Note that Los Angeles County does not have any significance thresholds for determining potential impacts.

For light or glare, the preparer must take note of the project's surface materials, lighting program, and any signage component. Regarding glare, a project containing large expanses of windows and covered with lots of reflective surfaces could potentially result in a significant impact as light reflecting from the proposed structure may impede views in and around the project site. A project that contains a significant amount of light that is not shielded may significantly impact views in the project vicinity as the light pollution may hinder views of the night sky and other visual elements. However, the proposed project would be unlikely to result in a significant impact regardless of the amount of light generated because it would be required to comply with the County's Dark Skies Ordinance (once adopted). This ordinance would address such things as directing lighting toward the ground and shielding lights to prevent light pollution.

Resources

- Shade/shadow model (if needed)
- Check with Building & Safety
- Note: San Gabriel CSD 45 degree angle clauses related to glare and light

Potential Mitigation

- Since Los Angeles County does not have any adopted significance thresholds, the best way to mitigate any potentially significant shadow impacts would be to break up the shadow as much as possible, which may require that the applicant redesign the project such that the massing is broken up to create passages through which light may pass or that the applicant reorient the proposed structure such that the shadows generated are smaller.
- Potential mitigation for glare impacts may include requirements that all non-glass reflective

surfaces be sanded down to reduce the project's reflectivity and on all glass surfaces, that the developer apply a low reflective coating, use of tinted windows or even curtains;

- Potential mitigation for light generation includes compliance with Los Angeles County's Dark Skies Ordinance.

EVALUATION OF ENVIRONMENTAL IMPACTS:

Official State Scenic Highways are designated by the California Department of Transportation (CalTrans). According to CalTrans, "[t]he stated intent (Streets and Highway Code Section 260) of the California Scenic Highway Program is to protect and enhance California's natural beauty and to protect the social and economic values provided by the State's scenic resources" (State of California Department of Transportation, California Scenic Highway Program, website: http://www.dot.ca.gov/dist3/departments/mtce/scenic.htm, accessed October 6, 2011). While there are numerous designated Scenic Highways across the state, the following have been designated in Los Angeles County: Angeles Crest Highway (Route 2) from just north of Interstate 210 to the Los Angeles/San Bernardino County Line, two segments of Mulholland Highway from Pacific Coast Highway to Kanan Dume Road and from west of Cornell road to east of Las Virgenes Road, and Malibu Canyon-Las Virgenes Highway from Pacific Coast Highway to Lost Hills Road.

In addition to scenic highways, unincorporated Los Angeles County identifies ridgelines of significant aesthetic value that are to be preserved in their current state. This preservation is accomplished by limiting the type and amount of development near them. These "Significant Ridgelines" ("Major Ridgelines" on Santa Catalina Island) are designated by the General Plan or applicable Area/Community Plan, Local Coastal Program, or Community Standards District.

Riding and hiking trails have been designated throughout unincorporated Los Angeles County. At present, there are officially adopted trails in the Antelope Valley, the Santa Clarita Valley, and the Santa Monica Mountains designated by the General Plan or applicable Area/Community Plan and Local Coastal Program.

FOR projects in Hillside Management Areas:

The Hillside Management Ordinance (Los Angeles County Code Title 22, Section 22.56.215) is designed to protect designated hillsides from incompatible development. The County of Los Angeles designates two hillside management areas, one urban and one non-urban with both designations applying to properties that have hillsides with a 25 percent grade or greater. The ordinance protects these resources by requiring almost all development on properties with either the urban or non-urban designation to obtain a conditional use permit with the intent of preserving the remaining natural topography.

Briefly describe the proposed project, the environmental and/or regulatory setting related to all of the questions above, and your environmental determination.

APPENDIX C

PHOTOGRAPHIC LOG

APPENDIX C

PHOTOGRAPHIC LOG

Photo 1. Taken from northwest side of 120th Street W/West Avenue I intersection, looking southeast across the Project site.

Photo 2. Taken from the south side of West Avenue I, approximately 0.2 mile east of the Project site, looking west/southwest.

APPENDIX C

PHOTOGRAPHIC LOG

Photo 3. Taken from the northeast side of the West Avenue K/110th Street West intersection, looking west to northeast, approximately 1.6 miles south/southeast of the Project site.

Photo 4. View from the Foothills Area looking towards the Project site. Photo taken from the trail along the north side of the California Aqueduct, approximately 2.3 miles south of the Project site, looking west to east.

APPENDIX C

PHOTOGRAPHIC LOG

Photo 5. View from the top of the Valley Vista Trail, in the center of the California Poppy Reserve, 3.9 miles south/southeast of the Project site, looking northeast to southwest.

Photo 6. View from Quartz Hill in the direction of the Project (west to northeast), from approximately 8.0 miles southeast of the Project site.

APPENDIX D

CONTRAST RATING FORM

TETRA TECH EC, INC.

VISUAL CONTRAST RATING WORKSHEET
FOR KOPS ON NON-NFS/BLM LANDS

Section A: Project Information

Project Name	Key Observation Point	Latitude / Longitude	Notes
Silver Sun Greenworks (CUP Group 10A)	PP 10	34 42'19.45"N, 118 20'11.82"W	View southwest towards the project from 120th Street.

Section B: Characteristic Landscape Description

	LAND / WATER	VEGETATION	STRUCTURES
FORM	Foreground/Middleground (FG/MG): Flat, gently sloping; Wide band with irregular edges. Background (BG): Rugged, pyramidal	FG/MG: Small, rounded shrubs, low irregular patches (grasses) BG: Indistinguishable	FG/MG: Repeated tall, narrow, cylindrical (distribution poles); low, small, rectangular (road signs); Tall, geometric, complex, transparent (transmission towers); low, rectangular (buildings); curving band (road)
LINE	FG/MG: Straight horizontal, gentle diagonal; Strong, undulating, irregular lines created by ridge peaks BG: Irregular, jagged	FG/MG: Low, horizontal, broken abut edge (at road); Irregular, digitized edge between hills and plain BG: Indistinguishable	FG/MG: Tall, Straight, simple, vertical (distribution poles); Slightly curving horizontal (conductors); Rectangular (road signs); curvilinear (road); Angular (lattice transmission towers)
COLOR	FG/MG: Light tan, brown BG: White (snow caps); Appears faded and bluish due to atmospheric conditions	FG/MG: Dull-green (Shrubs), green, light tan (grasses) BG: Indistinguishable	FG/MG: Dark brown (distribution poles); Gray, white (road signs); Gray (road); Dull Gray (transmission towers) BG: Indistinguishable
TEXTURE	FG/MG: Fine gravelly, medium texture created by the hills BG: Medium	FG/MG: Stippled; fine BG: Fine	FG/MG: Indistinguishable BG: Indistinguishable

Section C: Proposed Activity Description

HAS PHOTO SIMULATION BEEN CREATED FOR KOP? ☒ Yes ☐ No IF YES, FIGURE NUMBER: 4

	LAND / WATER	VEGETATION	STRUCTURES
FORM	No change	FG/MG: Vegetation (shrubs) would be removed on south side of roadway.	FG/MG: Horizontal rectangular bands (solar modules); Short, vertical tubes (fence posts); Low, wide, cylindrical, solid
LINE	No change	FG/MG: Vegetation (shrubs) would be removed on south side of roadway, no line would be apparent.	FG/MG: Long, straight, horizontal. Short vertical. and short vertical; Rectangular
COLOR	No change	FG/MG: Vegetation (shrubs) would be removed, removing some of the dull-green colored vegetation	FG/MG: Light and dark gray, matted (solar panels); Silver and metallic (fence posts); white
TEXTURE	No change	FG/MG: Shrubs would be removed, removing stippled texture created by them	FG/MG: Fine, uniform, ordered

Section D: Contrast Rating

FEATURES

ELEMENTS	DEGREE OF CONTRAST	LAND/WATER				VEGETATION				STRUCTURES			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
	FORM				x			x			x		
	LINE				x			x			x		
	COLOR				x			x			x		
	TEXTURE				x			x			x		

OVERALL LEVEL OF CONTRAST: Moderate

Section E: Viewer Sensitivity

VIEWER EXPECTATIONS	DURATION OF VIEW	USE VOLUME	OVERALL SENSITIVITY
Typical desert view towards the mountains	Short	Low	Low

ADDITIONAL COMMENTS:
The low-profile of the solar panels does not block middleground views of the foothills, or background views of the San Gabriel or San Bernardino Mountains.

EVALUATORS NAMES: Tara Low/Lori Davidson

DATE: October 19, 2012

APPENDIX B-1.6

PROJECT 6 LANCASTER WAD
AESTHETIC IMPACTS REPORT

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

LANCASTER WAD (CUP GROUP 15)
AESTHETIC IMPACTS REPORT

Prepared for:

44 Montgomery Street, Suite 3065
San Francisco, CA 94104

Prepared by:

Tetra Tech EC, Inc.
17885 Von Karman Avenue, Site 500
Irvine, CA 92614-6213

August 2012

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1.0 INTRODUCTION

This Aesthetics Impact Report has been prepared for the proposed Lancaster WAD Solar Generation Facility Project (Project) to assess the potential visual impacts resulting from the construction and operation of the Project. The Project is proposed by Silverado Power, LLC, for a 39-acre site approximately 6 miles north of Lancaster, California. The Project is located in unincorporated northern Los Angeles County (Figure 1).

For the purposes of this visual assessment, “Project site” refers to the area within the delineated boundary for the Project components, and ”Project area” refers to those landscapes within 15 miles of the Project site.

2.0 PROJECT DESCRIPTION

The proposed Project would have a generating capacity of 5 megawatts alternating current and be located on 39 acres of fallow agricultural land (Figure 2). The Project site is located approximately 1.0 mile west of the intersection of the Antelope Valley Freeway (California State Route 14) and West Avenue D (California State Route 138) in northern Los Angeles County. The Project site is bounded by West Avenue D to the south and 35th Street West to the west.

The Project will employ a series of photovoltaic (PV) module arrays to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system. The PV convert sunlight into low-voltage direct current (DC) power, which is subsequently transformed into alternating current (AC) power through an inverter.

The Project will consist of construction and operation of a solar generation facility that will utilize PV technology on fixed-tilt or tracker mounting supports. The Project will be constructed in phases and operated for a period of 35 years, and will consist of the following elements:

- PV modules
- PV module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing.

It is anticipated that the Project will require a Conditional Use Permit from Los Angeles County for the construction and operation of this facility.

The following sections detail the visual characteristics of major project components.

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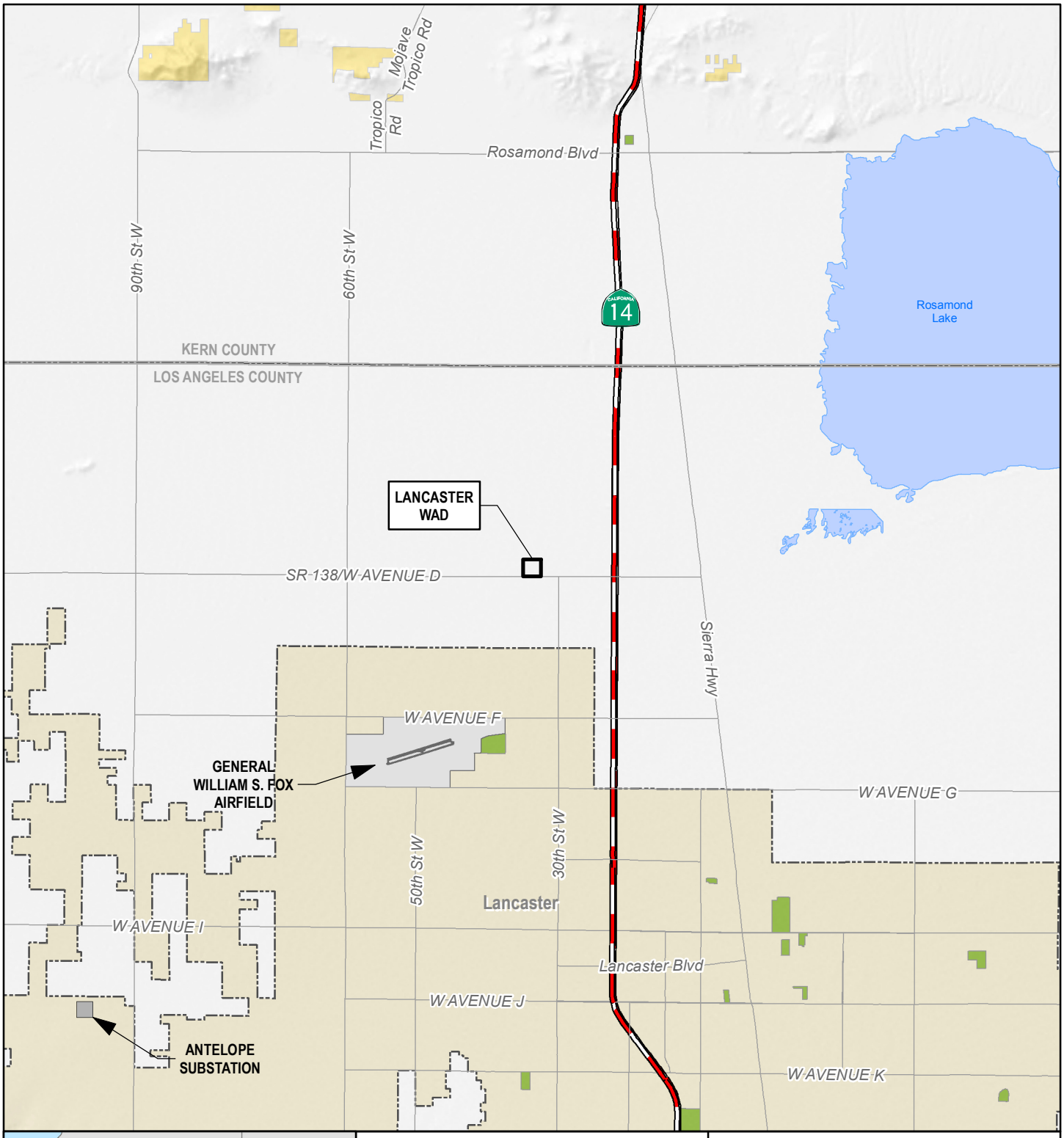

Legend

- CUP 15 Lancaster WAD
- City of Lancaster Boundary
- County Boundary

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - LANCASTER WAD

FIGURE 1
PROJECT LOCATION

0 1 2 4
Miles

TETRA TECH EC, INC.

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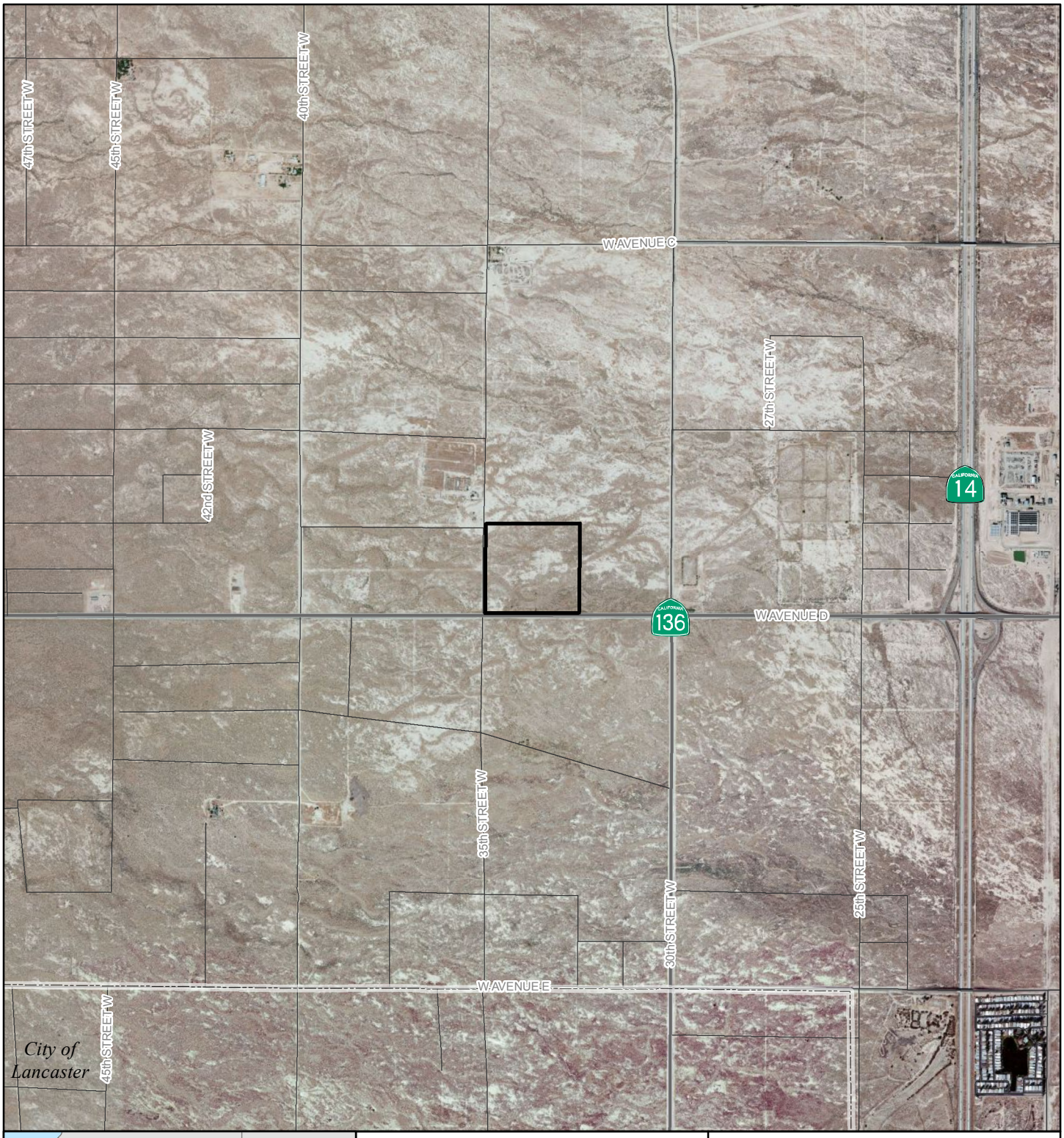

Legend

- CUP 15 Lancaster WAD
- City of Lancaster

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.

SILVERADO power

SILVERADO POWER - LANCASTER WAD

FIGURE 2
VICINITY AERIAL MAP

0 1,000 2,000 4,000
Feet

TETRA TECH EC, INC.

2.1 Photovoltaic Modules

The solar generation facility will require installation of PV modules. The total number of PV modules required will depend on the technology selected, optimization evaluation, and detailed design. The market conditions, economic considerations, and the environmental factors will be taken into account during the detail design process. The following PV module technologies or equivalent are being considered for incorporation into the Project:

- PV thin-film technology
- PV crystalline silicon technology
- Fixed-tilt configuration

The modules configured with a fixed tilt will be oriented toward the south and angled at a degree that will optimize solar resource efficiency. Modules will be non-reflective and highly absorptive.

The PV modules will be thin rectangular blocks, mounted in multiple rows aligned from east to west. The front of each module will appear in varying shades of dark blue and purple, depending on the angle of the sun and brightness of the sky. The backs of the modules will be colored either white or a very light gray. The modules will be mounted on light gray steel support structures. The modules will be arranged at a fixed angle (i.e., tilted) of 45 degrees towards the sun. Depending on the final design, the assembled PV modules will have a typical height of approximately 6.5 feet above the ground, based on the orientation of the racks.

A site plan is provided in Appendix A to show the arrangement and detailed dimensions of the PV arrays. The Project will consist of six PV array blocks, each measuring approximately 559 feet by 337 feet (covering approximately 4.3 acres each). Each block will contain rows of PV arrays and an inverter/electrical equipment pad, which will consist of equipment enclosed in a gray-colored box approximately 9-feet tall, and a small parking area.

During construction of each of the PV facilities, the proposed Project site will be cleared of vegetation, graded to remove localized mounds or valleys, and internal roads finished with a layer of aggregate to allow for various construction activities to take place. These activities will include trenching for installation of gathering lines, pouring of the support structure foundations, delivery of the PV panel components, and PV panel installation. Disturbance areas will appear as large patches of fine, buff-colored rock and soil. Construction activities may produce visible dust but impacts will be mitigated to less than significant with implementation of the fugitive dust plan.

2.2 Generation Tie-Line

The power generated by the Project will be connected to Southern California Edison's existing transmission network with the voltage transformation equipment and system safety equipment constructed on the site. Electricity will be delivered to the existing Southern California Edison 12.47 kV distribution line adjacent to the property. The 12.47 kV distribution line is adjacent to the southern border of the Project Site on the south side of West Avenue D. No new overhead transmission infrastructure is required.

2.3 Other Infrastructure Elements

A series of internal access roads and driveways will extend throughout the proposed Project site between the PV arrays and will be characterized by approximately 20-foot-wide bands of light tan and buff-colored aggregate. The proposed Project site will have one access point along West Avenue D.

The Project site perimeter will be enclosed by a galvanized chain link fence topped with a three-strand barbed wire section. The total height of the fence will be 8 feet. The light gray fence posts will be spaced at approximately 10-foot intervals. The 40-foot driveway from West Avenue D to the gate will be 24 feet wide. A 10,000 gallon fire water tank will be located at the gate. Portable toilets will be provided during construction, but no other sanitary facilities will be onsite.

Lighting at specific locations for nighttime security purposes will be fence or structure-mounted and will be directed downwards.

3.0 REGULATORY SETTING

3.1 CEQA Compliance

A Conditional Use Application was filed with Los Angeles County in June 2011 for construction and operation of the Project. Los Angeles County is responsible for implementing the requirements of the California Environmental Quality Act (CEQA) for projects proposed for unincorporated Los Angeles County, in accordance with the California Public Resources Code, Section 21000 et. seq. (CEQA). Appendix G of the 2012 State CEQA guidelines (Association of Environmental Professionals 2012) contains four questions relating to visual resources and aesthetics. These questions are as follows:

a) Would the project have a substantial adverse effect on a scenic vista?

b) Would the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

c) Would the proposed project substantially degrade the existing visual character or quality of the site and its surroundings?

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

In addition, the County of Los Angeles currently utilizes the Environmental Checklist Form (Initial Study) to provide thresholds of significance for potential impacts to resources including aesthetics (correspondence with Los Angeles County and Environmental Checklist Form provided in Appendix B). The following five questions relating to visual resources and aesthetics are provided;

a) Would the project have a substantial adverse effect on a scenic vista?

According to the Environmental Checklist Form, a scenic vista may include designated scenic highways, scenic highways or resources designated by local land use plans, scenic highways or corridors designated by cities adjacent to or near the project site, or significant ridgelines. If the proposed project is not sited near any designated scenic highways, significant ridgelines, or

other identified scenic resources, it is unlikely to result in impacts related to having as substantial adverse effect on a scenic vista.

b) Would the project be visible from or obstruct views from a regional riding or hiking trail?

Impacts may arise from the vacation of a portion of a trail, degradation of the scenic character in and around the trail, and obstruction of expansive views visible from the trail's course but not compromising the trail itself.

c) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

According to the Environmental Checklist Form, this question is concerned with not only trees, rock outcroppings, and historic buildings, but also undisturbed areas and hillside management areas. The question required identification of "undeveloped" or "undisturbed" areas either on the project site or in the vicinity of the project site. According to the form, development of on-site, greenfield conditions is likely to result in a significant impact given the previously undisturbed nature of the land.

d) Would the project substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?

This checklist question evaluates how well the design of the proposed project would integrate with the visual character of its surroundings and the project's level of visual integration from the perspective of height, bulk, pattern, scale, character, or other features. According to the checklist, the height/bulk of a proposed project could negatively impact the surrounding area. Ultimately, the final impact determination will have to do with how well the proposed project integrates with the surrounding neighborhood.

e) Would the project create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area?

Whether a project will produce a substantial amount of shadows is dependent upon a combination of factors including height of the project, width, setbacks, and the length of shadows cast upon potentially sensitive uses. Light or glare is dependent on a project's surface materials, lighting program, and signage. Projects involving large expanses of reflective surfaces may potentially result in a significant impact if reflected light (glare) may impede views in and around the project site. The checklist states that projects must comply with Los Angeles County's Dark Skies Ordinance, however at the time of this report, the Dark Skies Ordinance had not been officially adopted.

The County's checklist questions are largely based on the state checklist, with some questions on the County's checklist requiring additional detail. This Aesthetics Impacts Study therefore uses the County's checklist and associated guidance to determine if the Project will potentially

impact visual resources, and whether those impacts are less than significant, less than significant with mitigation, or significant.

3.2 Local Land Use Plans and Guidance

Development in the Project area is guided by county and local land use plans. Land use plans reviewed for relevant guidelines and policies include the Los Angeles County General Plan, the Antelope Valley Area Plan, and the City of Lancaster General Plan.

3.2.1 Los Angeles County General Plan

The Los Angeles County General Plan (Los Angeles County 1980) included the following policy relevant to visual resources:

- *General Goals and Policies, Goal 15:* Protect areas that have significant natural resources and scenic values, including significant ecological areas, the coastal zone, and prime agricultural lands.
- *Conservation and Open Space Goals and Policies, Policy 15:* Protect the visual quality of scenic areas including ridgelines and scenic views from public roads, trails, and key vantage points.

The Los Angeles County General Plan also identifies officially designated scenic highways, and divides proposed scenic highways into first- and second-priority proposed scenic highways. First priority routes recommended for further study include the Antelope Valley Freeway, located approximately 1 mile east of the Project site. There are no second-priority routes in the vicinity of the proposed Project site.

3.2.2 Antelope Valley Area Plan

The Project site is located within the boundaries of the planning area for the Antelope Valley Areawide General Plan (Los Angeles County, 1986). The areawide plan contains the following policy relevant to visual resources:

- *Policy 22:* Minimize environmental degradation by enforcing controls on sources of pollutants (including visual pollution) and noise.

Visual pollution is not defined by the general plan, but typically includes dust, smog, trash, or visual clutter.

3.2.3 Los Angeles County Hillside Management Ordinance

The Hillside Management Ordinance (Los Angeles County Code Title 22, Section 22.56.215) designates hillside management areas in urban and non-urban areas that have hillsides with a 25 percent grade or greater. The ordinance requires development on properties covered by the hillside management ordinance to obtain a conditional use permit with the intent of preserving remaining natural topography.

4.0 METHODOLOGY

4.1 Identification of Potential Scenic Areas

Potential scenic areas were identified prior to the field visit so they could be evaluated and photographed. Potential scenic areas were identified from review of maps, local land use plans, county land use plans, and relevant guidance as described in Section 3.0.

As detailed in Section 3.1, the Los Angeles County Environmental Checklist Form (Appendix B) identifies other aesthetic considerations and categories of scenic resources that must be addressed. The following categories of scenic resources are addressed in this report:

- Scenic highways
- Scenic highways or resources designated by local land use plans
- Scenic highways or corridors designated by cities adjacent to or near the Project site
- Significant Ridgelines
- Hillside Management Areas
- Riding and Hiking Trails
- Trees, Rock Outcroppings, and historic buildings within a state scenic highway
- Undisturbed land on the Project site or in the vicinity of the Project site

Guidance contained in question (a) in the Aesthetics Section of the Environmental Checklist requires consideration of scenic resources designated by local land use plans or by cities adjacent to or near the project site. The City of Lancaster's Master Environmental Assessment (MEA) (2009a) and the City of Lancaster's General Plan (2009b) were used to identify specific scenic resources in the area. Although the Project is located in unincorporated Los Angeles County outside municipal boundaries, it is inside the "Sphere of Influence" identified in the MEA. Scenic resources are defined by the MEA as "those unique visual features that provide attractive views either into or from the study area" (City of Lancaster 2009a). Five scenic areas were identified in the Sphere of Influence identified in the MEA, which included areas beyond the city of Lancaster's municipal boundaries: the Foothills Area, Little Buttes, Quartz Hill, Piute Ponds, and Little Rock Wash:

- The Foothills Area is the northern edge of the San Gabriel Mountains. The area between the Angeles National Forest and the Antelope Valley provides many trails for hiking and biking. Trails along the California Aqueduct provide access for hiking, biking, and fishing. These trails provide visitors with expansive views of the surrounding mountains and Antelope Valley. The MEA identifies a visual buffer area extending from the foothills area into the valley, but does not provide specific direction for management of the visual buffer area.

- Little Buttes is located approximately 7.5 miles west of the Antelope Valley Freeway, and 1.5 miles north of West Avenue D. Little Buttes is a butte (hill) rising from the flat desert landscape, and is crossed by a number of hiking trails that are not formally marked.

- Quartz Hill is a hill surrounded by residential development within the unincorporated community of Quartz Hill immediately south of the City of Lancaster. Quartz Hill rises over 200 feet above the surrounding community and is located approximately 2.7 miles west of the Antelope Valley Freeway along West Avenue M/Columbia Way.

- The Piute Ponds area is located on Edwards Air Force Base east of the Antelope Valley Freeway. Access is restricted, and special permission is required to enter the area. The Piute Ponds consist of several shallow amorphous ponds on the southern edge of Rosamond Dry Lake. These ponds form a series of interconnected impoundments that receive wastewater from the Lancaster Water Reclamation Plant as well as seasonal runoff from washes that cross the valley floor (University of California-Santa Barbara 2009). Recreational activities in the Piute Ponds area include hiking and wildlife watching.

- Little Rock Wash, located approximately 11 miles southeast of the proposed Project site and one of the larger washes in the Project area, is dry most of the year. According to the MEA (City of Lancaster 2009a), Little Rock Wash is the most significant natural desert wash within the study area in terms of plant diversity and biological value. Little Rock Wash is considered a Significant Ecological Area. Trails and proposed trails exist in the area of Little Rock Wash. The MEA identifies a visual buffer area surrounding the wash, but does not provide specific direction for management of the visual buffer area.

The MEA also mentions the scenic value of the Antelope Valley California Poppy Reserve, a state natural reserve, located west of the Sphere of Influence. The Poppy Reserve receives the majority of its visitors during the spring and early summer months when the poppy flowers that are common to the area are in bloom.

The MEA mentions the Joshua tree as the most well-known desert plant in the Antelope Valley, with desert and desert woodland plant communities being of significant local and regional value. The Lancaster General Plan identifies local views of the surrounding buttes, Quartz Hill, and long distance panoramas of the San Gabriel Mountains and desert expanses as visual/scenic resources.

The MEA also identifies several roadways that could potentially serve as scenic routes in the future, but currently have no formal designation. These include the following:

- Antelope Valley Freeway, for long-range views of the San Gabriel Mountains to the southwest, south, and southeast, and far-off views of the San Bernardino Mountains to the southeast and the Tehachapi Mountains to the northwest. To the north this route provides close-in views of open desert lands.
- Avenue K between 110th Street West and 90th Street West, for views of the San Gabriel Mountains to the south and of the Portal Ridge foothills to the southwest.
- Avenue M between the Antelope Valley Freeway and 60th Street West, for views of the San Gabriel Mountains to the south and Quartz Hill.
- 60th Street West between Avenues K and M, for views of Portal Ridge to the west and the San Gabriel foothills to the south.

- 90th Street West, for long-range views of the San Gabriel Mountains to the south and southwest, close-in views of the open desert in the northern portion of the valley and of the Tehachapi Mountains to the northwest.

4.2 Field Visit

To properly assess the existing visual character of the landscapes in the Project area, a two-day visit to the proposed Project site and the surrounding Project area was conducted on Tuesday January 24th and Wednesday January 25, 2012 by Tetra Tech visual resource specialist Tara Low. On Wednesday, January 25, 2012, photos were taken near the Project site between 9:00AM and 11:00AM. The weather was clear and sunny with only a few widely-scattered clouds.

A Nikon D90 digital single lens reflex camera (dSLR) equipped with a 35-millimeter (mm) lens was used to take the photographs. When used with a 1.5x cropped-sensor camera such as the D90, a 35-mm lens is considered a "52-mm equivalent lens." A 52-mm equivalent lens is considered a "normal lens" that closely approximates the field of vision of the human eye. In photos taken using the combination of the D90 and a 35-mm lens, the size and scale objects in the background and foreground are depicted realistically, and are not distorted.

The Nikon D90 dSLR was also equipped with a Global Positioning System (GPS) device manufactured by Promote Systems. This GPS device records the latitude, longitude, and elevation of each photograph as it is taken and embeds this information in the .jpg itself. This feature allows one to upload the Project area photos to a Google Earth .kmz, which displays both the photos themselves and the locations where each photo was taken on an interactive representation of the earth. Other relevant project information, such as Project boundaries, existing transmission infrastructure, and jurisdiction boundaries can be displayed simultaneously in the .kmz along with the photo locations.

Each location where photographs were taken is referred to as a "photo point" in this report. At each photo point, a panorama, or an overlapping series of photos, is captured. After the conclusion of the field visit, each of these panoramas was created using a program called PTGui. These panoramas were then added to a Google Earth .kmz file, where the locations of each panorama were displayed on an interactive representation of the earth. A map showing the locations of photo points visited during the field visit can be seen in Figure 3. Panoramic photos taken during the field visit relevant to the Project site and this analysis are provided in Appendix C.

Photo points were captured at the proposed Project site from locations along adjacent roads and intersections near the Project site (Figure 3). During this site visit, the following locations were visited and photographed:

- The proposed Project site, and other sites proposed for solar development in separate permitting processes
- Locations in representative landscapes in the Project area where the Project may be seen
- Potentially sensitive viewing areas where the Project may be seen, which can include residential areas, community facilities such as parks, open space areas, fairgrounds, or playgrounds, or highways or well-travelled roads

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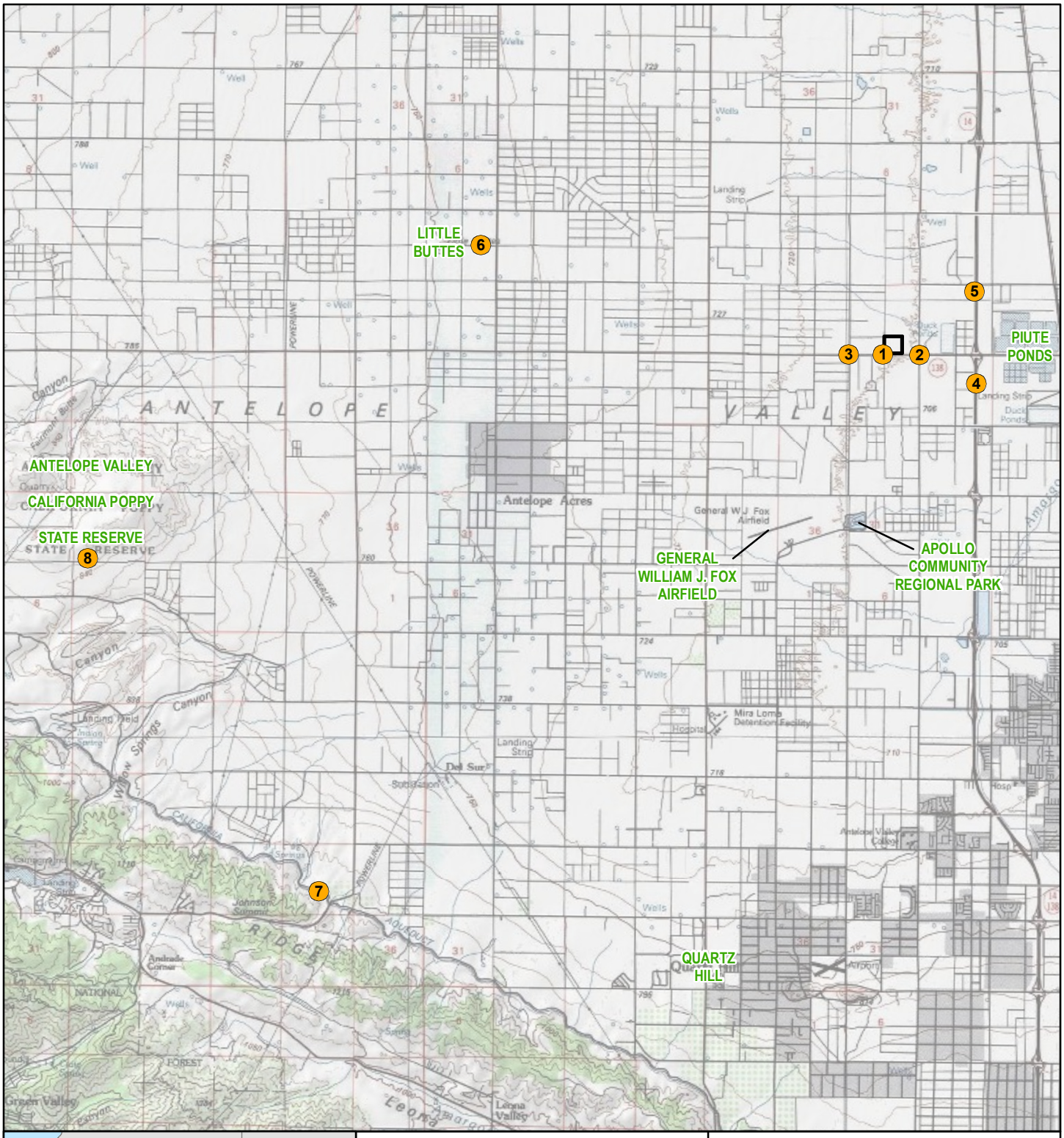

Legend

- CUP 15 Lancaster WAD
- Photo Locations

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Rosamond 7.5' Topographic DRG.

SILVERADO power

SILVERADO POWER - LANCASTER WAD

FIGURE 3
PHOTO LOCATION MAP

0 1 2 4
Miles

TETRA TECH EC, INC.

- Scenic areas identified in the City of Lancaster's Master Environmental Assessment, including the Poppy Reserve, Foothills Area, Little Buttes, and Quartz Hill.

Photos were not taken from Piute Ponds and Little Rock Wash, both located east of the Antelope Valley Freeway for the purpose of this visual assessment. The Piute Ponds area is located on Edwards Air Force Base approximately 4 miles east of the Project site, and special permission is required to enter the area. The Project site will not be visible from Piute Ponds due to distance and screening by terrain, infrastructure (including a waste water treatment plant, railroad, and the Antelope Valley Freeway) and vegetation. The visual resource specialist drove around the Little Rock Wash area, located approximately 13 miles southeast of the Project site, to observe the regional setting. The Project site is not visible from the Little Rock Wash area due to distance.

4.3 Photographic Simulations and Contrast Ratings

When assessing the potential visual impacts of the proposed Project, it is important to compare the visual characteristics of existing landscapes in the Project area with the visual characteristics of specific Project components that will be visible in those landscapes. The BLM's visual contrast rating process (*Handbook 8431-1 Visual Resource Contrast Rating*) was used as the basis for reviewing potential impacts to visual resources. Because the proposed Project is on private land and not subject to BLM regulations, a form adapted from the BLM's Visual Contrast Rating Worksheet (BLM Form 8400-4) was used to assess the degree of contrast the proposed project will introduce to the existing landscape.

The visual contrast rating worksheet uses landscape character elements and distance zones to describe the landforms (including water), vegetation, and man-made features (structures) that currently exist in the landscape using the basic landscape character elements of form, line, color, and texture:

- Form—The shape and mass of landforms or structures
- Line—The edge of shapes or masses, silhouettes, or bands
- Color—The property of reflecting light of a particular intensity of wavelength that the eye can see
- Texture—The nature of the surface of landforms, vegetation, or structures

When the visual resources in an area are described, the distance between objects or landforms and any potential viewer has a direct influence on that description. Objects or features that are closer to a viewer's location will appear more detailed and more dominant than those that are further away. The following distance zones are used in landscape descriptions:

- Foreground/Middleground—Areas immediately in front of to 5 miles away from an observer
- Background—Areas from 5 to 15 miles away from an observer
- Seldom Seen—Beyond background or can't see

Descriptions of the existing landscape and of the landscape after a proposed project is implemented are compared to identify the level of contrast a project's components may introduce. Photographic simulations are often created to help visualize the impacts to the existing landscape and to aid in the description of the proposed Project components. These simulations are created using a combination of Geographic Information Systems (GIS) and current 3D software to ensure accuracy in the locations of the proposed Project components.

5.0 AFFECTED ENVIRONMENT

5.1 Regional Landscapes

The proposed Project site is located in the west/central portion of the Antelope Valley, which is part of the Mojave Desert basin. The Antelope Valley is broad and relatively flat, with little variation in topography. The valley is shaped like a sideways letter "V," sloping northward toward the Tehachapi Mountains and southward toward the San Gabriel Mountains. The western portion of the valley slopes upward toward the point where these two mountain ranges come together at the junction of the San Andreas and the Garlock faults. In the Project area, these mountain ranges are characterized by many complex and well-eroded hills rising approximately 2,000 to 7,000 feet above the valley floor. Many small valleys and drainage complexes are visible in the foothills that border the valley.

Surface water is rarely observed in the Antelope Valley. There are many washes that meander across the valley; however, these streams are dry for the majority of the year and only fill with water during the spring snow melt originating from the nearby mountains and after major rain events. Concrete-lined aqueducts, which include the California Aqueduct and the Los Angeles Aqueduct, parallel the natural contours of the foothills of the San Gabriel and Tehachapi Mountains. Recreational trails line the California Aqueduct, which is located approximately 12 miles south of the Project site.

Desert woodland vegetation native to the Mojave Desert includes tall, irregular Joshua trees, and round juniper shrubs ranging from 4 to 10 feet tall (City of Lancaster 2009a). In most of the Project area, the native woodland vegetation has been cleared for agricultural use. Irrigated agricultural areas appear as square, rectangular, or circular green shapes on the brown-toned desert landscape. Root vegetables and fruit trees, as well as alfalfa, hay, and grapes are grown in the valley. In portions of the Project area where agriculture has yet to be developed or has been abandoned, a mixture of short grasses, wildflowers, and low desert scrub bushes are common. During the spring bloom, wildflowers cover the valley in brilliant displays of orange, yellow, and purple wildflowers (City of Lancaster 2009a). On the slopes of the foothills to the north and south, low woody vegetation is common, and includes scrub oak, sagebrush, creosote, and juniper bushes. During the spring and early summer, this vegetation appears in varying shades of dark and light green. During the fall and winter, patches of dark brown and grayish red hues are visible.

There are several well-developed cities in the Project area. Rosamond is located approximately 5 miles north of the Project site. Rosamond is a developed community that serves as the entrance to Edwards Air Force Base, and has a population of more than 10,000. Both Lancaster

and Palmdale, located approximately 6 and 14 miles south of the proposed Project site together have a population of more than 300,000.

Energy facilities and infrastructure are common in the western Antelope Valley. Several high-voltage transmission lines (constructed as both single pole structures and lattice structures) cross the area and converge at the Antelope Substation, approximately 8.5 miles southwest of the Project site. A large wind energy facility is situated at the foothills of the Tehachapi Mountains, approximately 17 miles north/northwest of the Project site. Solar energy facilities in the Antelope Valley include PV solar fields and the Sierra SunTower "power tower" facility, located adjacent to the Antelope Valley Freeway in Lancaster. Several other solar energy facilities are proposed in the valley.

Development proximate to the Project site is rural in nature. The closest residences are located northwest of the project site along 35th Street West. From aerial photographs it appears that three other residences are located within a mile of the Project site along 35th Street West, West Avenue D, and West Avenue D-8. The landscape surrounding these residences is typical of the Project area. In the absence of tall landforms and topographic features, visibility of the surrounding landscapes from these locations is limited by vegetation and distance. Photo 1 in Appendix C shows a view of the Project site from the southwest side of the West Avenue D and 35th Street West intersection, and most closely approximates the view of the Project area from the closest residences. Photo 2 shows the Project site from approximately a quarter-mile away from the southeast intersection of West Avenue D and 30th Street West. Photo 3 shows the Project area from the southeast side of West Avenue D/40th Street West (0.5 miles away).

There are several larger-scale facilities or developments within five miles of the Project site. The Lancaster Water Reclamation Plant, a large water treatment plant, and a railroad are located on the northeast side of California State Highway 14/West Avenue D interchange. A mobile home community is located adjacent to the northbound lanes of the Antelope Valley Freeway approximately 1.5 miles southeast of the Project site (on the opposite side of the highway). An airport (General William J. Fox Field) and a small park (Apollo Community Regional Park) are located approximately 2.3 miles south/southwest of the Project site. Clusters of rural "ranchette" style developments are located four to five miles west and northwest of the Project site, and developed areas associated with the city of Rosamond are located approximately five miles north of the site.

Additional cultural modifications to the landscape are prominent in the area immediately surrounding the proposed Project site. A communication tower is located north of the residences located on the west side of 35th Street West. A 12.47 kilovolt (kV) distribution line is adjacent to the southern border of the Project site on the south side of West Avenue D, and additional distribution lines are located along 35th Street West (leading to the residences northwest of the Project Site). The poles from this distribution line are visible in Photos 1 and 2 in Appendix C.

The Antelope Valley Freeway is a four-lane, divided highway that runs north/south approximately one mile east of the Project site. West Avenue D borders the Project site to the south, and is a two-lane blacktop road. Several large trucks (semis) were observed travelling on West Avenue D during the field visit.

5.2 Project Site Description

The Project site is located in the west/central portion of the Antelope Valley, and it is flat with very little variation in topography. Views of the landscape immediately around the Project site reveal a predominantly flat landscape, and very little topographic variation is visible. The foothills of the San Gabriel Mountains are visible in the distance to the far south of the site. The jagged ridgeline of the higher-elevation Tehachapi Mountains is prominent in views to the north/northwest from the proposed Project site. The mountain ridges to the north and south are characterized by a jagged, horizontal line of coarse hills and complex drainages.

Photos 1 through 5 in Appendix C show various views towards the Project site from local roads surrounding the area. The Project site was previously used for agricultural operations, and is now fallow. Two-track marks are visible from aerial photographs where vehicles have been used onsite. A small man-made irrigation ditch runs east/west through the center of the site. Desert playa features were identified throughout the project site, with cracked clay soils and evidence of pooling (dehydrated algal mats/cryptobiotic crusts/salt deposits). Man-made alterations to the landscape within the boundary of the Project site include the two-track marks on the Project site, the man-made irrigation ditch, and an old agricultural basin in the southern portion of the site.

Vegetation communities on the Project site consist of Desert Saltbush Scrub, Disturbed Desert Saltbush Scrub and Saltgrass Grassland, dominated by Desert Saltbush Scrub. Scattered tamarisks (*Tamarix ramosissima)* were present, but no Joshua trees were present onsite.

Desert Saltbush Scrub dominates the site, and is characterized by low, grayish shrubs 1-3 feet in height, dominated by saltbush (*Atriplex spp.)* and other shrub and succulent species. Cover is low with bare ground between widely spaced shrubs. Disturbed Desert Saltbush Scrub occurs in the southern area of the Project site, and is also characterized by low-growing, gray shrubs 1-3 feet in height dominated by saltbush species, and other shrub and succulent species.

Saltgrass Grassland occurs in moderately sized patches near areas that show recent evidence of pooling. Saltgrass Grassland is characterized by low, green to yellow grasses 1-2 feet in height, dominated by desert saltgrass (*Distichlis spicata)* with other grasses and annual species mixed in at lower abundances. Cover is high, with smaller patches of bare ground between the creeping grass patches.

5.3 Scenic Resources

Section 4.1 of this report identifies categories of scenic resources located within the Project area. The following sections identify which of those scenic resources may be potentially impacted by the proposed Project.

5.3.1 Scenic Vistas

Figure 3 shows the location of scenic resources in relation to the proposed Project site. The proposed Project will not likely be visible from any of the scenic resource locations identified by the City of Lancaster. The Antelope Valley is extremely flat, which limits the visibility of the project unless the viewer is located in a superior position (at an elevation higher from the object/location being viewed). Photos 6 through 8 in Appendix C show representative views of

the Antelope Valley from elevated locations in the Little Buttes area, Foothills Area, and California Poppy Reserve. These photographs demonstrate how visibility is limited by distance and the flat landscape from elevated viewpoints.

Even from a superior viewing position at Little Buttes, a viewer is not likely to be able to distinguish the Project site from a 6-mile distance. If the Project was discernible from that distance, it will not appear dissimilar to an agricultural field in shape, and will largely fade into the flat landscape. The Project will not be visible from Piute Ponds, which are approximately 3 miles east of the Project site. Piute Ponds is low-lying area, and the Project site will be obscured by the elevated railroad tracks, Antelope Valley Freeway, vegetation, and buildings associated with the water treatment plant.

Although not identified as a scenic area in the MEA, the Apollo Community Regional Park is located approximately 2.3 miles south/southwest of the Project site adjacent to the General William J. Fox Airport. The park contains a perimeter trail, picnic facilities, and duck ponds. The elevation of the park is slightly lower than that of the Project site, and the park is surrounded by planted trees, which limit views outside the park. The Project site will not be visible from the interior of the park.

5.3.2 Scenic Highways or Corridors

The Project site is located approximately 1 mile east of the intersection of West Avenue D with the Antelope Valley Freeway. Although the Antelope Valley Freeway is not officially designated as a scenic route, it is mentioned in the MEA as a potential scenic route for its long-range views of the surrounding mountains, and close-in views of open desert lands (City of Lancaster 2009a). Photos 4 and 5 in Appendix C, show views from the Antelope Valley Freeway, looking towards the Project site.

Travelers on the Antelope Valley Freeway and West Avenue D (California State Highway 138) represent the majority of potential viewers of the proposed Project. These travelers include local residents, tourists, recreational travelers, business travelers, and commercial drivers. The Project will be less noticeable on the Antelope Valley Freeway than it will be from West Avenue D, because the Project site is located 1 mile west of the freeway separated by an expanse of open desert. Each route provides motorists with expansive views of the Antelope Valley and surrounding mountains because there is little to no topographic enclosure in the valley to limit visibility.

5.3.3 Significant Ridgelines and Hillside Management Areas

No designated significant ridgelines are located within the Project area. The Project site is flat with a grade of less than 25 percent, and therefore the Hillside Management Ordinance does not apply to the Project site.

5.3.4 Riding and Hiking Trails

No riding or hiking trails were identified adjacent to the Project site. The nearest trails identified are associated with Piute Ponds, and the Project would not be visible from Piute Ponds. The Project is not likely to be discernible from hiking trails on Little Buttes, located approximately six miles north/northwest of the Project site.

5.3.5 Undisturbed Land

The proposed Project is located on land that is vacant, but not undisturbed. Disturbance is evident on the Project site as well as in lands surrounding the Project Site. The Project site and surrounding land is primarily unproductive agricultural land dominated by non-native vegetation species. Cultural modifications to the landscape surrounding the Project site include rural residences, agricultural fields, electrical distribution lines, roadways, communications towers, and a water treatment plant.

6.0 VISUAL IMPACT ANALYSIS

Using the CEQA checklist criteria provided in the County of Los Angeles' Environmental Checklist Form (presented in Section 3 of this report), the visual impacts from the proposed Project were assessed:

(a) Would the project have a substantial adverse effect on a scenic vista?

Recommended Rating: LESS THAN SIGNIFICANT IMPACT

According to the Los Angeles County Environmental Checklist Form, potential impacts could result from obstructing views to or from the scenic resource, degrading the character of a scenic highway, or disrupting a scenic vista.

Because of the low profile of the solar modules, the Project would not obstruct views to or from any scenic resources. The proposed Project would not likely be discernible from any of the scenic areas identified within the Project area. The scenic resources identified by the City of Lancaster (Piute Ponds, Little Rock Wash, Little Buttes, the Foothills Area, and Quartz Hill) are located a sufficient distance away such that the Project will fade into the horizon line. Even from a superior viewing position at Little Buttes, a viewer is not likely to be able to distinguish the Project site from 6 miles away. If the Project was visible from that distance, it will not appear dissimilar to an agricultural field in size, shape, and color.

The proposed Project components may be visible from the Antelope Valley Freeway, particularly from the southbound lanes north of the West Avenue D intersection, approximately 1 mile east of the Project site. The Antelope Valley Freeway is identified as a potential scenic route by the City of Lancaster's MEA (City of Lancaster 2009a) for its far-off views of surrounding mountain ranges, and close-in views of open desert lands. Because of its low profile, the Project will not obstruct far-off view of surrounding mountain ranges. Because the Project site is separated from the freeway by one mile of open desert lands, it also will not interrupt the close-in views of the desert.

Even where visible, the proposed Project components will not be a dominant element in views from the Antelope Valley Freeway, and from most locations along West Avenue D. As seen in

the visual simulation in Figure 4, from 0.25 mile away, the solar modules will form a thin line that mimics the natural horizontal lines of the flat landscape, and will not be a dominant landscape feature. Infrastructure associated with the water treatment plant is also visible from the highway, and is a larger and more noticeable feature than the proposed Project will be. Drivers will be moving at a high rate of speed, and mostly watching the road: Passengers will be more likely to notice the Project, but it will not be in view for longer than a few seconds because of the speed rates along the freeway. The same is true for West Avenue D. Although the Project will be prominent when the observer is adjacent to the solar field, drivers and passengers will be travelling at a high rate of speed and will be adjacent to the solar field for less than a minute.

(b) Would the project be visible from or obstruct views from a regional riding or hiking trail?

Recommended Rating: LESS THAN SIGNIFICANT IMPACT

According to the Los Angeles County Environmental Checklist Form, impacts would arise from the vacation of a portion of the trail, degrading the scenic character in or around the trail, or obstructing expansive views visible from the trail's course.

No trails are located on the Project site, therefore the Project would not cause the vacation of any portion of any trail. The Project would not obstruct expansive views from any trails, and is not anticipated to be discernible from regional riding or hiking trails in the area. Regional trails such as those associated with Piute Ponds or Little Buttes are either obscured by terrain, vegetation, or buildings, or are located a sufficient distance such that the Project site will not be distinguishable. From an approximately 6-mile distance at an elevated viewpoint, the proposed Project will not appear dissimilar to an agricultural field in shape.

(c) Will the project substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

Recommended Rating: NO IMPACT

According to the Los Angeles County Environmental Checklist Form, impacts may occur from development of undisturbed lands on-site or in the vicinity of the Project area. All development and staging would occur on the Project site or on already disturbed areas. As described in Section 5.3.5, the Project site is disturbed land and is surrounded by cultural modifications.

As described in Question (a), the Project will not damage scenic resources. The proposed Project is not located along or in proximity to a state scenic highway. The proposed Project will not substantially damage or impact scenic resources such as trees (including Joshua trees) or rock outcroppings, and there are no historic buildings located in the proposed Project site.

(d) Will the proposed project substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?

Recommended Rating: LESS THAN SIGNIFICANT

According to the Los Angeles County Environmental Checklist Form, the height/bulk of a proposed project could negatively impact the surrounding area depending on how well the design of the proposed project integrates with the visual character of its surroundings from the perspective of height, bulk, pattern, scale, character, or other features.

Simulation. From West Avenue D (Highway 138) and 30th Street West looking west at project.

Existing. From West Avenue D (Highway 138) and 30th Street West looking west at project.

Figure 4. Photo Simulation

The existing site is currently open land in a rural area, and is typical of the surrounding landscape on the west side of the Antelope Valley Freeway. The visual quality of the Project site is low. The Project site itself does not have unique or rare features, or hold special significance. The topography is uniform and flat. Vegetation is uniform and consists of desert scrub. No permanent water features occur on the site, and there are no features or characteristics that set the Project site apart from the surrounding of the desert landscape. Viewers such as nearby residents and travelers on local roads still experience views of the open desert lands around the Project site after the solar facility is constructed.

Even where visible, the proposed Project components will not be a dominant element in the landscape unless the viewer was directly adjacent to the facility. A contrast rating was conducted from the viewpoint shown in Figure 4 (approximately 0.25 mile east of the Project site) to assess the level of contrast that would be introduced by the proposed Project to landform, vegetation, or structures in terms of major landform characteristics (form, line, color, and texture). The height, bulk, pattern, scale and scale of proposed Project features are considerations in the contrast rating process. According to the contrast rating (provided in Appendix D), the Project can be expected to introduce a low level of contrast to the landscape from that viewpoint. No changes to landforms or vegetation will be apparent. The Project would introduce new structures to the area, but the solar panel structures would be low-profile and the lines created would mimic the naturally flat lines of the foreground landscape. The colors of the solar modules already exist in the landscape. From viewing points further than approximately 0.25 mile from the solar field, at approximately the same elevation, the solar facility will largely fade into the flat landscape and not dominate the view.

Even though the Project components are out-of-character with directly adjacent land (which is primarily rural residential and fallow agriculture), the Project is not out-of-character when considering the context of the surrounding landscape. Cultural modifications are common in the landscape around the Project site, and include an 800-acre water treatment plant, roadways, the Antelope Valley Freeway, communication towers, and rural residences. Wind turbines located at the foot of the Tehachapi Mountains are visible from the Project site as well. Viewers such as nearby residents and travelers on the Antelope Valley Freeway and West Avenue D will still experience views of the open desert lands around the Project site after the solar facility is constructed.

Because other cultural modifications to the landscape are common in the vicinity of the Project site and in the larger Project area, and because the Project site itself is not characterized by high visual quality, the visual impact of the Project on the existing visual character of the proposed Project site and its surroundings will be less than significant.

(e) Will the project create a new source of substantial light or glare which will adversely affect day or nighttime views in the area?

Recommended Rating: LESS THAN SIGNIFICANT

According to the County of Los Angeles' Environmental Checklist Form, impacts may occur if shadows are cast upon nearby sensitive uses, or if reflective light or glare impeded views in and around the Project site.

Because of the low profile of the solar modules, no significant shadows will be cast upon nearby sensitive land uses. Impacts from new sources of light or glare are expected to be less than significant. The Project will not create a significant source of light. Light sources associated with the Project will be minimal, and will be restricted to that required for nighttime safety and security according to county requirements. Lighting will be installed and directed downward and shielded to avoid light trespass. The amount of light generated by the security lights will be consistent with existing sources produced by man-made structures adjacent to the proposed Project site, including residences, roadway lights, and the water treatment facility.

Project components will introduce minimal amounts of glare to the existing landscape. The Project PV modules are designed to absorb sunlight, and the glass modules that protect the PV surface are typically formulated glass designed to allow sunlight to pass with minimal reflection.

7.0 CONCLUSIONS

Implementation of the proposed Project is expected to have a less than significant impact on scenic resources and aesthetic values.

The following mitigation measures that will minimize visual impacts are incorporated into the Project design:

Construction Phase:

- Implement a Fugitive Dust Control Plan to minimize dust (visual pollution).
- The Project site will be maintained free of debris, trash, and waste during construction.

Operations Phase:

- The proposed structures onsite will be neutral colors (grays) and non-reflective.
- A landscape plan will be developed prior to Project construction that shows detail of any proposed earthwork or vegetation intended to screen the Project visually from area residents or travelers on nearby roadways.
- Lighting will be pointed downwards to minimize light trespass, and mounted on essential infrastructure rather than on separate light poles

8.0 REFERENCES

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Los Angeles County, 1986. *Antelope Valley Areawide General Plan.* Available online at: http://planning.lacounty.gov/assets/upl/data/tnc_avap.pdf. (Accessed February 22, 2012).

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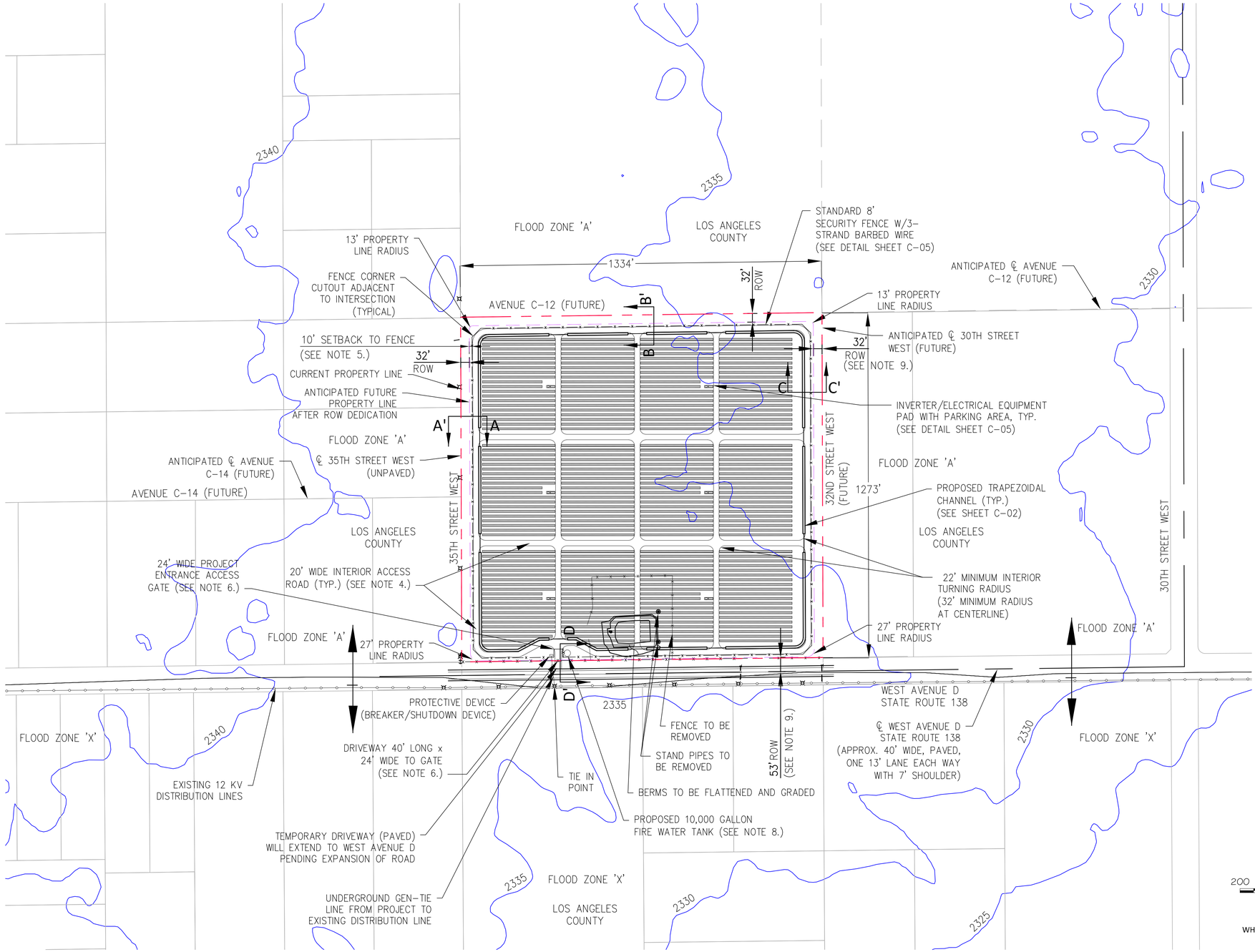
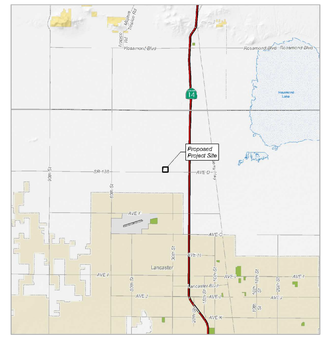
APPENDIX A

SITE PLAN





VICINITY MAP

NO SCALE

PROJECT SITE:

PROJECT SITE IS 39 ACRES (NET)

NOTES:

1. "ZONE X" AS SHOWN ON PANEL 0150F OF FLOOD INSURANCE RATE MAP NO. 06037C0175F. ZONE "X" DESIGNATED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN. ZONE "A" DESIGNATED AS, "NO BASE FLOOD ELEVATIONS DETERMINED".

2. FIRE DEPARTMENT ACCESS DEVICE AND EMERGENCY CONTACT PLACARD LOCATED AT ALL ENTRANCE GATES.

3. PORTABLE TOILETS WILL BE PROVIDED DURING CONSTRUCTION AND MAINTENANCE ACTIVITIES. NO OTHER SANITARY FACILITIES WILL BE ON SITE.

4. INTERIOR ACCESS ROADS WILL BE 20' WIDE, COMPACTED TO 90%, WITH 22 FOOT TURNING RADIUS AT INNER EDGE.

5. FENCELINE IS SET BACK 10 FEET FROM PROPERTY LINE AFTER DEDICATION. THIS AREA WILL INCLUDE THE 10 FOOT WIDE EASEMENT AROUND PERIMETER FOR DRAINAGE.

6. DRIVEWAY ACCESS GATES TO BE SET 40 FEET BACK FROM EDGE OF PROPERTY. DRIVEWAY WILL BE 24 FEET WIDE.

7. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION DURING DETAILED DESIGN.

8. TANK CONNECTIONS PER LOS ANGELES COUNTY FIRE DEPARTMENT.

9. ANTICIPATED ROW SETBACK/DEDICATION FOR FUTURE ROAD DEVELOPMENT. REFER TO SHEET C-06 FOR SECTIONS AND ROW DETAILS.

10. CONTOURS SHOWN ON SITE PLAN, C-01, ARE BASED ON USGS MAP CONTOURS.

LEGEND:

MIN	MINIMUM
ROW	RIGHT OF WAY
℄	CENTERLINE
	POWER POLE
x x	FENCE LINE
	OVERHEAD LINE
	PROPERTY LINE (AFTER DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
	CONTOUR LINE (5' INTERVAL FROM USGS)

R2011-00805 (RCUP2011-00074) C-01

P:\1436-SILVERADO POWER SOLAR CUP\CAD\SITE PLANS\15\COUNTY SUBMITTAL-B_12-0208\C-SP_CUP_15.DWG
PLOT/UPDATE: Feb 9, 2012 10:15:56 AM

REGISTERED PROFESSIONAL ENGINEER JULIE ANN DELANEY No.C54558 CIVIL STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH EC, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
B	02/09/12	REVISIONS FOR COUNTY	JD	SP
A	05/18/11	INITIAL SUBMITTAL	TWC	SP

Solar PV System Summary

5MW AC Solar Photovoltaic Generation System (15)

APN:
3115-010-004

Project Name:
Lancaster WAD

Project Address:
W Ave. D & 35th St. W
Lancaster,
Los Angeles County, CA

DRAWING: SITE PLAN

APPLICANT:
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104
(415) 692-7740

SILVERADO power

LANCASTER
WAD
LOS ANGELES COUNTY, CA

APPENDIX B

CORRESPONDENCE AND LOS ANGELES COUNTY ENVIRONMENTAL CHECKLIST FORM

From: Szalay, Kim <kszalay@planning.lacounty.gov>
Sent: Thursday, May 17, 2012 4:38 PM
To: DiSano, Michael
Cc: Low, Tara; Blengini, Carolina; Dea, Samuel
Subject: Silverado: I.S. and Aesthetics, etc.
Attachments: Initial_study_wguidelines 4-18-12.docx

Good Afternoon Mike,

Before I respond to your question below, please note that your opening paragraphs on Regulatory Setting section 3.1.3 are not up to date with revised County procedures. Let me clarify that first.

1) With regard to thresholds of significance, generally they are derived from the County of Los Angeles Department of Regional Planning's Initial Study Checklist, which is based on Appendix G of the CEQA Guidelines with County-specific additional items. Please use the attached updated County version.

2) The 2005 County CEQA Guidelines cited are currently in process of revision. Please use attached I.S. and the most recent version (January, 2012) of the State CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387) also available from http://ceres.ca.gov/ceqa/docs/CEQA_Handbook_2012_wo_covers.pdf). It will not be necessary at this time to cite the 2005 County CEQA Guidelines document.

3) We will have to discuss further where to include discussion of relevant Lancaster "Sphere of Influence" information included in Section 3.1.3 City of Lancaster General Plan and Master Environmental Assessment. We do not normally include other non-binding jurisdictional material in the regulatory setting section for Projects solely within County jurisdiction.

With regard to your question below, does the visual analysis you provided include the expanded analysis, or, are you asking if the attached requires an expanded analysis?

Whatever the case may be, please make the necessary changes regarding use of the above-mentioned County and State documents. We will also need to discuss how and where the Lancaster "Sphere of Influence" discussion is to be framed and located within the document.

Kim

Mr. Kim Szalay, AICP
Principal Planner
Special Projects Section
Department of Regional Planning
320 W. Temple Street
Los Angeles, CA 90012
http://planning.lacounty.gov
213-974-4876

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From: DiSano, Michael [mailto:Michael.DiSano@tetratech.com]
Sent: Wednesday, May 16, 2012 4:58 PM
To: Blengini, Carolina
Cc: Szalay, Kim; Low, Tara
Subject: Aesthetics

Carolina,

I was wondering if you think we should expand our technical study in regards to Aesthetics? Attached is the finalized visual document for your reference. I don't think it would be necessary to do a contrast rating but I want to defer to you as the Lead Agency to make that determination.

Regards,

Michael Di Sano | **Assistant Project Manager**
Direct: 949.809.5034 | Main: 949.806.5000 | Fax: 949.809.5004
Michael.DiSano@tetratech.com

Tetra Tech
17885 Von Karman Ave | Irvine, CA 92614-5227 | www.tetratech.com

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Think Green - Not every email needs to be printed.

Environmental Checklist Form (Initial Study)

County of Los Angeles, Department of Regional Planning

Project title: "Project Name" (if applicable) / Project No. / Case No(s). (All entered text should be Garamond font, size 11 or 12, underlined, single-spaced, and align-justified)

Lead agency name and address: _____

Contact Person and phone number: _____

Project sponsor's name and address: _____

Project location: (Address)
APN: _____ *USGS Quad*: _____

Gross Acreage: _____

General plan designation: _____

Community/Area wide Plan designation: _____

Zoning: (In addition to the zoning designation, indicate which Community Standards District the property is located within, if applicable.)

Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation.)

Surrounding land uses and setting: (Briefly describe the project's surroundings.)

Other public agencies whose approval may be required (e.g., permits, financing approval, or participation agreement):

Public Agency	*Approval Required*
_____	_____
_____	_____

Major projects in the area:

Project/Case No.	*Description and Status*
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Reviewing Agencies: [*See* **CEQA Appendix B** *to help determine which agencies should review your project***]**

Responsible Agencies

- ☐ None
- Regional Water Quality Control Board:
  - ☐ Los Angeles Region
  - ☐ Lahontan Region
- ☐ Coastal Commission
- ☐ Army Corps of Engineers

Special Reviewing Agencies

- ☐ None
- ☐ Santa Monica Mountains Conservancy
- ☐ National Parks
- ☐ National Forest
- ☐ Edwards Air Force Base
- ☐ Resource Conservation District of Santa Monica Mountains Area
- ☐

Regional Significance

- ☐ None
- ☐ SCAG Criteria
- ☐ Air Quality
- ☐ Water Resources
- ☐ Santa Monica Mtns. Area
- ☐

Trustee Agencies

- ☐ None
- ☐ State Dept. of Fish and Game
- ☐ State Dept. of Parks and Recreation
- ☐ State Lands Commission
- ☐ University of California (Natural Land and Water Reserves System)

County Reviewing Agencies

- ☐ DPW:
  (delete those that don't apply)
  - Land Development Division (Grading & Drainage)
  - Geotechnical & Materials Engineering Division
  - Watershed Management Division (NPDES)
  - Traffic and Lighting Division
  - Environmental Programs Division
  - Waterworks Division
  - Sewer Maintenance Division
- ☐ Fire Department
  (delete those that don't apply)
  - Forestry, Environmental Division
  - Planning Division
  - Land Development Unit
  - Health Hazmat
- ☐ Sanitation District
- ☐ Public Health/Environmental Health Division: Land Use Program (OWTS), Drinking Water Program (Private Wells), Toxics Epidemiology Program (Noise)
- ☐ Sheriff Department
- ☐ Parks and Recreation
- ☐ Subdivision Committee
- ☐

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project.

☐ Aesthetics	☐ Greenhouse Gas Emissions	☐ Population/Housing
☐ Agriculture/Forest	☐ Hazards/Hazardous Materials	☐ Public Services
☐ Air Quality	☐ Hydrology/Water Quality	☐ Recreation
☐ Biological Resources	☐ Land Use/Planning	☐ Transportation/Traffic
☐ Cultural Resources	☐ Mineral Resources	☐ Utilities/Services
☐ Energy	☐ Noise	☐ Mandatory Findings of Significance
☐ Geology/Soils		

DETERMINATION: (To be completed by the Lead Department.)
On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature (Prepared by) Date

_____ _____

Signature (Approved by) Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources the Lead Department cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the Lead Department has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level. (Mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced.)

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA processes, an effect has been adequately analyzed in an earlier EIR or negative declaration. (State CEQA Guidelines § 15063(c)(3)(D).) In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of, and adequately analyzed in, an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

7) The explanation of each issue should identify: the significance threshold, if any, used to evaluate each question, and; mitigation measures identified, if any, to reduce the impact to less than significance. Sources of thresholds include the County General Plan, other County planning documents, and County ordinances. Some thresholds are unique to geographical locations.

8) Climate Change Impacts: When determining whether a project's impacts are significant, the analysis should consider, when relevant, the effects of future climate change on : 1) worsening hazardous conditions that pose risks to the project's inhabitants and structures (e.g., floods and wildfires), and 2)

worsening the project's impacts on the environment (e.g., impacts on special status species and public health).

1. AESTHETICS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☐

General Discussion

The purpose of this question is to identify the scenic resources that exist on the project site and in the surrounding area and determine how the proposed project will impact those resources. If your project is directly adjacent to another jurisdiction, ensure it is not affecting any scenic resource in that jurisdiction. Potential impacts could result from obstructing views to or from the scenic resource, degrading the character of a scenic highway, or disrupting a scenic vista. The preparer should identify

- Designated scenic highways adjacent to or in proximity to the project site (State-designated highways are listed in the Stock Language Section below);
- Scenic highways, corridors, and resources designated by the County General Plan and the applicable Area/Community Plan or Local Coastal Program;
- Scenic highways or corridors designated by cities adjacent to or near the project site; and
- Significant ridgelines (major ridgelines on Santa Catalina Island).

If the proposed project is not sited near any designated scenic highways, significant ridgeline, or other identified scenic resources, then it is unlikely that the proposed project would result in any impacts related to having a substantial adverse effect on a scenic vista.

Resources

- GIS-NET Scenic Highways layer (in the "Transportation" folder) and Significant Ridgelines layer (in the "Administrative Layers & Districts" folder)
- State of California CalTrans Scenic Highway Mapping System (Updated 9/7/2011): http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

Potential Mitigation

- Mitigation may include reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors, use of earth tone colors and landscaping.
- Specific mitigation measures will be tailored to each proposed project.

b) Be visible from or obstruct views from a regional riding or hiking trail?	☐	☐	☐	☐

General Discussion

The purpose of this question is to determine how the proposed project would impact riding or hiking trails. Riding trails can include horseback riding, biking, hiking, etc. The preparer should identify:

- Designated or proposed trails traversing, adjacent to, or in proximity to, the project site; and
- Designated trails in cities adjacent to or near the project site.

Impacts would arise from the vacation of a portion of the trail, degrading the scenic character in and around the trail, as well as obstructing expansive views visible from the trial's course but not compromising the trail itself. If the proposed project is not sited near any designated riding or hiking trails, then it would not result in any impacts related to having a substantial adverse effect on these resources. Subdivision trail requirements are imposed through Subdivision Committee Meetings.

Resources

- GIS-NET Trails layer (in the "Transportation" folder) – make sure to cite the map source and year.

Potential Mitigation

- Reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will be tailored to each proposed project.

c) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? ☐ ☐ ☐ ☐

General Discussion

This question is concerned with how the proposed project would impact other scenic resources that are not identified in the first two questions, and specifically, impacts to trees, rock outcroppings, historic buildings, and undisturbed areas. For this question, the preparer should identify:

- Other scenic resources designated by the General Plan and applicable Community or Area plan, or Local Coastal Program in the vicinity of the project site;
- Undeveloped or undisturbed areas either on the project site or in the vicinity of the project site;
- Hillside management areas – impacts from grading, any alteration of topography (indicate the quantity);
- Nationally- or state-designated historic resources on, or in the vicinity of, the project site (the County does not currently have an historic preservation ordinance and thus does not designate any historic resources itself)

Development of on-site, greenfield conditions is likely to result in a significant impact given the previously undisturbed nature of the land. Similarly, previously undisturbed land in the vicinity of the project site may be impacted by the buildout of the proposed project if that land is used for construction staging or in some other phase of project buildout.

Resources

- List of Historic resources and points of interest designated by the State of California in unincorporated Los Angeles County - file://regionalfp1/E-DRIVE/Current%20Planning/Wiki/environmental_doc/Historic_sites.pdf
- California Office of Historic Preservation: http://ohp.parks.ca.gov/
- National Register of Historic Places: http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome
- State Register of Historic Places: http://ceres.ca.gov/geo_area/counties/Los_Angeles/landmarks.html

Potential Mitigation

- Reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will need to be tailored to each proposed project and with regard to their specific project site context.
- Compliance with the Hillside Management Ordinance to mitigate impacts in designated hillside management areas to a less than significant level.
- Regarding historic structures, because they are protected by law, mitigation may include complete project redesign or integration of the historic structure into the proposed project.

d) Substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features? ☐ ☐ ☐ ☐

General Discussion

This question wants to know how well the design of the proposed project would integrate with the visual character of its surroundings and the project's level of visual integration from the perspective of height, bulk, pattern, scale, character, or other features. If site photos are unavailable, perform a site visit and document the visual character of the project site and surroundings. Note that state and local laws do not protect views from private properties through the project site of some scenic resource. However, views of a scenic resource through the project site from public space (such as significant recreation or scenic areas such as the Santa Monica Mountains) or designated scenic highways are protected and should be noted. The preparer should take note of:

- The prevailing building heights (specifically, the height in feet and stories of the tallest structure in the vicinity of the project site), architectural styling, and setbacks;
- Hillside management areas – impacts from grading, any alteration of topography (indicate the quantity); and,
- Views of the project site from nearby vantage points.

It is unlikely that the architectural style employed by the proposed project will negatively impact the surrounding community given the wide variety of architectural styles found throughout southern California. However, the height/bulk of the proposed project could negatively impact the surrounding area. Ultimately, the final impact determination will have to do with how well the proposed project integrates with the surrounding neighborhood.

Resources

- Site photos, Site visits, and Project renderings

Potential Mitigation

- Mitigation may include project redesign, reduced structure height, re-siting of the proposed project, or breaking up the development into pieces to create view corridors.
- Specific mitigation measures will be tailored to each proposed project and with regard to their specific project site context.
- Though already required by law, the preparer should mention compliance with the Hillside Management Ordinance to be used to mitigate impacts in designated hillside management areas to a

less than significant level.

e) Create a new source of substantial shadows, light, or glare which would adversely affect day or nighttime views in the area? ☐ ☐ ☐ ☐

General Discussion

The preparer must determine whether or not the proposed project would be a new source of substantial shadows, light, or glare. A substantial amount of shadows is dependent upon a combination of factors including the height of the proposed project, the width of the street on which the proposed project is located, the proposed project's setbacks, and the project site's distance from nearby sensitive uses (residences, schools, parks, etc), and how long any shadows created by the proposed project are cast upon those sensitive uses. A land use survey of sensitive uses around the project site may be needed. If there are no sensitive uses nearby, there will be no shade/shadow impacts. For projects only achieving a couple of floors, it is unlikely that they will generate shadows of sufficient size to be cast upon nearby sensitive uses. However, with taller projects, it is far more likely that shadows will be cast upon nearby sensitive uses, and a shade/shadow modeling may be required. Note that Los Angeles County does not have any significance thresholds for determining potential impacts.

For light or glare, the preparer must take note of the project's surface materials, lighting program, and any signage component. Regarding glare, a project containing large expanses of windows and covered with lots of reflective surfaces could potentially result in a significant impact as light reflecting from the proposed structure may impede views in and around the project site. A project that contains a significant amount of light that is not shielded may significantly impact views in the project vicinity as the light pollution may hinder views of the night sky and other visual elements. However, the proposed project would be unlikely to result in a significant impact regardless of the amount of light generated because it would be required to comply with the County's Dark Skies Ordinance (once adopted). This ordinance would address such things as directing lighting toward the ground and shielding lights to prevent light pollution.

Resources

- Shade/shadow model (if needed)
- Check with Building & Safety
- Note: San Gabriel CSD 45 degree angle clauses related to glare and light

Potential Mitigation

- Since Los Angeles County does not have any adopted significance thresholds, the best way to mitigate any potentially significant shadow impacts would be to break up the shadow as much as possible, which may require that the applicant redesign the project such that the massing is broken up to create passages through which light may pass or that the applicant reorient the proposed structure such that the shadows generated are smaller.
- Potential mitigation for glare impacts may include requirements that all non-glass reflective surfaces be sanded down to reduce the project's reflectivity and on all glass surfaces, that the developer apply a low reflective coating, use of tinted windows or even curtains;
- Potential mitigation for light generation includes compliance with Los Angeles County's Dark Skies Ordinance.

EVALUATION OF ENVIRONMENTAL IMPACTS:

Official State Scenic Highways are designated by the California Department of Transportation (CalTrans). According to CalTrans, "[t]he stated intent (Streets and Highway Code Section 260) of the California Scenic Highway Program is to protect and enhance California's natural beauty and to protect the social and economic values provided by the State's scenic resources" (State of California Department of Transportation, California Scenic Highway Program, website: http://www.dot.ca.gov/dist3/departments/mtce/scenic.htm, accessed October 6, 2011). While there are numerous designated Scenic Highways across the state, the following have been designated in Los Angeles County: Angeles Crest Highway (Route 2) from just north of Interstate 210 to the Los Angeles/San Bernardino County Line, two segments of Mulholland Highway from Pacific Coast Highway to Kanan Dume Road and from west of Cornell road to east of Las Virgenes Road, and Malibu Canyon-Las Virgenes Highway from Pacific Coast Highway to Lost Hills Road.

In addition to scenic highways, unincorporated Los Angeles County identifies ridgelines of significant aesthetic value that are to be preserved in their current state. This preservation is accomplished by limiting the type and amount of development near them. These "Significant Ridgelines" ("Major Ridgelines" on Santa Catalina Island) are designated by the General Plan or applicable Area/Community Plan, Local Coastal Program, or Community Standards District.

Riding and hiking trails have been designated throughout unincorporated Los Angeles County. At present, there are officially adopted trails in the Antelope Valley, the Santa Clarita Valley, and the Santa Monica Mountains designated by the General Plan or applicable Area/Community Plan and Local Coastal Program.

FOR projects in Hillside Management Areas:

The Hillside Management Ordinance (Los Angeles County Code Title 22, Section 22.56.215) is designed to protect designated hillsides from incompatible development. The County of Los Angeles designates two hillside management areas, one urban and one non-urban with both designations applying to properties that have hillsides with a 25 percent grade or greater. The ordinance protects these resources by requiring almost all development on properties with either the urban or non-urban designation to obtain a conditional use permit with the intent of preserving the remaining natural topography.

Briefly describe the proposed project, the environmental and/or regulatory setting related to all of the questions above, and your environmental determination.

APPENDIX C

PROJECT AREA PHOTOGRAPHS

APPENDIX C

PROJECT AREA PHOTOGRAPHS

Photo 1. View of the Project area from the southwest side of the West Avenue D and 35th Street West intersection, and most closely approximates the view of the Project area from the closest residences.

Photo 2. View of the Project site from approximately a quarter-mile away from the southeast intersection of West Avenue D and 30th Street West.

APPENDIX C

PROJECT AREA PHOTOGRAPHS

Photo 3. View of the Project area from the southeast side of West Avenue D/40th Street West (0.5 miles away).

Photo 4. View from the Antelope Valley Freeway, looking towards the Project site.

APPENDIX C

PROJECT AREA PHOTOGRAPHS

Photo 5. View from the Antelope Valley Freeway, looking towards the Project site.

Photo 6. Representative view of the Antelope Valley from the Little Buttes area, Foothills Area, and California Poppy Reserve.

APPENDIX C

PROJECT AREA PHOTOGRAPHS

Photo 7. Representative view of the Antelope Valley from the Little Buttes area, Foothills Area, and California Poppy Reserve.

Photo 8. Representative view of the Antelope Valley from the Little Buttes area, Foothills Area, and California Poppy Reserve.

APPENDIX D

CONTRAST RATING FORM

TETRA TECH EC, INC.

Visual Contrast Rating Worksheet
For KOPs on Non-NFS/BLM Lands

Section A: Project Information

Project Name	Key Observation Point	Latitude / Longitude	Notes
Lancaster WAD (CUP Group 15)	PP 38	34 46'36.05"N, 118 11'4.50"W	View northwest towards the project from 30th Street, south of Avenue D.

Section B: Characteristic Landscape Description

	Land / Water	Vegetation	Structures
Form	Foreground/Middleground (FG/MG): Horizontal, flat, level Background (BG): Gently sloping (bajada) leading to Irregular, rugged (mountains)	FG/MG: Low, rounded (shrubs); Low, irregular patches (grasses); High, rounded, irregular (trees) BG: Amorphous patches	FG/MG: Long, narrow strip (road); Tall, simple (distribution poles/radio tower); Low, geometric (road signs and poles); Low, geometric (buildings) BG: Tall, simple (wind turbines)
Line	FG/MG: Horizontal, straight BG: Irregular, horizontal, diagonal, convex	FG/MG: Parallel, straight, diagonal abut edges (along roadways); Low, straight horizontal (shrubs) BG: Horizontal, digitized edge (along top of mountain peak)	FG/MG: Parallel, straight, band (road); Vertical, simple (distribution poles); Rectangular, geometric (signs); Tall, straight, weak (radio tower) BG: Subtle, straight
Color	FG/MG: Light tan BG: Tan, brown	FG/MG: Dull gray (shrubs), light tan (grasses), reddish-brown (trees), dark green (trees) BG: Dark green	FG/MG: Dark gray (road); Dark brown (distribution and fence poles); gray, green, white (signs); White, gray, brown (buildings); Gray (cell tower) BG: White (wind turbines)
Texture	FG/MG: Fine BG: Fine to medium	FG/MG: Fine to medium grain, dense BG: Fine grain, dense	FG/MG: Fine; Simple, geometric, uniform, ordered BG: Fine

Section C: Proposed Activity Description

Has Photo Simulation Been Created for KOP? ☒ Yes ☐ No If Yes, Figure Number: Figure 4

	Land / Water	Vegetation	Structures
Form	No change	No change	MG: Low, narrow, strip (solar panels)
Line	No change	No change	MG: Horizontal, straight, thin band
Color	No change	No change	MG: Light and dark gray, matte (solar panels)
Texture	No change	No change	MG: Fine

Section D: Contrast Rating

Features

Elements	Degree of Contrast	Land/Water				Vegetation				Structures			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
	Form				x				x			x	
	Line				x				x			x	
	Color				x				x			x	
	Texture				x				x			x	

Overall Level of Contrast: Low

Section E: Viewer Sensitivity

Viewer Expectations	Duration of View	Use Volume	Overall Sensitivity
Low	Short	Low	Low

Additional Comments: The low-profile of the solar panels does not block background views of the Tehachapi Mountains. In addition, disturbance to vegetation from construction would not be visible from this KOP due to screening by vegetation in the foreground. The low, narrow, straight line created by the solar panels, mimics similar features in the landscape (i.e., roads), which helps reduce contrast for form, line and color.

Evaluators Names	Date
Lori Davidson	June 18, 2012

APPENDIX B-2

AIR QUALITY AND GREENHOUSE GAS TECHNICAL REPORT

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APPENDIX B-2.1

PROJECT 1 NORTH LANCASTER RANCH
AIR QUALITY AND GHG TECHNICAL REPORT

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SILVERADO POWER CALIFORNIA

NORTH LANCASTER RANCH
(CUP 6-22)
AIR QUALITY AND GREENHOUSE GAS TECHNICAL REPORT

Prepared for:

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Prepared by:

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September 2013

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ABBREVIATIONS AND ACRONYMS

AC	Alternating current
AVAQMD	Antelope Valley Air Quality Management District
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards (CAAQS)
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DC	Direct current
EPA	Environmental Protection Agency
H_2S	Hydrogen sulfide
HI	Hazardous Index
HRA	Health Risk Assessment
HFCs	Hydrofluorcarbons
kV	Kilovolt
MDAB	Mojave Desert Air Basin
mph	Miles per hour
MW	Megawatts
NAAQS	National Ambient Air Quality Standards
N_2O	Nitrous oxide
NO_2	Nitrogen dioxide
O&M	Operations and maintenance
O_3	Ozone
OEHHA	Office of Environmental Health and Hazard Assessment
OPR	Office of Planning and Research
Pb	Lead
PFCs	Perfluorcarbons
PM_{10}	Fine particulate matter equal to or less than 10 microns
$PM_{2.5}$	Fine particulate matter equal to or less than 2.5 microns
PV	Photovoltaic
ROG	Reactive organic gases
RPS	Renewable Portfolio Standards

ABBREVIATIONS AND ACRONYMS
(Continued)

SCAB	South Coast Air Basin
SCE	Southern California Edison
SF_6	Sulfur hexafluoride
SGF	Solar Energy Generation Facility
SO_2	Sulfur dioxide
TACs	Toxic air contaminants
TSP	Total suspended particulate

1.0 EXECUTIVE SUMMARY

Silverado Power, LLC (Silverado Power) proposes to develop, own, and operate a photovoltaic (PV) solar energy project in the County of Los Angeles, California. The North Lancaster Ranch Solar Generation project (Project) will consist of a solar energy generating facility (SGF) that employs PV panels to convert sunlight directly into electrical energy without using heat transfer fluid or cooling water.

The Project facilities will operate year-round, producing electric power during daytime hours. The proposed schedule for construction begins with the facility's site preparation and construction in the third quarter of 2014 and completes construction by the second quarter of 2015.

The air quality analysis presented in this report analyzes the potential air quality impacts associated with the proposed Project. A health risk assessment (HRA) was performed to determine the health effects from construction activities to the nearest sensitive receptors. Since the Project site is located within the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD), the air quality analysis follows the AVAQMD's guidelines.

This report also provides estimates of greenhouse gas (GHG) emissions from the combustion of fossil fuels, primarily from constructing of the proposed facility, shows operation of the facility will result in reducing of GHG emissions, and addresses the effects of GHGs on climate change.

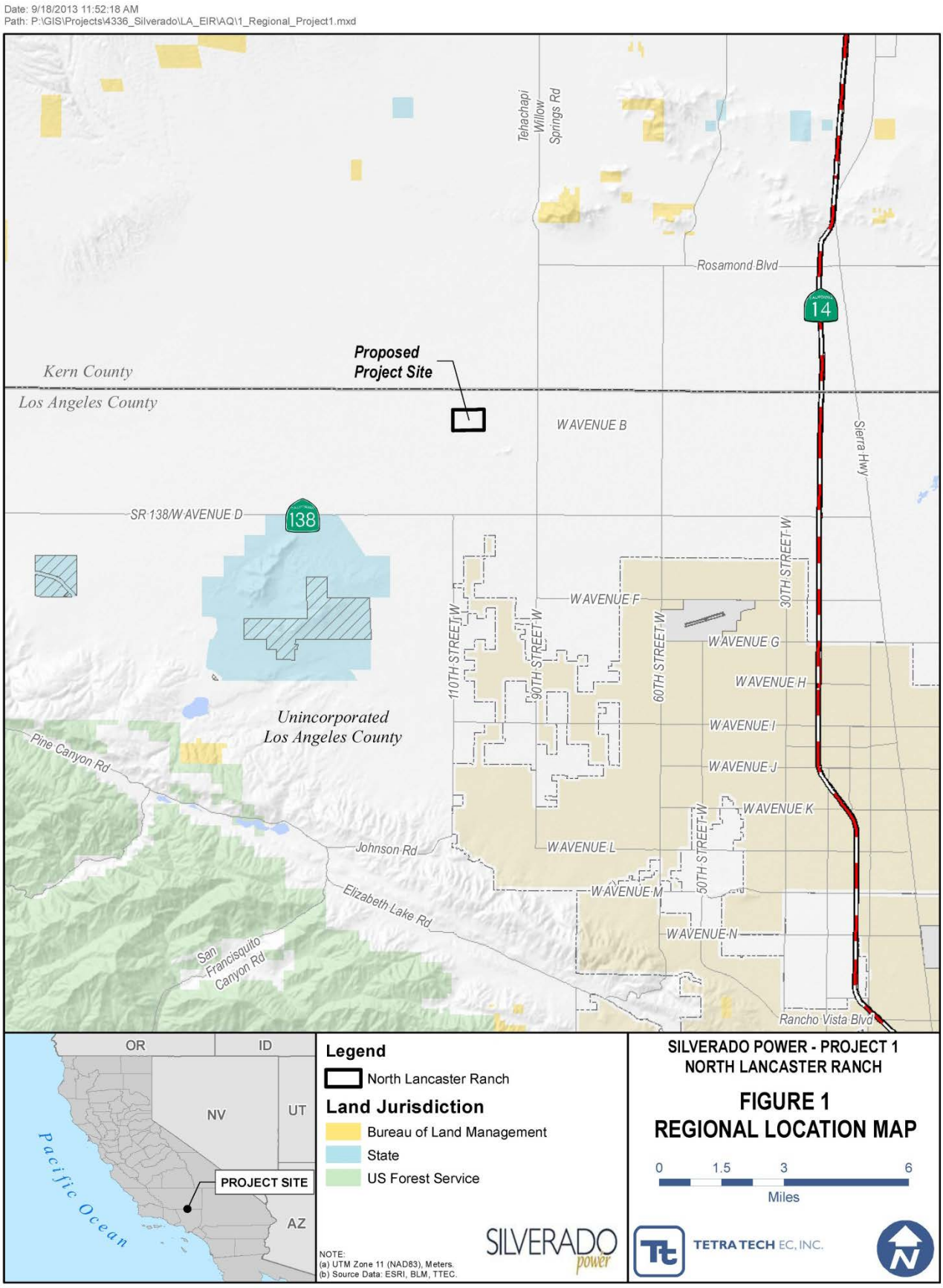
In summary, the air quality and GHG analysis concludes that emissions during short-term construction and during long-term operation of the project do not exceed the significant thresholds established by the AVAQMD. The HRA concludes that the construction activities would result in a less-than-significant impact regarding health risk. The project does not pose significant adverse impacts on local air quality or global climate change.

This report has been prepared for Silverado Power as part of an environmental review required by the California Environmental Quality Act (CEQA), with Los Angeles County as lead CEQA agency for the Project. The California Air Resources Board (CARB), AVAQMD, and Los Angeles County methods, standards, and significance thresholds used in this analysis are considered appropriate for determining impacts.

2.0 DESCRIPTION OF PROJECT

2.1 Project Location

The proposed Project is located on 240 acres of primarily unproductive agricultural land in the unincorporated northern section of Los Angeles County. The site is located approximately 12.19 miles northwest of the city of Lancaster. It is bordered to the south by West Avenue B, and is located east of West 110th Street and west of 100th Street. Figure 1 presents the project location.


Date: 9/18/2013 11:52:18 AM
Path: P:\GIS\Projects\4336_Silverado\LA_EIR\AQ\1_Regional_Project1.mxd
Tehachapi Willow Springs Rd
Rosamond Blvd
14
Proposed Project Site
Kern County
Los Angeles County
W AVENUE B
Sierra Hwy
SR 138/W AVENUE D
138
30TH STREET W
W AVENUE F
110TH STREET W
90TH STREET W
60TH STREET W
W AVENUE G
W AVENUE H
W AVENUE I
W AVENUE J
W AVENUE K
W AVENUE L
50TH STREET W
W AVENUE M
W AVENUE N
Unincorporated Los Angeles County
Pine Canyon Rd
Johnson Rd
Elizabeth Lake Rd
San Francisquito Canyon Rd
Rancho Vista Blvd
OR
ID
NV
UT
AZ
PROJECT SITE
Pacific Ocean
Legend
North Lancaster Ranch
Land Jurisdiction
Bureau of Land Management
State
US Forest Service
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 1
NORTH LANCASTER RANCH
FIGURE 1
REGIONAL LOCATION MAP
0 1.5 3 6
Miles
TETRA TECH EC, INC.

2.2 Project Description

The proposed solar energy generating facility will produce approximately 20 megawatts (MW) of electricity and will consist of the following components:

- PV modules
- PV module mounting system
- Electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing
- Generation tie (underground connection to the substation) of 0.5 miles.

The Project will not require the construction of an on-site operations and maintenance (O&M) facility.

3.0 EXISTING AND AFFECTED ENVIRONMENT

3.1 Existing Air Quality Standards

In California, local responsibility for air quality is assigned to air quality management districts and air pollution control districts. The project site is located in the northern portion of Los Angeles County, which is under the jurisdiction of the AVAQMD. The impact analysis contained in this section was prepared according to the methodologies provided by the AVAQMD [Ref. 1].

The Federal Clean Air Act (42 USC Section 7401-7671q; CAA) requires the adoption of the National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare from the effects of air pollution. Current standards include sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), fine particulate matter equal to or less than 10 microns (PM_{10}), fine particulate matter equal to or less than 2.5 microns ($PM_{2.5}$), and lead (Pb). These pollutants are designated criteria pollutants. CARB has established additional state standards for the criteria pollutants that are generally more restrictive than the NAAQS. Federal and state standards are shown in Table 1.

The project site is located within the jurisdiction of the AVAQMD whose mission is to attain and maintain NAAQS and California Ambient Air Quality Standards (CAAQS) and to ensure air pollutants do not pose a nuisance or significant public health threat. Included in AVAQMD's tasks are monitoring air pollution and promulgating Rules and Regulations. Four AVAQMD rules are applicable to the Project: Rule 402 (Nuisance), Rule 403 (Fugitive Dust), Regulation II (Permits), and Regulation XIII (New Sources Review).

Table 1. State and Federal Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O^3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})[8]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter ($PM_{2.5}$)[8]	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m^3)	Non-Dispersive Infrared Photometry	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)[9]	Annual Arithmetic Mean	0.03 ppm (56 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m^3)		100 ppb	None	
Sulfur Dioxide (SO_2)[10]	24 Hour	0.04 ppm (105 µg/m^3)	Ultraviolet Fluorescence	0.14 ppm (365 µg/m^3)	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1,300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		0.075 ppm (196 µg/m^3)	—	
	Annual Arithmetic Mean	0.075 ppm (196 µg/m^3)		0.03 ppm	—	
Lead (Pb)[11,12]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[13]	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates (SO_4)	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[11]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
9. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
10. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
11. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
12. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
13. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: California Air Resources Board (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, updated 06/04/13), and U.S. Environmental Protection Agency (http://www.epa.gov/air/criteria.html and http://www.epa.gov/air/lead/pdfs/20081015_pb_naaqs_final.pdf [see "FR Notices" at http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html], accessed September 2013]

3.2 Climate

Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.) but also by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall, etc.

The AVAQMD covers a western portion of the Mojave Desert Air Basin (MDAB). This desert region is characterized by wide day-night temperature fluctuations and seasonal strong winds. Days with temperatures exceeding 100°F typically begin in May and can last into October. During July and August minimum nocturnal temperatures in the low to mid-90s can be expected

on several nights. Relative humidity is low, below 40 percent most of the year; above 50 percent on most winter nights, during precipitation and on summer evenings after a rain. On a typical summer afternoon the relative humidity is approximately 10 percent; on a winter afternoon, approximately 30 percent. The rainfall pattern is seasonal with most rain falling between November and April. Since 1980, the mean annual precipitation has been 3.5 inches. Prevailing winds in the MDAB are out of the west and southwest.

The most recent data measured in 2012 at the AVAQMD's monitoring station in Lancaster-43301 Division Street shows that the monthly average ambient temperature is 63°F, hourly average wind speed is 4.7 miles per hour (mph), and monthly average humidity is 41 percent. [Ref. 2].

3.3 Air Pollutant Constituents and Attainment Status

A state or region is given the status of "attainment" or "unclassified" if either the federal or state ambient air quality standards have not been exceeded. A status of "nonattainment" for particular criteria pollutants is assigned if the ambient air quality standard for that pollutant has been exceeded. Once designated as nonattainment, attainment status may be achieved after three years of data showing non-exceedance of the standard. When an area is reclassified from nonattainment to attainment, it is designated as a maintenance area, which requires establishing and enforcing a plan to maintain attainment with the standard.

Table 2 lists criteria air pollutants and their attainment status in the MDAB.

Table 2. Criteria Pollutants Attainment Status in the Mojave Desert Air Basin

Air Pollutants	State	Federal
Ozone (1-Hour)	Nonattainment, classified Extreme	-
Ozone (8-Hour)	Non-attainment; classified Extreme	Non-attainment; classified Moderate
$PM_{2.5}$	Unclassified	Unclassified/attainment
PM_{10}	Non-attainment	Unclassified
NO_2	Attainment/unclassified	Attainment/unclassified
CO	Attainment	Attainment
SO_2	Attainment/unclassified	Attainment/unclassified
Lead	Attainment	Attainment
Particulate Sulfate	Unclassified	-
Hydrogen Sulfide	Unclassified	-
Visibility Reducing Particles	Unclassified	-

Source: AVAQMD 2013 [Ref. 3]

Ozone

Ozone (O_3) is a problematic air contaminant in the MDAB because a significant portion of the ozone (and ozone precursors) in the basin is transported from the heavily populated South Coast Air Basin (SCAB). Maximum ozone concentrations in the SCAB and in the MDAB usually are recorded during summer months.

The 2012 measured data at the Lancaster monitoring station shows that the state air quality standard of 1-hour ozone exceeded thresholds on 13 days; and the maximum concentration was 0.112 ppm. The 8-hour ozone exceeded state air quality standards on 72 days in that year;

and the maximum concentration was 0.096 ppm. The federal air quality standard for 8-hour ozone was exceeded on 39 days in that year; and the maximum concentration was 0.095 ppm. Under the state standards, the MDAB is classified as an extreme nonattainment area for ozone.

Nitrogen Dioxide

The monitoring data shows that the annual average NO_2 concentration in the MDAB has been within the federal standards for the last three years. The highest annual average concentration has remained nearly constant at 49 ppb. The 2012 measured data at the Lancaster monitoring station shows that the state standard for nitrogen dioxide standard was not exceeded in that year. The MDAB is in attainment status under California and federal standards.

Carbon Monoxide

Carbon monoxide (CO) is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. In many areas of California, CO emissions from sources such as wood-burning stoves and fireplaces also can be measurable contributors during cold-weather months. Industrial sources of pollution generally contribute less than 10 percent of ambient CO levels. Peak CO levels occur typically during winter months because of a combination of seasonal contributions from home heating devices and stagnant weather conditions. CO reduces the oxygen-carrying capacity of the blood and in high concentrations can cause death. At lower concentrations, people exposed experience dizziness and headaches.

The 2012 measured data at the Lancaster monitoring station shows that the federal and state standard for CO was not exceeded that year; and the maximum concentration was 1.0 ppm. The MDAB is an attainment area for CO for purposes of state and federal air quality planning.

Sulfur Dioxide

Sulfur Dioxide (SO_2) is produced when any sulfur-containing fuel is burned. Chemical plants that treat or refine sulfur or sulfur-containing chemicals also emit SO_2. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of the state, depending on local fuel characteristics, weather, and topography. SO_2 can cause bronchia constriction and may aggravate respiratory diseases. In moist environments, SO_2 may combine with water to form sulfuric acid, a component of acid deposition. SO_2 data is not available as it is not monitored at the Lancaster location; nevertheless, the MDAB is an attainment area of the state and federal for SO_2 standards.

Fine Particulates (PM_{10}, $PM_{2.5}$)

Particulate matter in the air is composed of windblown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and oxides of nitrogen. In 1984, CARB adopted standards for fine particulate (PM_{10} – particulate matter of less than 10 microns), and phased out the total suspended particulate (TSP) standards used up to that time. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of inhalable particulate related to human health. In 1987, the Environmental Protection Agency

(EPA) also replaced national TSP standards with PM_{10} standards. In July 1997, the EPA adopted new standards for fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$).

Particulates are a public health and welfare concern for several reasons. Particulates may be intrinsically toxic because of their inherent chemical and/or physical characteristics. Particulate matter may interfere with one or more of the mechanisms that normally clear the respiratory tract. Finally, fine particulates, which are easily carried deep into the lungs, may act as carriers of absorbed toxic substances. Thus elevated particulate concentrations may exacerbate pre-existing respiratory diseases such as bronchitis. Particulate matter, especially fine particulate, also interferes with visibility. The MDAB is a nonattainment area of the state's PM_{10} standards. The 2012 measured data at the Lancaster monitoring station shows a maximum concentration of 47 micrograms per cubic meter, an annual average of 19.8 micrograms per cubic meter, and shows zero number of days above the 24-hour PM_{10} federal standards. For state air quality standards, the data shows a maximum concentration of 43 micrograms per cubic meter, an annual average of 18.5 micrograms per cubic meter, and shows zero number of days above the 24-hour state standards for that year. For $PM_{2.5,}$ an annual average was not recorded in 2012, but shows a maximum concentration of 14 micrograms per cubic meter, and no exceedance above the 24-hour $PM_{2.5}$ federal or state standard in that year.

Lead

Lead is found in old paints and coatings, plumbing, and various other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The MDAB is an attainment area for the federal and State AAQS for lead.

3.4 Greenhouse Gases

Certain gases in the Earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. A GHG is any gas in the atmosphere that absorbs infrared radiation. As solar radiation enters the earth's atmosphere, a portion of the radiation is absorbed by the earth's surface, and a portion is reflected back through the atmosphere into space. The absorbed radiation is eventually emitted from the earth into the atmosphere, not as solar radiation, but as infrared radiation. Most solar radiation passes through GHGs; infrared radiation is selectively absorbed or "trapped" by GHGs as heat, and then reradiated back toward the earth's surface, resulting in a warming of the lower atmosphere and the earth's surface. This phenomenon, known as the "greenhouse effect," is beneficial for maintaining a habitable climate on the earth. As the atmospheric concentrations of GHGs rise, however, the average temperature of the lower atmosphere gradually increases, thereby increasing the potential for indirect effects such as a decrease in precipitation as snow, a rise in sea level, and changes to plant and animal species and habitat.

GHGs are emitted by natural processes and human activities. Water vapor is the most abundant and variable GHG in the atmosphere and is not considered a pollutant. The main source of water vapor is evaporation from the oceans (approximately 85 percent); other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves. Carbon dioxide (CO_2) also is a naturally emitted GHG.

Natural GHG sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing.

GHGs also are emitted from human activities including industrial/manufacturing, utilities, transportation, residential, and agricultural activities. Prominent GHGs contributing to the greenhouse effect are CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds. Ozone ($O_{3)}$ is a GHG; O_3 in the lower atmosphere, however, is relatively short-lived and therefore is not global in nature. Emissions of CO_2 are by-products of fossil fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) largely associated with agricultural practices and landfills. CO_2 is sequestered through photosynthesis and absorption from ocean uptake and vegetation. More CO_2 is currently emitted into the atmosphere than is sequestered by ocean uptake and vegetation.

Human-caused emissions of these GHGs, which exceed natural ambient concentrations, intensify the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. Explaining global climate change during the past 50 years cogently is extremely unlikely without the contribution from human activities [Ref. 4]. Therefore, GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern.

Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed globally. Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, scientific evidence reveals that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54 percent is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46 percent of human-caused CO_2 emissions remains stored in the atmosphere [Ref. 5]. The quantity of GHGs that it takes to ultimately result in climate change is not known precisely; suffice to say that the quantity is enormous, and no single project would be expected to contribute measurably to a noticeable incremental change in the global average temperature, or to global, local, or microclimate.

While climate change has been a concern since at least 1988, the efforts devoted to GHG emissions reduction and climate change policy have increased dramatically in recent years. In 2002, California passed Assembly Bill (AB) 1493, which requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions beginning with the 2009 model year. In June 2005, Executive Order S-3-05 was signed to reduce California's GHG emissions to: (1) 2000 levels by 2010; (2) 1990 levels by the 2020; and (3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of AB32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including recommendations of the state's Climate Action Team. Senate Bill

97 acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA.

CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions can adversely affect the environment because they contribute, cumulatively, to global climate change. In turn, global climate change could result in rising sea levels, potentially inundating low-lying areas; affect rain and snow fall, leading to changes in water supply; and affect habitats, leading to adverse effects on biological and other resources. Thus, GHG emissions require consideration in CEQA documents.

Federal Legislation

The U.S. Supreme Court ruled on April 2, 2007, that CO_2 is an air pollutant as defined under the CAA, and that the EPA has the authority to regulate emissions of GHGs. Nevertheless, there are no federal regulations or policies regarding GHG emissions applicable to the Project at the time of this writing. Responding to the mounting issue of climate change, the EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, the EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement will provide the EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year. This publically available data will allow the reporters to track their own emissions, compare them to similar facilities, and help identify cost effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial GHGs along with vehicle and engine manufacturers will report at the corporate level. An estimated 85 percent of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act

On December 7, 2009, the EPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). The Endangerment Finding is based on Section 202(a) of the CAA, which states that the Administrator (of EPA) should regulate and develop standards for "emission[s] of air pollution from any class of classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The rule addresses Section 202(a) in two distinct findings. The first addresses whether the concentrations of the six key GHGs (carbon dioxide [CO_2], methane [CH_4], nitrous oxide [N_2O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]) in the atmosphere threaten the health and welfare of current and future generations. The second addresses whether the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and therefore the threat of climate change.

The Administrator found that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are very likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, and higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The Administrator also found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHGs fit within the CAA definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but rather allow the EPA to define the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.

CARB is the agency responsible for coordinating and overseeing state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), which was adopted in 1988. Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is underway, and there is a real potential for severe adverse environmental, social, and economic effects in the long term.

4.0 METHODOLOGY AND THRESHOLDS

This section describes the methodologies used to determine the air quality impacts associated with the proposed project.

AVAQMD recommends that air quality analysis for a proposed project shall include: direct impacts, indirect impacts, cumulative impacts, and conformity impacts.

Direct impacts result from SGF construction and operation activities on air quality. Indirect impacts result from air quality changes that would not occur without the SGF project, e.g. building and operating a retail establishment nearby to support the SGF. Cumulative impacts are the combined effect on air quality from the SGF's operation and other emissions sources in the MDAB. Conformity impacts determine whether the SGF's operation complies with all applicable AVAQMD's rules and regulations.

4.1 Threshold of Significance

To meet federal requirements, impact significance is related to conformance with the EPA-approved SIP and with NAAQS. Air quality impacts would be significant if they exceed these standards or contribute to non-conformance. AVAQMD has published thresholds of significance for air quality and global climate change.

A project has significant air quality impact, if the following occurs:

1. Generates total emissions exceeding the AVAQMD significant thresholds shown in Table 3; and/or
2. Generates a violation of any ambient air quality standard when added to the local air quality background; and/or
3. Does not conform with the applicable attainment or maintenance plan(s); and/or
4. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1.

A significant project must incorporate mitigation sufficient to reduce its impact to a level that is not significant. A project that cannot be mitigated to a level that is not significant must incorporate all feasible mitigation.

Table 3. Significant Emission Thresholds

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NOx)	25	137
Reactive Organic Gases (ROG)	25	137
Oxides of Sulfur (SOx)	25	137
Particulate Matter (PM_{10})	15	82
Particulate Matter ($PM_{2.5}$)	15	82
Hydrogen Sulfide (H_2S)	10	54
Lead	0.6	3
Greenhouse Gases (CO_2e)	100,000	548,000

Source: AVAQMD 2013 [Ref. 1]

4.2 Direct Impacts

4.2.1 Criteria Air Emissions

Air quality and global climate change impacts associated with the proposed project are related to emissions that would occur during construction and subsequent operation of the proposed project. Principal sources of pollutants during construction would be earth-moving activities, construction equipment, trucks bringing materials to the site, and construction crew commuting vehicles. The sources of pollutants during project operations would be limited to the vehicles and equipment used by the operations and maintenance staff. There are numerous air quality modeling tools available to assess air quality impacts of the project. Emissions during construction and operation were estimated based on the air emission modeling software package, CARB's URBEMIS [Ref. 6]. The model contains data specific to each California air basin.

Construction

Construction process will be conducted in phases. As a conservative analysis, construction of the Project would occur over the course of twelve months, starting in the third quarter of 2014 and ending in the second quarter of 2015. This timeframe is important since construction

emissions are directly related to the intensity of construction activities (emissions increase as the overall amount of construction activity increases). Actual construction may proceed at a less intensive pace, which would result in lower daily emissions.

For Phase I of this project, the following construction phases are assumed:

Phase 1: Mow and Roll;
Phase 2: Fencing/Trenching/Infrastructure Construction; and
Phase 3: PV Installation.

For Phase II of this project, the following construction phases are assumed:

Phase 1: Demolition;
Phase 2: Mow and Roll;
Phase 3: Fencing/Trenching/Infrastructure Construction; and
Phase 4: PV Installation.

The URBEMIS model divides the construction processes into phases, including demolition, mass site grading, fine site grading, fencing/infrastructure construction (trenching, transmission line construction, paving), and PV installation. These model settings can be modified to fit applicable features of a specific project. The applicant has committed to using the mow and roll method to prepare the site for construction. The mow and roll method will utilize mowers and rollers, which is a less intensive soil disturbance method than grading and excavating the site. As the URBEMIS model only allows for mass site and fine site grading, the fine site grading phase was used to model mow and roll activities (using a half emission factor for grading equipment; approved by the AVAQMD). Since mowing and rolling of the site will clear vegetation and roll the surface of the site, emission estimates from the model are higher than emissions from actual activity during the mow and roll phase. Activities during the trenching phase were modeled to include trenching and infrastructure construction (road construction, transmission line and generation-tie line); and activities during the construction phase were modeled to include construction and installation of the PV panels.

Each construction phase has the potential to generate the following: (1) fugitive dust emissions resulting from soil disturbance activity; (2) emissions of air pollutants from fuel combustion in construction equipment; and (3) emissions of air pollutants from fuel combustion in vehicles used for worker commute and material hauling and construction debris disposal. Silverado Power is committed to implementing “Best Practices” during all construction phases of the Project to further reduce emissions. Figure 2 shows the construction schedules and Figure 3 shows the construction equipment.

Figure 1. Construction Schedule

North Lancaster Ranch SGF

Year	2014												2015											
Month*	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Phase 1																								
Mow and Roll																								
Trenching/ Infrastructure																								
PV Installation																								
Phase 2																								
Demolition																								
Mow and Roll																								
Trenching/ Infrastructure																								
PV Installation																								

***22 days per month**

Demolition	**Phase 1**	**Phase 2**
Start Date		1/15/2015
End Date		1/31/2015
Duration (months)		0.5
Duration (days)		12
Building Debris (sq.ft)		1,305
Truck Capacity (CY)		20
Total Truck Trips		24
Truck Trips per Day		3
Mow and Roll	**Phase 1**	**Phase 2**
Start Date	7/1/2014	2/1/2015
End Date	10/31/2014	4/30/2015
Duration (months)	4.0	3.0
Duration (days)	88	65
Total Acreage To Be Disturbed	160	80
Max Daily Acreage Disturbed	2	2
Trenching/Infrastructure Construction	**Phase 1**	**Phase 2**
Start Date	11/1/2014	5/1/2015
End Date	11/30/2014	5/31/2015
Duration (months)	1.0	1.0
Duration (days)	21	22
PV Installation	**Phase 1**	**Phase 2**
Start Date	12/1/2014	6/1/2015
End Date	12/31/2014	6/30/2015
Duration (months)	1.0	1.0
Duration (days)	22	22

Figure 2. Construction Equipment

Phase: Demolition
1 Excavator (168 hp) operating at a 0.57 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Mow and Roll
2 Mowers (Grader @ 87 hp) operating at a 0.31 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.60 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Trenching – Infrastructure Construction
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Trencher (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction – PV Installation
1 Bore/Drill Rig (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Crane (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day

During construction, the proposed Project would be subject to AVAQMD Rule 403 (Fugitive Dust). The purpose of Rule 403 is to reduce man-made fugitive dust. Rule 403 requires implementing control measures to prevent, reduce, or mitigate fugitive dust emissions and includes a performance standard that prohibits visible emissions from crossing any property line [Ref. 7]. Dust control measures, such as water application or chemical stabilizers on dry soil, and reducing vehicle travel on unpaved roads, are standard mitigation techniques. The project construction will be required to comply with Rule 403. Implementing the dust suppression techniques specified in Rule 403 can reduce the fugitive dust generation (and thus the PM_{10} component) by 50 percent or more. Therefore, the estimation of fugitive dust emissions during project construction is based on compliance with AVAQMD Rule 403 requirements for fugitive dust suppression. In addition, to further reduce dust emissions during construction, site preparation shall be limited to no more than two acres per day.

Operations

During operation, the project does not require the types of equipment that emit a large amount of air pollutants. The sources of pollutants would be limited to the vehicles used by the operations and maintenance staff.

The URBEMIS software was used to compile the vehicle emissions during long-term project operations. In calculating mobile source emissions, the URBEMIS assumptions were applied to arrive at the annual vehicle miles traveled (VMT).

The proposed Project will be subject to AVAQMD's Regulation II (Permits) and Regulation XIII (New Source Review). These regulations ensure that all equipment with the potential to emit air pollutants (including air toxics and hazardous air pollutants) at the Project site would be subject to the AVAQMD's review and approval before installation [Ref. 8].

4.2.2 Greenhouse Gas Emissions

For this project, the major source of GHG is the combustion of fuel in construction equipment, in vehicles used to haul materials, and in vehicles used by worker commuting to/from the site.

There are three types of GHG from fuel combustion, including carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). GHG emissions are presented as carbon dioxide equivalents (CO_2e). CO_2e is computed based on global warming equivalence. The CH_4 global warming equivalence is 21 times that of CO_2, and the N_2O global warming equivalence is 310 times that of CO_2.

Mathematically, the CO_{2e} can be represented by the following equation:

$$CO_2e \text{ Emissions} = CO_2 \text{ Emissions} + 21 \times CH_4 \text{ Emissions} + 310 \times N_2O \text{ Emissions}$$

The URBEMIS model was used to estimate the GHG emissions during the construction phase of the proposed project. Based on the construction schedule, types and quantities of construction equipment, and haul trucks, etc., the maximum CO_2e emissions were estimated.

The URBEMIS model provides a CO_2 profile only and does not quantify CO_2e, CH_4 and N_2O emissions. The analysis assumed that the CO_2 emissions are CO_2e. For typical diesel-fueled combustion equipment used in construction activities, the emissions factors adjusted with global warming equivalence are:

(1) CO_2 emission factors are 22.4 pounds of CO_2e per gallon consumed;
(2) CH_4 emission factors are 0.065 pounds of CO_2e per gallon consumed; and
(3) N_2O emission factors are 0.068 pounds of CO_2e per gallon consumed.

As shown in these emission factors, the CO_2 profile is 99 percent of the total GHG emissions generated in combustion equipment. Therefore, the CO_2 emissions were assumed to be equivalent to the CO_2e emissions levels.

4.2.3 Health Risk

During construction, toxic emissions are generated mainly from fuel combustion in the construction equipment. To determine the health impacts of these toxic emissions to sensitive receptors, a health risk assessment (HRA) was performed.

A HRA is an estimate of the probability that adverse health effects could occur due to exposure to toxic pollutants. A facility's air emissions, stack information, operation schedule, local weather conditions, chemical dose-response data, etc. are entered into a computer model to produce an

estimate of the health risks to nearby sensitive receptors. Sensitive receptors are populations that are more susceptible to the effects of air pollution than are the population at large. While the ambient air quality standards are designed to protect public health and are generally regarded as conservative for healthy adults, there is greater concern to protect adults who are ill or have long-term respiratory problems, and young children whose lungs are not fully developed. According to ARB, sensitive receptors include children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. The SCAQMD identify the following as locations that may contain a high concentration of sensitive receptors; long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, childcare centers, and athletic facilities. The closest sensitive receptor to the project is a single family residence located on 110th Street West, approximately 55 meters/ 180 feet northwest of the project site. A HRA is performed in 3 steps: hazard identification, exposure assessment, and risk characterization.

Hazard Identification

Hazard identification refers to identifying substances as carcinogens, reproductive toxins, chronic toxins, or acute toxins, or identifying a type of exposure as hazardous. The toxic air contaminants (TACs) used in the HRA includes diesel particulate matter (DPM) and acrolein. DPM and acrolein are byproducts of diesel fuel combustion. Studies have shown that diesel combustion produces acrolein in the amount equal to 0.013 times that of DPM [Ref. 9]. There are other TACs from diesel combustion besides DPM and acrolein. They are less potent and thus are not included in the HRA.

Exposure Assessment

Exposure assessment identifies and quantifies all routes of human exposure to substances of concern. The SCREEN3 model issued by EPA was used for estimating offsite concentrations of TACs. Based on land use surrounding the proposed project and EPA guidelines, a rural profile was assumed. Construction activities were modeled as area sources placed over the area of project site. Appendix B provides the SCREEN3 model run.

Risk Characterization

Risk characterization is the final step of the HRA. It quantifies the human health risk based on the exposure assessment and dose-response relationships (cancer potency factors and reference exposure levels). In this assessment, three types of human health effects were considered: (1) cancer; (2) chronic effects; and (3) acute effects. Health risks including cancer, chronic, and acute risks are calculated based on the Office of Environmental Health and Hazard Assessment (OEHHA) guidelines.

Following is a summary of the OEHHA method to determine the cancer, chronic and acute health risk:

Cancer Risk

The cancer risks were calculated as the individual excess lifetime cancer risk (i.e., the probability that an individual may develop cancer from a lifetime exposure to the chemicals of

concern). There are different pathways that a toxicant can enter a human body. Gaseous toxicants can enter a human body through the inhalation pathway. Gaseous toxicants also can be deposited on soil, surface water, or plants, which then can enter a human body through ingestion and dermal pathways. Semi-volatile and metal toxicants can enter the body through inhalation, ingestion and dermal pathways.

For inhalation pathway, the cancer risk is computed using the following equation:

$$CRinh = (GLC \times CP \times BR \times EF \times ED \times 10^{-6}) / AT \quad \text{Eq. 1}$$

Where:

CRinh = Cancer Risk through inhalation
GLC = Annual Average Ground-level concentration (from air dispersion model)
CP = Cancer Potency factor
BR = Daily Breathing Rate
EF = Exposure frequency
ED = Exposure Duration
AT = Average Time Period

For the proposed project, contribution from non-inhalation pathways would not contribute to the overall risk such that the total risk would be above 10 in one million once the multi-pathway risks are added, thus non-inhalation pathway risk estimates are negligible.

Chronic Risk

The potential for long-term chronic health effects is quantified by comparing the predicted level of exposure to a reference exposure level (REL). This ratio of predicted exposure to reference exposure is referred to as a chronic hazard index (HIc). HIc is calculated by summing the ratios of each toxic substance over its REL. The equation for estimating HIc is as follows:

$$HIc = \sum Ci / \text{chronic RELi}$$

Where:

Ci = Ground-level concentration of substance i (annual average concentration)
RELi = Chronic Reference Exposure Level for substance i.

Acute Risk

In the same manner as the quantification of chronic health effects, the potential for short-term acute health effects was quantified using a hazard index. The acute hazard index (HIa) is calculated by dividing the maximum estimated hourly concentration of each toxic air pollutant by its reference short-term exposure levels. The equation for estimating HIa is as follows:

$$HIa = \sum Ci / \text{Acute RELi}$$

Where:

Ci = Maximum hourly ground-level concentration of substance i
RELi = Acute Reference Exposure Level for substance i.

4.3 Indirect Impacts on Air Quality

Indirect impacts are the result of air quality changes that would not occur without the SGF project. The SGF does not have any permanent on-site staff. There will not be construction and operation of retail establishment to support the SGF. Therefore, indirect impact on air quality is expected to be minimal.

4.4 Cumulative Impacts

Cumulative impacts are the combined effect on air quality from the SGF's operation and other emissions sources in the MDAB. In the operation phase, the SGF operation has no major emissions sources. Operation of equipment that emits regulated air pollutants, or requires AVAQMD permits, is not planned at the SGF. The SGF project will not conflict with or obstruct implementation of the applicable air quality plan, which in this case is the Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area). [Ref. 10] A project is deemed inconsistent with air quality plans if it results in population and/or employment growth that exceeds growth estimates in the applicable air quality plan. The ozone attainment plan relies upon future year emission inventories consistent with CARB, which in turn relies upon adopted General Plan growth projections. As the proposed project is not part of an ongoing regulatory program, the AVAQMD recommends that project-specific air quality impacts be used to determine the potential cumulative impacts to regional air quality. As discussed above, peak daily emissions of operation-related pollutants will not exceed AVAQMD significance thresholds.

In addition, estimates state that while the project would generate air and greenhouse gas emissions during construction and a very minimal amount of GHG emissions during operations, the solar energy provided by the project is a much cleaner source of energy than traditional sources used for the generation of electricity, such as the burning of coal, fuel oil, or natural gas. The amount of CO_2 reductions from proposed solar energy generation depends on the type of electric generation to be displaced by the addition of the solar energy. The energy produced by the proposed 20 MW project is estimated to displace approximately 34,050 tons of CO_2e that would otherwise be emitted by fossil fuel fired power plants. This is more than enough to offset the project's air and GHG emissions.

As a result, the emissions of non-attainment pollutants and precursors generated by project operation exceeding the AVAQMD project-level thresholds will be less than significant. Cumulative impact on air quality is expected to be minimal.

4.5 Conformity Impacts

The SGF is required to comply with all applicable rules and regulations of the AVAQMD. The project does not conflict with or delay implementation of any applicable attainment or maintenance plan; therefore, non-conformity is not expected.

5.0 DIRECT IMPACTS ON AIR QUALITY

This section presents the direct impacts on air quality associated with the proposed project. The following sections present information on potentially significant impacts on air quality environment resulting from the project's implementation. Mitigation measures are proposed that can reduce or eliminate any such impacts.

5.1 Direct Impacts from Project Construction

Short-term air quality impacts would occur during the construction of the project site. Three major sources of emissions during constructions include:

- Fugitive dust emissions – Dust is generally associated with excavation, windblown unpaved areas, vehicle and equipment travel on unpaved roads, and dirt/debris pushing. Dust generated during construction activities would vary substantially depending on the level of activity, the specific operations, and weather conditions;
- Construction Equipment – Construction requires usage of heavy-duty equipment, such as bulldozers, excavators, loaders, etc. Exhaust emissions from this equipment during construction activities would vary daily as activity levels change; and
- Vehicles – Transport vehicles travelling to and from the site, including delivery trucks hauling materials and automobiles carrying workers, generate exhaust emission.

The URBEMIS model runs, which estimate the construction emissions, are presented in Appendix A. Table 4 summarizes emissions during construction. As shown, the short-term emissions during the construction phase will not exceed AVAQMD significant thresholds. As such, the project will not exceed thresholds or result in violating air quality standards or contribute substantially to an existing or projected air quality violation.

Table 4. Construction Emissions[a]

North Lancaster Ranch SGF	ROG	NOx	CO	SO_2	PM_{10}[b]	$PM_{2.5}$	CO_2e
	(lbs/day)						
Phase 1							
Mow and Roll	2	16	10	0	17	1	2,037
Trenching/Infrastructure Construction	1	8	4	0	0	0	988
PV Installation	3	27	25	0	0	1	7,064
Phase 2							
Demolition	4	30	17	0	0.48	1	3,768
Mow and Roll	6	42	28	0	17	1	5,294
Trenching/Infrastructure Construction	1	7	4	0	0	0	988
PV Installation	3	23	24	0	0	1	7,064
Maximum Daily Emissions	**6**	**42**	**28**	**0**	**17**	**1**	**7,064**
AVAQMD Regional Emissions Threshold	**137**	**137**	**548**	**137**	**82**	**82**	**548,000**
Over / (Under)	(131)	(95)	(520)	(137)	(65)	(81)	(540,936)
Exceed Threshold?	No	No	No	No	No	No	No

***** Values may not exactly add up due to rounding.

[a] Compiled using the URBEMIS emissions inventory model. The equipment mix and use assumption for each phase is provided in Figure 2.

[b] PM_{10} emissions estimates are based on compliance with AVAQMD Rule 403 requirements for fugitive dust suppression and mitigation measures listed in Section 6.

Source: Tetra Tech, 2013

Table 5 summarizes the health risk assessment for construction activities. Note that the EPA SCREEN3 model uses conservative assumptions for screening purposes; therefore, actual concentration levels are expected to be less than what was analyzed in this report. As shown in Table 5, short-term concentration levels during the construction phase do not expose sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1.

Table 5. Health Risk Assessment

	Construction Activities
Diesel Particulate Matter Run (Cancer Risk)	
DPM Emission Sources Modeled as Area Source, m^2	976,535
Emission Rate, g/s	0.0216
Emission Rate, g/s-m^2	2.21E-08
Maximum One-Hour Ground-Level Concentration, µg/m^3	1.1800
Annual Average Ground-Level Concentration, µg/m^3	0.1180
DPM Cancer Potency Factor (mg/kg-day)$^{-1}$	1.10E+00
Breathing Rate, (L/kg-day)	302
Exposure Frequency (days/year)	365
Exposure Duration (years)	1
Average Time Period (days)	25,550
Acrolein (Acute and Chronic Risk)	
Emission Rate, g/s-m^2	2.87E-10
Maximum One-Hour Ground-Level Concentration, µg/m^3	1.53E-02
Acrolein Acute Inhalation REL (Eyes; Respiratory System), µg/m^3	2.5
Acrolein Chronic Inhalation REL (Respiratory System), µg/m^3	0.35
Cancer Risk from Exposure to DPM (Chance in a million)	**0.56**
Cancer risk greater than or equal to 10 in a million?	No
Acute Risk from Exposure to Acrolein	**0.01**
Hazard Index (HI) (non-cancerous) greater than or equal to 1?	No
Chronic Risk from Exposure to Acrolein	0.00
Hazard Index (HI) (non-cancerous) greater than or equal to 1?	No

Source: Tetra Tech, 2013

5.2 Direct Impacts from Project Operation

The URBEMIS model runs, which estimate the operation emissions, are presented in Appendix A. Table 6 summarizes the operation emission calculation compared with the annual threshold, since operation is long-term. The primary sources of emissions during operation are vehicles used by facility maintenance staff to and from the site. For worst-case analysis, maintenance activities would consist of one water truck and one light duty truck for bi-annual panel washing. As shown in Table 6, emissions during the long-term operation do not exceed AVAQMD significant thresholds.

Table 6. Operation Emissions

North Lancaster Ranch SGF	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
	(tons/year)						
Area[a]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy[b]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile[c]	0.23	0.00	0.04	0.00	0.01	0.00	4.68
Water[d]	0.00	0.00	0.00	0.00	0.00	0.00	1.36
Operation Phase	0.23	0.00	0.04	0.00	0.01	0.00	6.04
Energy Reduction[b]	0.00	0.00	0.00	0.00	0.00	0.00	-34,050
Net Annual Emissions	0.08	0.00	0.01	0.00	0.00	0.00	(34,044)
AVAQMD Significance Threshold	**25**	**25**	**100**	**25**	**15**	**15**	**100,000**
Over / (Under)	(24)	(25)	(100)	(25)	(15)	(15)	(134,044)
Exceed Threshold?	No	No	No	No	No	No	No

*All values were calculated using URBEMIS, unless otherwise stated. Values may not exactly add up due to rounding.

[a] Area sources related to the project include minimal consumer products.

[b] Project will generate solar energy only; and will not use electricity or natural gas. Emissions were calculated outside of URBEMIS.

[c] Mobile emissions are based on project's trip generation. Client indicated two trips per year to the site for maintenance and security. A maximum of 10 trips per year was assumed. The Project Trip Rate is 0.01.

[d] Panel washing is estimated to use one acre foot of water per year.

Source: Tetra Tech, 2013

5.3 Greenhouse Gas Emission Impacts

Construction of the Project would increase GHG generation, which can contribute to global climate change. This analysis is provided in response to recent heightened interest in the subject of global climate change, and specifically, the California legislature's passage and the Governor's signing of AB 32, which is intended to control and reduce the emission of global warming gases in California; and SB 97, which directs the Office of Planning and Research (OPR) and the California Resources Agency to develop CEQA Guidelines on how local agencies should analyze and, if necessary, mitigate for GHG emissions.

Short-term construction and long-term operation of the Project will generate emissions of GHGs. Construction emissions would be associated with vehicle engine exhaust from construction equipment and vehicles, vendor trips, and construction worker commuting trips. Construction-related GHG emissions are considered temporary and short term. As shown in Table 4, short-term construction emissions will not exceed the daily GHG threshold.

As mentioned above, the Project's facility operation will be limited to general maintenance, panel washing, and security. A water well is located on-site that may be used, however for purposes of this analysis, operation and maintenance will use one water truck for bi-annual panel washing and one light duty truck as needed. This results to about 3.71 tons of CO_2e annually. According to EPA 2007 GHG Inventory guidance, a 20 MW solar generation facility is calculated to displace 34,050 tons of CO_2e per year. Taking into account the solar generation offsets, facility operation will reduce approximately 34,044 tons of CO_2e annually, as shown in Table 6.

Because construction-related emissions will be temporary and finite in nature, below those levels being considered and/or discussed by other government agencies and associations, and consistent with the AB 32 Scoping Plan, the Project's construction-related GHG emissions are not a cumulatively considerable contribution to climate change and, therefore, are less than significant. The Project's operation-related GHG emissions will be negligible and are not a cumulatively considerable contribution to climate change and, therefore, are less than significant.

When considering net GHG emissions from converting the Project site from operating as an agricultural farm to operating a 20-MW solar PV power-generating facility, there will be a positive impact of a substantial net reduction in GHG emissions at the Project site. In addition, the generation of power from solar energy is a substantial reduction in GHG emissions over conventional power generation from the combustion of fossil fuels. The energy produced by the proposed project would reduce more than 34,044 tons of CO_2e per year during operation.

The Project, therefore, will be in accordance with the state's need for the construction of renewable energy power plants to meet the state's GHG reduction objectives including:

- California's Renewable Portfolio Standard (RPS) that requires California's investor-owned electric utilities to obtain, from renewable sources, 20 percent of the electricity that they supply.
- Executive Order S-14-08 that established RPS targets for California that "all retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020."
- Executive Order S-03-05 on climate change to advance renewable energy and other solutions to reduce California's GHG emissions.
- The California Global Warming Solutions Act of 2006 (Assembly Bill 32) that established a comprehensive program of regulatory and market mechanisms to reduce GHG emissions to 1990 levels by the year 2020.

6.0 MITIGATION MEASURES

The project will be required to comply with regional rules that assist in reducing air pollutant emissions. AVAQMD Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, AVAQMD Rule 402 requires implementing dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Implementing these dust suppression techniques will reduce the fugitive dust generation

(and thus the PM_{10} component). Compliance with these rules will reduce impacts on nearby sensitive receptors. Applicable dust suppression techniques include the following:

AQ-1 During construction, apply nontoxic chemical soil stabilizers according to manufacturers' specifications or water active sites at least twice daily (locations where site preparation is to occur will be thoroughly watered before earthmoving);

AQ-2 All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard in accordance with the requirements of California Vehicle Code (CVC) section 23114 (freeboard means vertical space between the top of the load and top of the trailer);

AQ-3 All off-road diesel-powered construction equipment less than 175 horsepower shall meet or exceed Tier 2 off-road emission standards. Off-road diesel-powered construction equipment greater than 175 horsepower shall meet or exceed Tier 3 off-road emissions standards;

AQ-4 During construction, the off-road equipment, vehicles, and trucks shall not be idle more than five minutes in any one hour;

AQ-5 The off-road construction equipment drivers shall have proper training in operating equipment efficiently, taking into account ways to reduce the hours of operation of the equipment and/or operate the equipment at a lower load factor;

AQ-6 Traffic speeds on all unpaved roads shall be reduced to 15 mph or less; and

AQ-7 During construction, there shall be carpools, vanpools, and/or shuttles provided for construction employees.

Implementing these mitigation measures will reduce emissions below AVAQMD thresholds.

7.0 REFERENCES

1. Antelope Valley Air Quality Management District, “California Environmental Quality Act and Federal Conformity Guidelines”, AVAQMD Stationary Sources Section, AVAQMD Surveillance Section, August 2011.

2. California Air Resources Board iADAM: Air Quality Data Statistics Select 8 Summary. Accessed online at: http://www.arb.ca.gov/ada/select8/sc8start.php, August 2013.

3. California Air Resources Board Area Designations. Available at www.arb.ca.gov/desig/desig.htm

4. Intergovernmental Panel on Climate Change (IPCC). Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Geneva, Switzerland. February.

5. Seinfeld and Pandis. Atmospheric Chemistry and Physics from Air Pollution to Climate Change, 1998.

6. CARB’s Urban Emission Model 2007, Version 9.2.4, http://www.urbemis.com/

7. Antelope Valley Air Quality Management District Rule 403, http://www.avaqmd.ca.gov/index.aspx?page=102

8. Antelope Valley Air Quality Management District Regulation II and XIII, http://www.avaqmd.ca.gov/index.aspx?page=102

9. Southwest Research Institute Study, “Diesel Exhaust Standard Phase I, CRC Project No. AVFL-10A”, August 2003.

10. AVAQMD Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area), May 20, 2008, http://www.arb.ca.gov/planning/sip/planarea/antaqmp/av2008ozone.pdf

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APPENDIX A

URBEMIS MODEL RUNS

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

Project Name: Silverado Power- North Lancaster Ranch CUP Group 6

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (tons/year unmitigated)	0.14	1.11	0.76	0.00	1.34	0.05	1.39	0.28	0.05	0.33	181.77
2014 TOTALS (tons/year mitigated)	0.14	1.11	0.76	0.00	0.76	0.05	0.80	0.16	0.04	0.20	181.77
Percent Reduction	0.00	0.00	0.00	0.00	43.38	9.35	42.12	43.34	9.36	38.42	0.00
2015 TOTALS (tons/year unmitigated)	0.27	1.99	1.37	0.00	0.97	0.10	1.07	0.20	0.09	0.30	298.94
2015 TOTALS (tons/year mitigated)	0.27	1.99	1.37	0.00	0.55	0.07	0.62	0.12	0.06	0.18	298.94
Percent Reduction	0.00	0.00	0.00	0.00	43.12	35.81	42.42	43.05	35.84	40.78	0.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.00						
TOTALS (tons/year, mitigated)	0.00						
Percent Reduction	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.23	0.00	0.04	0.00	0.01	0.00	4.68

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.23	0.00	0.04	0.00	0.01	0.00	4.68

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014	0.14	1.11	0.76	0.00	1.34	0.05	1.39	0.28	0.05	0.33	181.77
Fine Grading 07/01/2014-10/31/2014	0.09	0.73	0.43	0.00	1.34	0.03	1.37	0.28	0.03	0.31	90.65
Fine Grading Dust	0.00	0.00	0.00	0.00	1.34	0.00	1.34	0.28	0.00	0.28	0.00
Fine Grading Off Road Diesel	0.09	0.72	0.39	0.00	0.00	0.03	0.03	0.00	0.03	0.03	83.85
Fine Grading On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27
Fine Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.53
Trenching 11/01/2014-11/30/2014	0.01	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.88
Trenching Off Road Diesel	0.01	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.95
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93
Building 12/01/2014-12/31/2014	0.04	0.31	0.29	0.00	0.00	0.01	0.01	0.00	0.01	0.01	81.24
Building Off Road Diesel	0.03	0.20	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	38.82
Building Vendor Trips	0.01	0.10	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.00	27.48
Building Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.94
2015	0.27	1.99	1.37	0.00	0.97	0.10	1.07	0.20	0.09	0.30	298.94
Demolition 01/15/2015-01/31/2015	0.04	0.33	0.19	0.00	0.01	0.01	0.02	0.00	0.01	0.01	41.45
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.04	0.32	0.18	0.00	0.00	0.01	0.01	0.00	0.01	0.01	39.36
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72
Demo Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.37
Fine Grading 02/01/2015-04/30/2015	0.18	1.33	0.88	0.00	0.96	0.07	1.03	0.20	0.07	0.27	169.41
Fine Grading Dust	0.00	0.00	0.00	0.00	0.96	0.00	0.96	0.20	0.00	0.20	0.00
Fine Grading Off Road Diesel	0.18	1.32	0.81	0.00	0.00	0.07	0.07	0.00	0.07	0.07	155.72
Fine Grading On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.76
Fine Grading Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.94
Trenching 05/01/2015-05/31/2015	0.01	0.07	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.38
Trenching Off Road Diesel	0.01	0.07	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.40
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98

Building 06/01/2015-06/30/2015	0.03	0.26	0.26	0.00	0.00	0.01	0.01	0.00	0.01	0.01	77.70
Building Off Road Diesel	0.02	0.17	0.10	0.00	0.00	0.01	0.01	0.00	0.01	0.01	37.13
Building Vendor Trips	0.01	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.28
Building Worker Trips	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29

Phase Assumptions

Phase: Demolition 1/15/2015 - 1/31/2015 - Phase 2- Demolition

Building Volume Total (cubic feet): 13050

Building Volume Daily (cubic feet): 1112

On Road Truck Travel (VMT): 15.44

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Fine Grading 2/1/2015 - 4/30/2015 - Phase 2- Mow and Roll

Total Acres Disturbed: 80

Maximum Daily Acreage Disturbed: 3

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 27.69

Off-Road Equipment:

2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Fine Grading 7/1/2014 - 10/31/2014 - Phase 1- Mow and Roll

Total Acres Disturbed: 160

Maximum Daily Acreage Disturbed: 3

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 6.74

Off-Road Equipment:

1 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 11/1/2014 - 11/30/2014 - Phase 1- Trenching
Off-Road Equipment:
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day
1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 5/1/2015 - 5/31/2015 - Phase 2- Trenching
Off-Road Equipment:
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day
1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 12/1/2014 - 12/31/2014 - Phase 1- PV Installation
Off-Road Equipment:
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 6/1/2015 - 6/30/2015 - Phase 2- PV Installation
Off-Road Equipment:
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2014	0.14	1.11	0.76	0.00	0.76	0.05	0.80	0.16	0.04	0.20	181.77
Fine Grading 07/01/2014-10/31/2014	0.09	0.73	0.43	0.00	0.76	0.03	0.79	0.16	0.03	0.19	90.65
Fine Grading Dust	0.00	0.00	0.00	0.00	0.75	0.00	0.75	0.16	0.00	0.16	0.00
Fine Grading Off Road Diesel	0.09	0.72	0.39	0.00	0.00	0.03	0.03	0.00	0.03	0.03	83.85
Fine Grading On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27
Fine Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.53
Trenching 11/01/2014-11/30/2014	0.01	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.88
Trenching Off Road Diesel	0.01	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.95
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93
Building 12/01/2014-12/31/2014	0.04	0.31	0.29	0.00	0.00	0.01	0.01	0.00	0.01	0.01	81.24
Building Off Road Diesel	0.03	0.20	0.11	0.00	0.00	0.01	0.01	0.00	0.00	0.00	38.82
Building Vendor Trips	0.01	0.10	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.00	27.48
Building Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.94
2015	0.27	1.99	1.37	0.00	0.55	0.07	0.62	0.12	0.06	0.18	298.94
Demolition 01/15/2015-01/31/2015	0.04	0.33	0.19	0.00	0.01	0.01	0.01	0.00	0.01	0.01	41.45
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.04	0.32	0.18	0.00	0.00	0.01	0.01	0.00	0.01	0.01	39.36
Demo On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.72
Demo Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.37
Fine Grading 02/01/2015-04/30/2015	0.18	1.33	0.88	0.00	0.54	0.04	0.59	0.11	0.04	0.15	169.41
Fine Grading Dust	0.00	0.00	0.00	0.00	0.54	0.00	0.54	0.11	0.00	0.11	0.00
Fine Grading Off Road Diesel	0.18	1.32	0.81	0.00	0.00	0.04	0.04	0.00	0.04	0.04	155.72
Fine Grading On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.76
Fine Grading Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.94
Trenching 05/01/2015-05/31/2015	0.01	0.07	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.38
Trenching Off Road Diesel	0.01	0.07	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.40
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98
Building 06/01/2015-06/30/2015	0.03	0.26	0.26	0.00	0.00	0.01	0.01	0.00	0.01	0.01	77.70
Building Off Road Diesel	0.02	0.17	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.13
Building Vendor Trips	0.01	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.28

Building Worker Trips	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.29

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Demolition 1/15/2015 - 1/31/2015 - Phase 2- Demolition

For Excavators, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Fine Grading 2/1/2015 - 4/30/2015 - Phase 2- Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Fine Grading 7/1/2014 - 10/31/2014 - Phase 1- Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Trenching 11/1/2014 - 11/30/2014 - Phase 1- Trenching

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 5/1/2015 - 5/31/2015 - Phase 2- Trenching

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 12/1/2014 - 12/31/2014 - Phase 1- PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 6/1/2015 - 6/30/2015 - Phase 2- PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape							
Consumer Products	0.00						
Architectural Coatings							

TOTALS (tons/year, unmitigated)	0.00

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape							
Consumer Products	0.00						
Architectural Coatings							
TOTALS (tons/year, mitigated)	0.00						

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.23	0.00	0.04	0.00	0.01	0.00	4.68
TOTALS (tons/year, unmitigated)	0.23	0.00	0.04	0.00	0.01	0.00	4.68

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT

General light industry	0.01	acres	240.00	2.40	25.74
				2.40	25.74

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	100.0	0.0	0.0			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

Project Name: Silverado Power- North Lancaster Ranch CUP Group 6

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	3.32	26.57	25.14	0.04	30.01	1.10	30.78	6.27	1.01	6.98	7,064.11
2014 TOTALS (lbs/day mitigated)	3.32	26.57	25.14	0.04	16.97	0.85	17.74	3.55	0.78	4.25	7,064.11
2015 TOTALS (lbs/day unmitigated)	5.63	41.72	27.50	0.04	30.02	2.27	32.29	6.27	2.09	8.36	7,064.03
2015 TOTALS (lbs/day mitigated)	5.63	41.72	27.50	0.04	16.98	1.40	18.38	3.55	1.29	4.84	7,064.03

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.00						
TOTALS (lbs/day, mitigated)	0.00						
Percent Reduction	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.54	0.02	0.20	0.00	0.04	0.01	26.50

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.54	0.02	0.20	0.00	0.04	0.01	26.50

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 7/1/2014-10/31/2014 Active Days: 89	2.10	16.33	9.61	0.00	30.01	0.77	30.78	6.27	0.71	6.98	2,037.12
Fine Grading 07/01/2014-10/31/2014	2.10	16.33	9.61	0.00	30.01	0.77	30.78	6.27	0.71	6.98	2,037.12
Fine Grading Dust	0.00	0.00	0.00	0.00	30.00	0.00	30.00	6.27	0.00	6.27	0.00
Fine Grading Off Road Diesel	2.06	16.15	8.73	0.00	0.00	0.76	0.76	0.00	0.70	0.70	1,884.28
Fine Grading On Road Diesel	0.01	0.13	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.01	28.57
Fine Grading Worker Trips	0.02	0.05	0.82	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.27
Time Slice 11/3/2014-11/28/2014 Active Days: 20	1.12	7.71	4.37	0.00	0.00	0.46	0.46	0.00	0.42	0.43	988.28
Trenching 11/01/2014-11/30/2014	1.12	7.71	4.37	0.00	0.00	0.46	0.46	0.00	0.42	0.43	988.28
Trenching Off Road Diesel	1.10	7.68	3.76	0.00	0.00	0.46	0.46	0.00	0.42	0.42	895.09
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 12/1/2014-12/31/2014 Active Days: 23	3.32	26.57	25.14	0.04	0.14	1.10	1.24	0.05	1.01	1.06	7,064.11
Building 12/01/2014-12/31/2014	3.32	26.57	25.14	0.04	0.14	1.10	1.24	0.05	1.01	1.06	7,064.11
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.70	0.70	0.00	0.65	0.65	3,375.70
Building Vendor Trips	0.85	8.70	7.15	0.02	0.08	0.36	0.44	0.03	0.33	0.35	2,389.28
Building Worker Trips	0.25	0.48	8.59	0.01	0.06	0.04	0.10	0.02	0.03	0.05	1,299.12
Time Slice 1/1/2015-1/30/2015 Active Days: 22	3.70	29.59	17.04	0.00	0.48	1.21	1.68	0.10	1.11	1.21	3,767.88
Demolition 01/15/2015-01/31/2015	3.70	29.59	17.04	0.00	0.48	1.21	1.68	0.10	1.11	1.21	3,767.88
Fugitive Dust	0.00	0.00	0.00	0.00	0.47	0.00	0.47	0.10	0.00	0.10	0.00
Demo Off Road Diesel	3.65	29.28	16.17	0.00	0.00	1.19	1.19	0.00	1.10	1.10	3,578.17
Demo On Road Diesel	0.02	0.27	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	65.46
Demo Worker Trips	0.02	0.04	0.77	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.25
Time Slice 2/2/2015-4/30/2015 Active Days: 64	5.63	41.72	27.50	0.00	30.02	2.27	32.29	6.27	2.09	8.36	5,294.13
Fine Grading 02/01/2015-04/30/2015	5.63	41.72	27.50	0.00	30.02	2.27	32.29	6.27	2.09	8.36	5,294.13
Fine Grading Dust	0.00	0.00	0.00	0.00	30.00	0.00	30.00	6.27	0.00	6.27	0.00
Fine Grading Off Road Diesel	5.53	41.13	25.39	0.00	0.00	2.25	2.25	0.00	2.07	2.07	4,866.12
Fine Grading On Road Diesel	0.04	0.48	0.20	0.00	0.00	0.02	0.02	0.00	0.02	0.02	117.37
Fine Grading Worker Trips	0.06	0.11	1.92	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.64
Time Slice 5/1/2015-5/29/2015 Active Days: 21	1.04	7.08	4.29	0.00	0.00	0.43	0.43	0.00	0.39	0.39	988.28

Trenching 05/01/2015-05/31/2015	1.04	7.08	4.29	0.00	0.00	0.43	0.43	0.00	0.39	0.39	988.28
Trenching Off Road Diesel	1.02	7.04	3.71	0.00	0.00	0.42	0.42	0.00	0.39	0.39	895.09
Trenching Worker Trips	0.02	0.03	0.57	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.19
Time Slice 6/1/2015-6/30/2015 Active Days: 22	3.03	23.25	23.83	0.04	0.14	0.98	1.12	0.05	0.90	0.95	7,064.03
Building 06/01/2015-06/30/2015	3.03	23.25	23.83	0.04	0.14	0.98	1.12	0.05	0.90	0.95	7,064.03
Building Off Road Diesel	2.03	15.19	9.26	0.00	0.00	0.63	0.63	0.00	0.58	0.58	3,375.70
Building Vendor Trips	0.77	7.62	6.55	0.02	0.08	0.31	0.39	0.03	0.28	0.31	2,389.32
Building Worker Trips	0.23	0.44	8.01	0.01	0.06	0.04	0.10	0.02	0.03	0.05	1,299.01

Phase Assumptions

Phase: Demolition 1/15/2015 - 1/31/2015 - Phase 2- Demolition

Building Volume Total (cubic feet): 13050

Building Volume Daily (cubic feet): 1112

On Road Truck Travel (VMT): 15.44

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Fine Grading 2/1/2015 - 4/30/2015 - Phase 2- Mow and Roll

Total Acres Disturbed: 80

Maximum Daily Acreage Disturbed: 3

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 27.69

Off-Road Equipment:

2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Fine Grading 7/1/2014 - 10/31/2014 - Phase 1- Mow and Roll

Total Acres Disturbed: 160

Maximum Daily Acreage Disturbed: 3

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 6.74

Off-Road Equipment:

1 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 11/1/2014 - 11/30/2014 - Phase 1- Trenching

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 5/1/2015 - 5/31/2015 - Phase 2- Trenching

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 12/1/2014 - 12/31/2014 - Phase 1- PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 6/1/2015 - 6/30/2015 - Phase 2- PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 7/1/2014-10/31/2014 Active Days: 89	2.10	16.33	9.61	0.00	16.97	0.77	17.74	3.55	0.71	4.25	2,037.12
Fine Grading 07/01/2014-10/31/2014	2.10	16.33	9.61	0.00	16.97	0.77	17.74	3.55	0.71	4.25	2,037.12
Fine Grading Dust	0.00	0.00	0.00	0.00	16.97	0.00	16.97	3.54	0.00	3.54	0.00
Fine Grading Off Road Diesel	2.06	16.15	8.73	0.00	0.00	0.76	0.76	0.00	0.70	0.70	1,884.28
Fine Grading On Road Diesel	0.01	0.13	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.01	28.57
Fine Grading Worker Trips	0.02	0.05	0.82	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.27
Time Slice 11/3/2014-11/28/2014 Active Days: 20	1.12	7.71	4.37	0.00	0.00	0.26	0.27	0.00	0.24	0.24	988.28
Trenching 11/01/2014-11/30/2014	1.12	7.71	4.37	0.00	0.00	0.26	0.27	0.00	0.24	0.24	988.28
Trenching Off Road Diesel	1.10	7.68	3.76	0.00	0.00	0.26	0.26	0.00	0.24	0.24	895.09
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 12/1/2014-12/31/2014 Active Days: 23	3.32	26.57	25.14	0.04	0.14	0.85	1.00	0.05	0.78	0.83	7,064.11
Building 12/01/2014-12/31/2014	3.32	26.57	25.14	0.04	0.14	0.85	1.00	0.05	0.78	0.83	7,064.11
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.46	0.46	0.00	0.42	0.42	3,375.70
Building Vendor Trips	0.85	8.70	7.15	0.02	0.08	0.36	0.44	0.03	0.33	0.35	2,389.28
Building Worker Trips	0.25	0.48	8.59	0.01	0.06	0.04	0.10	0.02	0.03	0.05	1,299.12
Time Slice 1/1/2015-1/30/2015 Active Days: 22	3.70	29.59	17.04	0.00	0.48	0.86	1.33	0.10	0.79	0.89	3,767.88
Demolition 01/15/2015-01/31/2015	3.70	29.59	17.04	0.00	0.48	0.86	1.33	0.10	0.79	0.89	3,767.88
Fugitive Dust	0.00	0.00	0.00	0.00	0.47	0.00	0.47	0.10	0.00	0.10	0.00
Demo Off Road Diesel	3.65	29.28	16.17	0.00	0.00	0.84	0.84	0.00	0.78	0.78	3,578.17
Demo On Road Diesel	0.02	0.27	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	65.46
Demo Worker Trips	0.02	0.04	0.77	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.25
Time Slice 2/2/2015-4/30/2015 Active Days: 64	5.63	41.72	27.50	0.00	16.98	1.40	18.38	3.55	1.29	4.84	5,294.13
Fine Grading 02/01/2015-04/30/2015	5.63	41.72	27.50	0.00	16.98	1.40	18.38	3.55	1.29	4.84	5,294.13
Fine Grading Dust	0.00	0.00	0.00	0.00	16.97	0.00	16.97	3.54	0.00	3.54	0.00
Fine Grading Off Road Diesel	5.53	41.13	25.39	0.00	0.00	1.37	1.37	0.00	1.26	1.26	4,866.12
Fine Grading On Road Diesel	0.04	0.48	0.20	0.00	0.00	0.02	0.02	0.00	0.02	0.02	117.37

Fine Grading Worker Trips	0.06	0.11	1.92	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.64
Time Slice 5/1/2015-5/29/2015 Active Days: 21	1.04	7.08	4.29	0.00	0.00	0.24	0.24	0.00	0.22	0.22	988.28
Trenching 05/01/2015-05/31/2015	1.04	7.08	4.29	0.00	0.00	0.24	0.24	0.00	0.22	0.22	988.28
Trenching Off Road Diesel	1.02	7.04	3.71	0.00	0.00	0.24	0.24	0.00	0.22	0.22	895.09
Trenching Worker Trips	0.02	0.03	0.57	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.19
Time Slice 6/1/2015-6/30/2015 Active Days: 22	3.03	23.25	23.83	0.04	0.14	0.76	0.90	0.05	0.69	0.74	7,064.03
Building 06/01/2015-06/30/2015	3.03	23.25	23.83	0.04	0.14	0.76	0.90	0.05	0.69	0.74	7,064.03
Building Off Road Diesel	2.03	15.19	9.26	0.00	0.00	0.41	0.41	0.00	0.38	0.38	3,375.70
Building Vendor Trips	0.77	7.62	6.55	0.02	0.08	0.31	0.39	0.03	0.28	0.31	2,389.32
Building Worker Trips	0.23	0.44	8.01	0.01	0.06	0.04	0.10	0.02	0.03	0.05	1,299.01

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Demolition 1/15/2015 - 1/31/2015 - Phase 2- Demolition

For Excavators, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Fine Grading 2/1/2015 - 4/30/2015 - Phase 2- Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Fine Grading 7/1/2014 - 10/31/2014 - Phase 1- Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Trenching 11/1/2014 - 11/30/2014 - Phase 1- Trenching

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 5/1/2015 - 5/31/2015 - Phase 2- Trenching

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 12/1/2014 - 12/31/2014 - Phase 1- PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 6/1/2015 - 6/30/2015 - Phase 2- PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape							
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, unmitigated)	0.00						

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape							
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, mitigated)	0.00						

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	1.54	0.02	0.20	0.00	0.04	0.01	26.50
TOTALS (lbs/day, unmitigated)	1.54	0.02	0.20	0.00	0.04	0.01	26.50

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.01	acres	240.00	2.40	25.74
					2.40	25.74

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6

Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	100.0	0.0	0.0			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

Project Name: Silverado Power- North Lancaster Ranch CUP Group 6

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	3.32	26.57	25.14	0.04	30.01	1.10	30.78	6.27	1.01	6.98	7,064.11
2014 TOTALS (lbs/day mitigated)	3.32	26.57	25.14	0.04	16.97	0.85	17.74	3.55	0.78	4.25	7,064.11
2015 TOTALS (lbs/day unmitigated)	5.63	41.72	27.50	0.04	30.02	2.27	32.29	6.27	2.09	8.36	7,064.03
2015 TOTALS (lbs/day mitigated)	5.63	41.72	27.50	0.04	16.98	1.40	18.38	3.55	1.29	4.84	7,064.03

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.00						
TOTALS (lbs/day, mitigated)	0.00						
Percent Reduction	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.73	0.03	0.19	0.00	0.04	0.01	23.98

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.73	0.03	0.19	0.00	0.04	0.01	23.98

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

Time Slice 7/1/2014-10/31/2014 Active Days: 89	2.10	16.33	9.61	0.00	30.01	0.77	30.78	6.27	0.71	6.98	2,037.12
Fine Grading 07/01/2014-10/31/2014	2.10	16.33	9.61	0.00	30.01	0.77	30.78	6.27	0.71	6.98	2,037.12
Fine Grading Dust	0.00	0.00	0.00	0.00	30.00	0.00	30.00	6.27	0.00	6.27	0.00
Fine Grading Off Road Diesel	2.06	16.15	8.73	0.00	0.00	0.76	0.76	0.00	0.70	0.70	1,884.28
Fine Grading On Road Diesel	0.01	0.13	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.01	28.57
Fine Grading Worker Trips	0.02	0.05	0.82	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.27
Time Slice 11/3/2014-11/28/2014 Active Days: 20	1.12	7.71	4.37	0.00	0.00	0.46	0.46	0.00	0.42	0.43	988.28
Trenching 11/01/2014-11/30/2014	1.12	7.71	4.37	0.00	0.00	0.46	0.46	0.00	0.42	0.43	988.28
Trenching Off Road Diesel	1.10	7.68	3.76	0.00	0.00	0.46	0.46	0.00	0.42	0.42	895.09
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 12/1/2014-12/31/2014 Active Days: 23	3.32	26.57	25.14	0.04	0.14	1.10	1.24	0.05	1.01	1.06	7,064.11
Building 12/01/2014-12/31/2014	3.32	26.57	25.14	0.04	0.14	1.10	1.24	0.05	1.01	1.06	7,064.11
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.70	0.70	0.00	0.65	0.65	3,375.70
Building Vendor Trips	0.85	8.70	7.15	0.02	0.08	0.36	0.44	0.03	0.33	0.35	2,389.28
Building Worker Trips	0.25	0.48	8.59	0.01	0.06	0.04	0.10	0.02	0.03	0.05	1,299.12
Time Slice 1/1/2015-1/30/2015 Active Days: 22	3.70	29.59	17.04	0.00	0.48	1.21	1.68	0.10	1.11	1.21	3,767.88
Demolition 01/15/2015-01/31/2015	3.70	29.59	17.04	0.00	0.48	1.21	1.68	0.10	1.11	1.21	3,767.88
Fugitive Dust	0.00	0.00	0.00	0.00	0.47	0.00	0.47	0.10	0.00	0.10	0.00
Demo Off Road Diesel	3.65	29.28	16.17	0.00	0.00	1.19	1.19	0.00	1.10	1.10	3,578.17
Demo On Road Diesel	0.02	0.27	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	65.46
Demo Worker Trips	0.02	0.04	0.77	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.25
Time Slice 2/2/2015-4/30/2015 Active Days: 64	5.63	41.72	27.50	0.00	30.02	2.27	32.29	6.27	2.09	8.36	5,294.13
Fine Grading 02/01/2015-04/30/2015	5.63	41.72	27.50	0.00	30.02	2.27	32.29	6.27	2.09	8.36	5,294.13
Fine Grading Dust	0.00	0.00	0.00	0.00	30.00	0.00	30.00	6.27	0.00	6.27	0.00
Fine Grading Off Road Diesel	5.53	41.13	25.39	0.00	0.00	2.25	2.25	0.00	2.07	2.07	4,866.12
Fine Grading On Road Diesel	0.04	0.48	0.20	0.00	0.00	0.02	0.02	0.00	0.02	0.02	117.37
Fine Grading Worker Trips	0.06	0.11	1.92	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.64
Time Slice 5/1/2015-5/29/2015 Active Days: 21	1.04	7.08	4.29	0.00	0.00	0.43	0.43	0.00	0.39	0.39	988.28
Trenching 05/01/2015-05/31/2015	1.04	7.08	4.29	0.00	0.00	0.43	0.43	0.00	0.39	0.39	988.28
Trenching Off Road Diesel	1.02	7.04	3.71	0.00	0.00	0.42	0.42	0.00	0.39	0.39	895.09
Trenching Worker Trips	0.02	0.03	0.57	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.19

Time Slice 6/1/2015-6/30/2015 Active Days: 22	3.03	23.25	23.83	0.04	0.14	0.98	1.12	0.05	0.90	0.95	7,064.03
Building 06/01/2015-06/30/2015	3.03	23.25	23.83	0.04	0.14	0.98	1.12	0.05	0.90	0.95	7,064.03
Building Off Road Diesel	2.03	15.19	9.26	0.00	0.00	0.63	0.63	0.00	0.58	0.58	3,375.70
Building Vendor Trips	0.77	7.62	6.55	0.02	0.08	0.31	0.39	0.03	0.28	0.31	2,389.32
Building Worker Trips	0.23	0.44	8.01	0.01	0.06	0.04	0.10	0.02	0.03	0.05	1,299.01

Phase Assumptions

Phase: Demolition 1/15/2015 - 1/31/2015 - Phase 2- Demolition
Building Volume Total (cubic feet): 13050
Building Volume Daily (cubic feet): 1112
On Road Truck Travel (VMT): 15.44
Off-Road Equipment:
1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Fine Grading 2/1/2015 - 4/30/2015 - Phase 2- Mow and Roll
Total Acres Disturbed: 80
Maximum Daily Acreage Disturbed: 3
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 27.69
Off-Road Equipment:
2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Fine Grading 7/1/2014 - 10/31/2014 - Phase 1- Mow and Roll
Total Acres Disturbed: 160
Maximum Daily Acreage Disturbed: 3
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 6.74
Off-Road Equipment:
1 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 11/1/2014 - 11/30/2014 - Phase 1- Trenching
Off-Road Equipment:
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day
1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 5/1/2015 - 5/31/2015 - Phase 2- Trenching
Off-Road Equipment:
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day
1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 12/1/2014 - 12/31/2014 - Phase 1- PV Installation
Off-Road Equipment:
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 6/1/2015 - 6/30/2015 - Phase 2- PV Installation
Off-Road Equipment:
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 7/1/2014-10/31/2014 Active Days: 89	2.10	16.33	9.61	0.00	16.97	0.77	17.74	3.55	0.71	4.25	2,037.12
Fine Grading 07/01/2014-10/31/2014	2.10	16.33	9.61	0.00	16.97	0.77	17.74	3.55	0.71	4.25	2,037.12

Fine Grading Dust	0.00	0.00	0.00	0.00	16.97	0.00	16.97	3.54	0.00	3.54	0.00
Fine Grading Off Road Diesel	2.06	16.15	8.73	0.00	0.00	0.76	0.76	0.00	0.70	0.70	1,884.28
Fine Grading On Road Diesel	0.01	0.13	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.01	28.57
Fine Grading Worker Trips	0.02	0.05	0.82	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.27
Time Slice 11/3/2014-11/28/2014 Active Days: 20	1.12	7.71	4.37	0.00	0.00	0.26	0.27	0.00	0.24	0.24	988.28
Trenching 11/01/2014-11/30/2014	1.12	7.71	4.37	0.00	0.00	0.26	0.27	0.00	0.24	0.24	988.28
Trenching Off Road Diesel	1.10	7.68	3.76	0.00	0.00	0.26	0.26	0.00	0.24	0.24	895.09
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 12/1/2014-12/31/2014 Active Days: 23	3.32	26.57	25.14	0.04	0.14	0.85	1.00	0.05	0.78	0.83	7,064.11
Building 12/01/2014-12/31/2014	3.32	26.57	25.14	0.04	0.14	0.85	1.00	0.05	0.78	0.83	7,064.11
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.46	0.46	0.00	0.42	0.42	3,375.70
Building Vendor Trips	0.85	8.70	7.15	0.02	0.08	0.36	0.44	0.03	0.33	0.35	2,389.28
Building Worker Trips	0.25	0.48	8.59	0.01	0.06	0.04	0.10	0.02	0.03	0.05	1,299.12
Time Slice 1/1/2015-1/30/2015 Active Days: 22	3.70	29.59	17.04	0.00	0.48	0.86	1.33	0.10	0.79	0.89	3,767.88
Demolition 01/15/2015-01/31/2015	3.70	29.59	17.04	0.00	0.48	0.86	1.33	0.10	0.79	0.89	3,767.88
Fugitive Dust	0.00	0.00	0.00	0.00	0.47	0.00	0.47	0.10	0.00	0.10	0.00
Demo Off Road Diesel	3.65	29.28	16.17	0.00	0.00	0.84	0.84	0.00	0.78	0.78	3,578.17
Demo On Road Diesel	0.02	0.27	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	65.46
Demo Worker Trips	0.02	0.04	0.77	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.25
Time Slice 2/2/2015-4/30/2015 Active Days: 64	5.63	41.72	27.50	0.00	16.98	1.40	18.38	3.55	1.29	4.84	5,294.13
Fine Grading 02/01/2015-04/30/2015	5.63	41.72	27.50	0.00	16.98	1.40	18.38	3.55	1.29	4.84	5,294.13
Fine Grading Dust	0.00	0.00	0.00	0.00	16.97	0.00	16.97	3.54	0.00	3.54	0.00
Fine Grading Off Road Diesel	5.53	41.13	25.39	0.00	0.00	1.37	1.37	0.00	1.26	1.26	4,866.12
Fine Grading On Road Diesel	0.04	0.48	0.20	0.00	0.00	0.02	0.02	0.00	0.02	0.02	117.37
Fine Grading Worker Trips	0.06	0.11	1.92	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.64
Time Slice 5/1/2015-5/29/2015 Active Days: 21	1.04	7.08	4.29	0.00	0.00	0.24	0.24	0.00	0.22	0.22	988.28
Trenching 05/01/2015-05/31/2015	1.04	7.08	4.29	0.00	0.00	0.24	0.24	0.00	0.22	0.22	988.28
Trenching Off Road Diesel	1.02	7.04	3.71	0.00	0.00	0.24	0.24	0.00	0.22	0.22	895.09
Trenching Worker Trips	0.02	0.03	0.57	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.19
Time Slice 6/1/2015-6/30/2015 Active Days: 22	3.03	23.25	23.83	0.04	0.14	0.76	0.90	0.05	0.69	0.74	7,064.03
Building 06/01/2015-06/30/2015	3.03	23.25	23.83	0.04	0.14	0.76	0.90	0.05	0.69	0.74	7,064.03

Building Off Road Diesel	2.03	15.19	9.26	0.00	0.00	0.41	0.41	0.00	0.38	0.38	3,375.70
Building Vendor Trips	0.77	7.62	6.55	0.02	0.08	0.31	0.39	0.03	0.28	0.31	2,389.32
Building Worker Trips	0.23	0.44	8.01	0.01	0.06	0.04	0.10	0.02	0.03	0.05	1,299.01

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Demolition 1/15/2015 - 1/31/2015 - Phase 2- Demolition

For Excavators, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Fine Grading 2/1/2015 - 4/30/2015 - Phase 2- Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Fine Grading 7/1/2014 - 10/31/2014 - Phase 1- Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

The following mitigation measures apply to Phase: Trenching 11/1/2014 - 11/30/2014 - Phase 1- Trenching

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 5/1/2015 - 5/31/2015 - Phase 2- Trenching

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
The following mitigation measures apply to Phase: Building Construction 12/1/2014 - 12/31/2014 - Phase 1- PV Installation
For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
The following mitigation measures apply to Phase: Building Construction 6/1/2015 - 6/30/2015 - Phase 2- PV Installation
For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape							
Consumer Products	0.00						
Architectural Coatings							

TOTALS (lbs/day, unmitigated)	0.00						

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape							
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, mitigated)	0.00						

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.73	0.03	0.19	0.00	0.04	0.01	23.98
TOTALS (lbs/day, unmitigated)	0.73	0.03	0.19	0.00	0.04	0.01	23.98

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.01	acres	240.00	2.40	25.74
					2.40	25.74

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	100.0	0.0	0.0			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

APPENDIX B

SCREEN3 MODEL RUNS

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APPENDIX B

SCREEN3 MODEL RUNS

```
 ******  SCREEN3 MODEL  ******
 **** VERSION DATED 13043 ****

 ENTER TITLE FOR THIS RUN (UP TO 79 CHARACTERS):
Site 1- North Lancaster Ranch

 ENTER SOURCE TYPE: P    FOR POINT
                    F    FOR FLARE
                    A    FOR AREA
                    V    FOR VOLUME
   ALSO ENTER ANY OF THE FOLLOWING OPTIONS ON THE SAME LINE:

     N    - TO USE THE NON-REGULATORY BUT CONSERVATIVE BRODE 2
            MIXING HEIGHT OPTION,
     nn.n - TO USE AN ANEMOMETER HEIGHT OTHER THAN THE REGULATORY
            (DEFAULT) 10 METER HEIGHT.
     SS   - TO USE A NON-REGULATORY CAVITY CALCULATION ALTERNATIVE
   Example - PN 7.0 SS (entry for a point source)

  ENTER SOURCE TYPE AND ANY OF THE ABOVE OPTIONS:
a
 ENTER EMISSION RATE (G/(S-M**2)):
2.21e-8
 ENTER SOURCE RELEASE HEIGHT (M):
5
 ENTER LENGTH OF LARGER SIDE FOR AREA (M):
1208
 ENTER LENGTH OF SMALLER SIDE FOR AREA (M):
808
 ENTER RECEPTOR HEIGHT ABOVE GROUND (FOR FLAGPOLE RECEPTOR) (M):
0
 ENTER URBAN/RURAL OPTION (U=URBAN, R=RURAL):
r
 SEARCH THROUGH RANGE OF DIRECTIONS TO FIND THE MAXIMUM?
 ENTER Y OR N:
y
 ENTER CHOICE OF METEOROLOGY;
 1 - FULL METEOROLOGY (ALL STABILITIES & WIND SPEEDS)
 2 - INPUT SINGLE STABILITY CLASS
 3 - INPUT SINGLE STABILITY CLASS AND WIND SPEED
1
 USE AUTOMATED DISTANCE ARRAY? ENTER Y OR N:
y
 ENTER MIN AND MAX DISTANCES TO USE (M):
1
500

 ***********************************
 *** SCREEN AUTOMATED DISTANCES ***
 ***********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED
 FOR FOLLOWING DISTANCES ***


   DIST     CONC          U10M   USTK  MIX HT   PLUME  MAX
DIR
    (M)   (UG/M**3)  STAB  (M/S)  (M/S)    (M)   HT (M)   (DEG)
-------  ----------  ----  -----  -----  ------  ------  -------
     1. 1.106       6     1.0    1.0 10000.0    5.00     33.
   100. 1.240       6     1.0    1.0 10000.0    5.00     33.
   200. 1.365       6     1.0    1.0 10000.0    5.00     33.
   300. 1.481       6     1.0    1.0 10000.0    5.00     32.
   400. 1.590       6     1.0    1.0 10000.0    5.00     32.
   500. 1.693       6     1.0    1.0 10000.0    5.00     32.
 ITERATING TO FIND MAXIMUM CONCENTRATION . . .
 ITERATION STOPPED AT 50 - MAX NOT FOUND!!!

 MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
   837. 2.002       6     1.0    1.0 10000.0    5.00     33.

 USE DISCRETE DISTANCES?  ENTER Y OR N:
y
 TO CEASE, ENTER A DISTANCE OF ZERO (0).

 ***********************************
 *** SCREEN DISCRETE DISTANCES ***
 ***********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED
 FOR FOLLOWING DISTANCES ***


   DIST     CONC          U10M   USTK  MIX HT   PLUME  MAX
DIR
    (M)   (UG/M**3)  STAB  (M/S)  (M/S)    (M)   HT (M)   (DEG)
-------  ----------  ----  -----  -----  ------  ------  -------
 ENTER DISTANCE (M) (0 TO EXIT):
55
    55. 1.180       6     1.0    1.0 10000.0    5.00     33.
 ENTER DISTANCE (M) (0 TO EXIT):
```

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APPENDIX B-2.2

PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH AIR QUALITY AND GHG TECHNICAL REPORT

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SILVERADO POWER CALIFORNIA

WESTERN ANTELOPE BLUE SKY RANCH (CUP GROUP 7-29) AIR QUALITY AND GREENHOUSE GAS TECHNICAL REPORT

Prepared for:

2 Embarcadero Center, Suite 410
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Prepared by:

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17885 Von Karman Avenue, Suite 500
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September 2013

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Appendix B SCREEN3 MODEL RUNS

ABBREVIATIONS AND ACRONYMS

AC	Alternating current
AVAQMD	Antelope Valley Air Quality Management District
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards (CAAQS)
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DC	Direct current
EPA	Environmental Protection Agency
H_2S	Hydrogen sulfide
HI	Hazardous Index
HRA	Health Risk Assessment
HFCs	Hydrofluorcarbons
kV	Kilovolt
MDAB	Mojave Desert Air Basin
mph	Miles per hour
MW	Megawatts
NAAQS	National Ambient Air Quality Standards
N_2O	Nitrous oxide
NO_2	Nitrogen dioxide
O&M	Operations and maintenance
O_3	Ozone
OEHHA	Office of Environmental Health and Hazard Assessment
OPR	Office of Planning and Research
Pb	Lead
PFCs	Perfluorcarbons
PM_{10}	Fine particulate matter equal to or less than 10 microns
$PM_{2.5}$	Fine particulate matter equal to or less than 2.5 microns
PV	Photovoltaic
ROG	Reactive organic gases
RPS	Renewable Portfolio Standards

ABBREVIATIONS AND ACRONYMS
(Continued)

SCAB	South Coast Air Basin
SCE	Southern California Edison
SF_6	Sulfur hexafluoride
SGF	Solar Energy Generation Facility
SO_2	Sulfur dioxide
TACs	Toxic air contaminants
TSP	Total suspended particulate

1.0 EXECUTIVE SUMMARY

Silverado Power, LLC (Silverado Power) proposes to develop, own, and operate a photovoltaic (PV) solar energy project in the County of Los Angeles, California. The Western Antelope Blue Sky Ranch Solar Generation project (Project) will consist of a solar energy generating facility (SGF) that employs PV panels to convert sunlight directly into electrical energy without using heat transfer fluid or cooling water.

The Project facilities will operate year-round, producing electric power during daytime hours. The proposed schedule for construction begins with the facility's site preparation and construction in first quarter of 2014 and completes construction by the third quarter of 2014.

The air quality analysis presented in this report analyzes the potential air quality impacts associated with the proposed Project. A health risk assessment (HRA) was performed to determine the health effects from construction activities to the nearest sensitive receptors. Since the Project site is located within the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD), the air quality analysis follows the AVAQMD's guidelines.

This report also provides estimates of greenhouse gas (GHG) emissions from the combustion of fossil fuels, primarily from constructing the proposed facility, shows operation results in reducing GHG emissions, and addresses the effects of GHGs on climate change.

In summary, the air quality and GHG analysis concludes that emissions during short-term construction and during long-term operation of the project do not exceed the significant thresholds established by the AVAQMD. The HRA concludes that the construction activities would result in a less-than-significant impact with regarding health risk. The project does not pose significant adverse impacts on local air quality or global climate change.

This report has been prepared for Silverado Power as part of an environmental review required by the California Environmental Quality Act (CEQA), with Los Angeles County as lead CEQA agency for the Project. The California Air Resources Board (CARB), AVAQMD, and Los Angeles County methods, standards, and significance thresholds used in this analysis are considered appropriate for determining impacts.

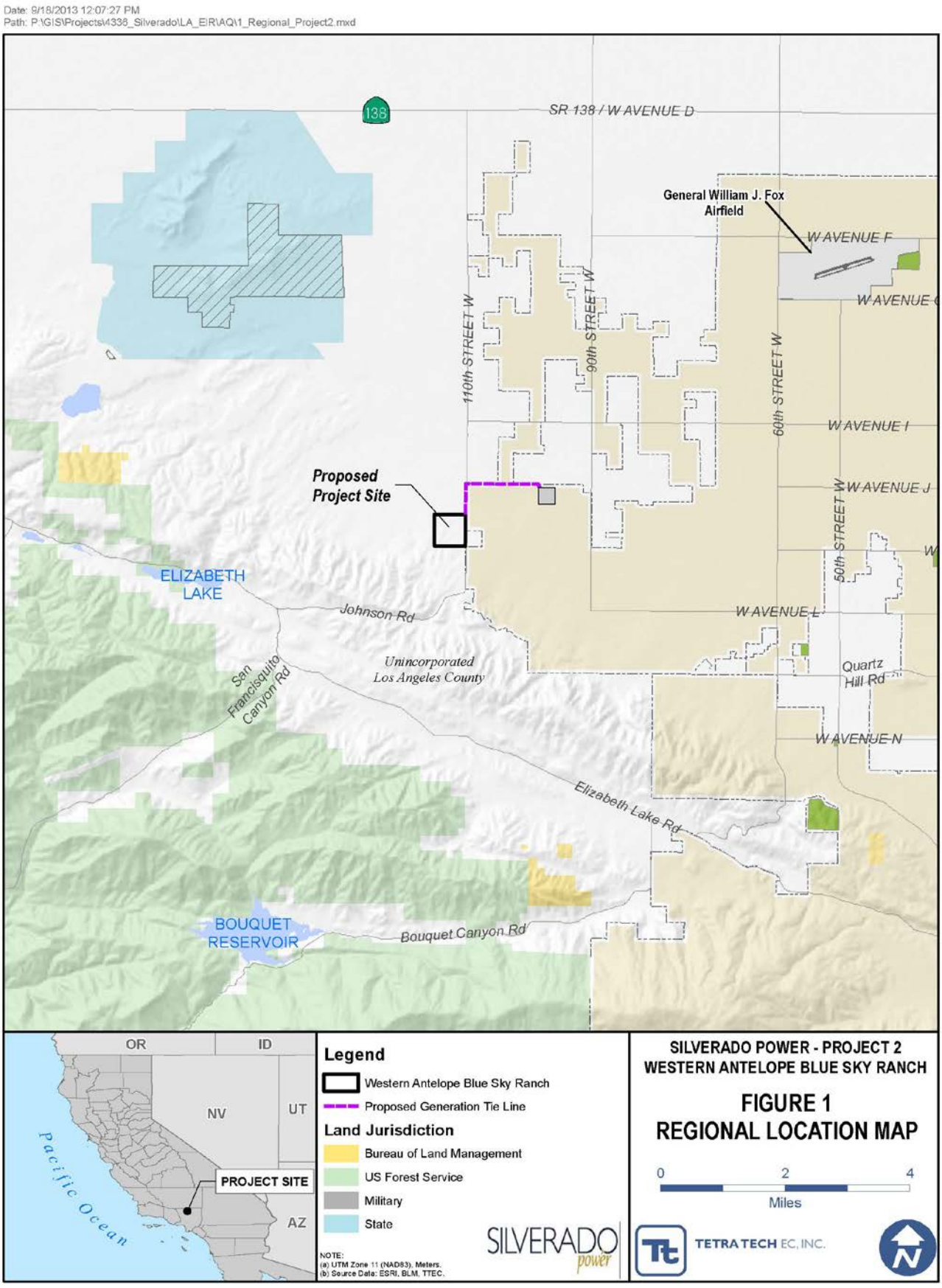
2.0 DESCRIPTION OF PROJECT

2.1 Project Location

The proposed Project is located on 157 acres of primarily unproductive agricultural land in the unincorporated northern section of Los Angeles County. The site is located approximately 9.0 miles northwest of the city of Lancaster. It is located on the northwest corner of West Avenue K and 110th Street, bordered by 110th Street to the right of the project site and West Avenue K to the south of the project site. Figure 1 presents the project location.

2.2 Project Description

The proposed solar generating facility will produce approximately 40 megawatts (MW) of electricity and will consist of the following components:


Date: 9/18/2013 12:07:27 PM
Path: P:\GIS\Projects\4338_Silverado\LA_EIR\AQ\1_Regional_Project2.mxd
138
SR 138 / W AVENUE D
General William J. Fox Airfield
W AVENUE F
W AVENUE G
110th STREET W
90th STREET W
60th STREET W
50th STREET W
W AVENUE I
W AVENUE J
Proposed Project Site
ELIZABETH LAKE
Johnson Rd
W AVENUE L
Unincorporated Los Angeles County
San Francisquito Canyon Rd
Quartz Hill Rd
W AVENUE N
Elizabeth Lake Rd
BOUQUET RESERVOIR
Bouquet Canyon Rd
OR
ID
NV
UT
AZ
Pacific Ocean
PROJECT SITE
Legend
Western Antelope Blue Sky Ranch
Proposed Generation Tie Line
Land Jurisdiction
Bureau of Land Management
US Forest Service
Military
State
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 2
WESTERN ANTELOPE BLUE SKY RANCH
FIGURE 1
REGIONAL LOCATION MAP
0 2 4
Miles
TETRA TECH EC, INC.
N

- PV modules
- PV module mounting system
- Electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing
- Generation tie (underground connection to the substation) of 0.5 miles.

The Project will not require the construction of an on-site operations and maintenance (O&M) facility.

3.0 EXISTING AND AFFECTED ENVIRONMENT

3.1 Existing Air Quality Standards

In California, local responsibility for air quality is assigned to air quality management districts and air pollution control districts. The project site is located in the northern portion of Los Angeles County, which is under the jurisdiction of the AVAQMD. The impact analysis contained in this section was prepared according to the methodologies provided by the AVAQMD [Ref. 1].

The Federal Clean Air Act (42 USC Section 7401-7671q; CAA) requires the adoption of the National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare from the effects of air pollution. Current standards include sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), fine particulate matter equal to or less than 10 microns (PM_{10}), fine particulate matter equal to or less than 2.5 microns ($PM_{2.5}$), and lead (Pb). These pollutants designated criteria pollutants. CARB has established additional state standards for the criteria pollutants that are generally more restrictive than the NAAQS. Federal and state standards are shown in Table 1.

Table 1. State and Federal Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})[8]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter ($PM_{2.5}$)[8]	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12 µg/m^3	15 µg/m^3	
Carbon Monoxide	8 Hour	9.0 ppm (10mg/m^3)	Non-Dispersive Infrared	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
(CO)	1 Hour	20 ppm (23 mg/m^3)	Photometry (NDIR)	35 ppm (40 mg/m^3)		Photometry (NDIR)
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)[9]	Annual Arithmetic Mean	0.03 ppm (56 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m^3)		100 ppb	None	
Sulfur Dioxide (SO_2)[10]	24 Hour	0.04 ppm (105 µg/m^3)	Ultraviolet Fluorescence	0.14 ppm (365 µg/m^3)	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		0.075 ppm (196 µg/m^3)	—	
	Annual Arithmetic Mean	0.075 ppm (196 µg/m^3)		0.03 ppm	—	
Lead (Pb)[11,12]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[13]	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates (SO_4)	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[11]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

1. *California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.*
2. *National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.*
3. *Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.*
4. *Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.*
5. *National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.*
6. *National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.*
7. *Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.*
8. *On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m3 to 12.0 µg/m3. The existing national 24-*

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]

hour PM2.5 standards (primary and secondary) were retained at 35 µg/m3, as was the annual secondary standard of 15 µg/m3. The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

9. *To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.*
10. *On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.*
    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
11. *The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.*
12. *The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.*
13. *In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.*

Source: California Air Resources Board (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, updated 06/04/13), and U.S. Environmental Protection Agency (http://www.epa.gov/air/criteria.html and http://www.epa.gov/air/lead/pdfs/20081015_ pb_naaqs_final.pdf [see "FR Notices" at http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html], accessed September 2013]

The project site is located within the jurisdiction of the AVAQMD whose mission is to attain and maintain NAAQS and California Ambient Air Quality Standards (CAAQS) and to ensure air pollutants do not pose a nuisance or significant public health threat. Included in AVAQMD's tasks are monitoring air pollution and promulgating Rules and Regulations. Four AVAQMD rules are applicable to the Project: Rule 402 (Nuisance), Rule 403 (Fugitive Dust), Regulation II (Permits), and Regulation XIII (New Sources Review).

3.2 Climate

Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.) but also by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall, etc.

The AVAQMD covers a western portion of the Mojave Desert Air Basin (MDAB). This desert region is characterized by wide day-night temperature fluctuations and seasonal strong winds. Days with temperatures exceeding 100°F typically begin in May and can last into October. During July and August minimum nocturnal temperatures in the low to mid-90s can be expected on several nights. Relative humidity is low, below 40 percent most of the year; above 50 percent on most winter nights, during precipitation and on summer evenings after a rain. On a typical summer afternoon the relative humidity is approximately 10 percent; on a winter afternoon, approximately 30 percent. The rainfall pattern is seasonal with most rain falling between November and April. Since 1980, the mean annual precipitation has been 3.5 inches. Prevailing winds in the MDAB are out of the west and southwest.

The most recent data measured in 2012 at the AVAQMD's monitoring station in Lancaster-43301 Division Street shows that the monthly average ambient temperature is 63 °F, hourly average wind speed is 4.7 miles per hour (mph), and monthly average humidity is 41 percent. [Ref. 2].

3.3 Air Pollutant Constituents and Attainment Status

A state or region is given the status of "attainment" or "unclassified" if either the federal or state ambient air quality standards have not been exceeded. A status of "nonattainment" for particular criteria pollutants is assigned if the ambient air quality standard for that pollutant has been exceeded. Once designated as nonattainment, attainment status may be achieved after three years of data showing non-exceedance of the standard. When an area is reclassified from nonattainment to attainment, it is designated as a maintenance area, which requires establishing and enforcing a plan to maintain attainment with the standard.

Table 2 lists criteria air pollutants and their attainment status in the MDAB.

Table 2. Criteria Pollutants Attainment Status in the Mojave Desert Air Basin

Air Pollutants	State	Federal
Ozone (1-Hour)	Nonattainment, classified Extreme	-
Ozone (8-Hour)	Non-attainment; classified Extreme	Non-attainment; classified Moderate
$PM_{2.5}$	Unclassified	Unclassified/attainment
PM_{10}	Non-attainment	Unclassified
NO_2	Attainment/unclassified	Attainment/unclassified
CO	Attainment	Attainment
SO_2	Attainment/unclassified	Attainment/unclassified
Lead	Attainment	Attainment
Particulate Sulfate	Unclassified	-
Hydrogen Sulfide	Unclassified	-
Visibility Reducing Particles	Unclassified	-

Source: AVAQMD 2013 [Ref. 3]

Ozone

Ozone (O_3) is a problematic air contaminant in the MDAB because a significant portion of the ozone (and ozone precursors) in the basin is transported from the heavily populated South Coast Air Basin (SCAB). Maximum ozone concentrations in the SCAB and in the MDAB usually are recorded during summer months.

The 2012 measured data at the Lancaster monitoring station shows that the state air quality standard of 1-hour ozone exceeded threshold on 13 days; and the maximum concentration was 0.112. The 8-hour ozone exceeded state air quality standards on 72 days in that year, and the maximum concentration was 0.096 ppm. The federal air quality standard for 8-hour ozone was exceeded on 39 days in that year, and the maximum concentration was 0.095 ppm. Under the state standards, the MDAB is classified as an extreme nonattainment area for ozone.

Nitrogen Dioxide

The monitoring data shows that the annual average NO_2 concentration in the MDAB has been within the federal standards for the last three years. The highest annual average concentration has remained nearly constant 49 ppb. The 2012 measured data at the Lancaster monitoring station shows that the state standard for nitrogen dioxide standard was not exceeded in that year. The MDAB is in attainment status under California and federal standards.

Carbon Monoxide

Carbon monoxide (CO) is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. In many areas of California, CO emissions from sources such as wood-burning stoves and fireplaces also can be measurable contributors during cold-weather months. Industrial sources of pollution generally contribute less than 10 percent of ambient CO levels. Peak CO levels occur typically during winter months because of a combination of seasonal contributions from home heating devices and stagnant weather conditions. CO reduces the oxygen-carrying capacity of the blood and in high concentrations can cause death. At lower concentrations, people exposed experience dizziness and headaches.

The 2012 measured data at the Lancaster monitoring station shows that the federal and state standard for CO was not exceeded that year; and the maximum concentration was 1.0 ppm. The MDAB is an attainment area for CO for purposes of state and federal air quality planning.

Sulfur Dioxide

Sulfur Dioxide (SO_2) is produced when any sulfur-containing fuel is burned. Chemical plants that treat or refine sulfur or sulfur-containing chemicals also emit SO_2. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of the state, depending on local fuel characteristics, weather, and topography. SO_2 can cause bronchia constriction and may aggravate respiratory diseases. In moist environments, SO_2 may combine with water to form sulfuric acid, a component of acid deposition. SO_2 data is not available as it is not monitored at the Lancaster location, nevertheless, the MDAB is an attainment area of the state and federal for SO_2 standards.

Fine Particulates (PM_{10}, $PM_{2.5}$)

Particulate matter in the air is composed of windblown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and oxides of nitrogen. In 1984, the ARB adopted standards for fine particulate (PM_{10} – particulate matter of less than 10 microns), and phased out the total suspended particulate (TSP) standards used up to that time. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of inhalable particulate related to human health. In 1987, the Environmental Protection Agency (EPA) also replaced national TSP standards with PM_{10} standards. In July 1997, the EPA adopted new standards for fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$).

Particulates are a public health and welfare concern for several reasons. Particulates may be intrinsically toxic because of their inherent chemical and/or physical characteristics. Particulate matter may interfere with one or more of the mechanisms that normally clear the respiratory

tract. Finally, fine particulates, which are easily carried deep into the lungs, may act as carriers of absorbed toxic substances. Thus elevated particulate concentrations may exacerbate pre-existing respiratory diseases such as bronchitis. Particulate matter, especially fine particulate, also interferes with visibility. The MDAB is a nonattainment area of the state's PM_{10} standards. The 2012 measured data at the Lancaster monitoring station shows a maximum concentration of 47 micrograms per cubic meter, an annual average of 19.8 micrograms per cubic meter, and shows zero number of days above the 24-hour PM_{10} federal standards. For state air quality standards, the data shows a maximum concentration of 43 micrograms per cubic meter, and an annual average of 18.5 micrograms per cubic meter, and shows zero number of days about the 24-hour standards for that year. For $PM_{2.5}$, an annual average was not recorded in 2012, but shows a maximum concentration of 14 micrograms per cubic meter, and no a exceedances above the 24-hour $PM_{2.5}$ federal of state standard in that year.

Lead

Lead is found in old paints and coatings, plumbing, and various other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The MDAB is an attainment area for the federal and State AAQS for lead.

3.4 Greenhouse Gases

Certain gases in the Earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. A GHG is any gas in the atmosphere that absorbs infrared radiation. As solar radiation enters the earth's atmosphere, a portion of the radiation is absorbed by the earth's surface, and a portion is reflected back through the atmosphere into space. The absorbed radiation is eventually emitted from the earth into the atmosphere, not as solar radiation, but as infrared radiation. Most solar radiation passes through GHGs; infrared radiation is selectively absorbed or "trapped" by GHGs as heat, and then reradiated back toward the earth's surface, resulting in a warming of the lower atmosphere and the earth's surface. This phenomenon, known as the "greenhouse effect," is beneficial for maintaining a habitable climate on the earth. As the atmospheric concentrations of GHGs rise, however, the average temperature of the lower atmosphere gradually increases, thereby increasing the potential for indirect effects such as a decrease in precipitation as snow, a rise in sea level, and changes to plant and animal species and habitat.

GHGs are emitted by natural processes and human activities. Water vapor is the most abundant and variable GHG in the atmosphere and is not considered a pollutant. The main source of water vapor is evaporation from the oceans (approximately 85 percent); other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves. Carbon dioxide (CO_2) also is a naturally emitted GHG.

Natural GHG sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing.

GHGs also are emitted from human activities including industrial/manufacturing, utilities, transportation, residential, and agricultural activities. Prominent GHGs contributing to the greenhouse effect are CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds. Ozone (O_3)) is a GHG; O3 in the lower atmosphere, however, is relatively short-lived and

therefore is not global in nature. Emissions of CO_2 are by-products of fossil fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) largely associated with agricultural practices and landfills. CO_2 is sequestered through photosynthesis absorption from ocean uptake and vegetation. More CO_2 is currently emitted into the atmosphere than is sequestered by ocean uptake and vegetation.

Human-caused emissions of these GHGs, which exceed natural ambient concentrations, intensify the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. Explaining global climate change during the past 50 years cogently is extremely unlikely without the contribution from human activities [Ref. 4]. Therefore, GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern.

Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (one year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed globally. Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, scientific evidence reveals that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54 percent is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46 percent of human-caused CO_2 emissions remains stored in the atmosphere [Ref. 5]. The quantity of GHGs that it takes to ultimately result in climate change is not known precisely; suffice to say that the quantity is enormous, and no single project would be expected to contribute measurably to a noticeable incremental change in the global average temperature, or to global, local, or microclimate.

While climate change has been a concern since at least 1988, the efforts devoted to GHG emissions reduction and climate change policy have increased dramatically in recent years. In 2002, California passed Assembly Bill (AB) 1493, which requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions beginning with the 2009 model year. In June 2005, Executive Order S-3-05 was signed to reduce California's GHG emissions to: (1) 2000 levels by 2010; (2) 1990 levels by the 2020; and (3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of AB32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including recommendations made of the state's Climate Action Team. Senate Bill 97 acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA.

CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions can adversely affect the environment because they contribute, cumulatively, to global climate change. In turn, global climate change could raise sea levels, potentially inundating low-lying areas; affect rain and snow fall, leading to changes in water supply; and affect habitats, leading to adverse effects on

biological and other resources. Thus, GHG emissions require consideration in CEQA documents.

Federal Legislation

The U.S. Supreme Court ruled on April 2, 2007, that CO_2 is an air pollutant as defined under the CAA, and that the EPA has the authority to regulate emissions of GHGs. Nevertheless, there are no federal regulations or policies regarding GHG emissions applicable to the Project at the time of this writing. Responding to the mounting issue of climate change, the EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, the EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement will provide the EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year. This publically available data will allow the reporters to track their own emissions, compare them to similar facilities, and help identify cost effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial GHGs along with vehicle and engine manufacturers will report at the corporate level. An estimated 85 percent of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act

On December 7, 2009, the EPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). The Endangerment Finding is based on Section 202(a) of the CAA, which states that the Administrator (of EPA) should regulate and develop standards for "emission[s] of air pollution from any class of classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The rule addresses Section 202(a) in two distinct findings. The first addresses whether the concentrations of the six key GHGs (carbon dioxide [CO_2], methane [CH_4], nitrous oxide [N_2O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]) in the atmosphere threaten the health and welfare of current and future generations. The second addresses whether the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and therefore the threat of climate change.

The Administrator found that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are very likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, and higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The Administrator also found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHGs fit within the CAA definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but rather allow the EPA to define the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.

CARB is the agency responsible for coordinating and overseeing state and local air pollution control programs in California and for implementing the California Clean Air Act CCAA, which was adopted in 1988. Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is underway, and there is a real potential for severe adverse environmental, social, and economic effects in the long term.

4.0 METHODOLOGY AND THRESHOLDS

This section describes the methodologies used to determine the air quality impacts associated with the proposed project.

AVAQMD recommends that air quality analysis for a proposed project shall include: direct impacts, indirect impacts, cumulative impacts, and conformity impacts.

Direct impacts result from SGF construction and operation activities on air quality. Indirect impacts result from air quality changes that would not occur without the SGF project, e.g. building and operating retail establishments nearby to support the SGF. Cumulative impacts are the combined effect on air quality from the SGF's operation and other emissions sources in the MDAB. Conformity impacts determine whether the SGF's operation complies with all applicable AVAQMD's rules and regulations.

4.1 Threshold of Significance

To meet federal requirements, impact significance is related to conformance with the EPA-approved SIP and with NAAQS. Air quality impacts would be significant if they exceed these standards or contribute to non-conformance. AVAQMD has published thresholds of significance for air quality and global climate change.

A project has significant air quality impact, if the following occurs:

1. Generates total emissions exceeding the AVAQMD significant thresholds shown in Table 3; and/or
2. Generates a violation of any ambient air quality standard when added to the local air quality background; and/or
3. Does not conform with the applicable attainment or maintenance plan (s); and/or
4. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1.

Table 3. Significant Emission Thresholds

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NOx)	25	137
Reactive Organic Gases (ROG)	25	137
Oxides of Sulfur (SOx)	25	137
Particulate Matter (PM_{10})	15	82
Particulate Matter ($PM_{2.5}$)	15	82
Hydrogen Sulfide (H_2S)	10	54
Lead	0.6	3
Greenhouse Gases (CO_2e)	100,000	548,000

Source: AVAQMD, 2013

A significant project must incorporate mitigation sufficient to reduce its impact to a level that is not significant. A project that cannot be mitigated to a level that is not significant must incorporate all feasible mitigation.

4.2 Direct Impacts

4.2.1 Criteria Air Emissions

Air quality and global climate change impacts associated with the proposed project are related to emissions that would occur during construction and subsequent operation of the proposed project. Principal sources of pollutants during construction would be earth-moving activities, construction equipment, trucks bringing materials to the site, and construction crew commuting vehicles. The sources of pollutants during project operations would be limited to the vehicles and equipment used by the operations and maintenance staff. There are numerous air quality modeling tools available to assess air quality impacts of the project. Emissions during construction and operation were estimated based on the air emission modeling software package, CARB's URBEMIS [Ref. 6]. The model contains data specific to each California air basin.

Construction

Construction process will be conducted in phases. As a conservative analysis, construction of the Project would occur over the course of eight months, starting in the first quarter of 2014 and ending in third quarter of 2014. This timeframe is important since construction emissions are directly related to the intensity of construction activities (emissions increase as the overall amount of construction activity increases). Actual construction may proceed at a less intensive pace, which would result in lower daily emissions. For this project, the following construction phases are assumed:

Phase 1: Mow and Roll;
Phase 2: Fencing/Trenching/Infrastructure Construction;
Phase 3: PV Installation.

The URBEMIS model divides the construction processes into phases, including demolition, mass site grading, fine site grading, fencing/infrastructure construction (trenching, transmission

line construction, paving), and PV installation. These model settings can be modified to fit applicable features of a specific project. The applicant has committed to using the mow and roll method to prepare the site for construction. The mow and roll method will utilize mowers and rollers, which is a less intensive soil disturbance method than grading and excavating the site. As the URBEMIS model only allows for mass site and fine site grading, the fine site grading phase was used to model mow and roll activities (using a half emission factor for grading equipment; approved by the AVAQMD). Since mowing and rolling of the site will clear vegetation and roll the surface of the site, emission estimates from the model are higher than emissions from actual activity during the mow and roll phase. Activities during the trenching phase were modeled to include trenching and infrastructure construction (road construction, transmission line and generation-tie line); and activities during the construction phase were modeled to include construction and installation of the PV panels.

Each construction phase has the potential to generate the following: (1) fugitive dust emissions resulting from soil disturbance activity; (2) emissions of air pollutants from fuel combustion in construction equipment; and (3) emissions of air pollutants from fuel combustion in vehicles used for worker commute and material hauling and construction debris disposal. Silverado Power is committed to implementing “Best Practices” during all construction phases of the Project to further reduce emissions. Figure 2 shows the construction schedules and Figure 3 shows the construction equipment.

During construction, the proposed Project would be subject to AVAQMD Rule 403 (Fugitive Dust). The purpose of Rule 403 is to reduce man-made fugitive dust. Rule 403 requires implementing control measures to prevent, reduce, or mitigate fugitive dust emissions and includes a performance standard that prohibits visible emissions from crossing any property line [Ref. 7]. Dust control measures, such as water application or chemical stabilizers on dry soil, and reducing vehicle travel on unpaved roads, are standard mitigation techniques. The project construction will be required to comply with Rule 403. Implementing the dust suppression techniques specified in Rule 403 can reduce the fugitive dust generation (and thus the PM10 component) by 50 percent or more. Therefore, the estimation of fugitive dust emissions during project construction are based on compliance with AVAQMD Rule 403 requirements for fugitive dust suppression. In addition, to further reduce dust emissions during construction, site preparation will only occur on 75% of the project site, and shall be limited to no more than two acres per day.

Operations

During operation, the project does not require the types of equipment that emit a large amount of air pollutants. The sources of pollutants would be limited to the vehicles used by the operations and maintenance staff.

The URBEMIS software was used to compile the vehicle emissions during long-term project operations. In calculating mobile source emissions, the URBEMIS assumptions were applied to arrive at the annual vehicle miles traveled (VMT).

The proposed Project will be subject to AVAQMD’s Regulation II (Permits) and Regulation XIII (New Source Review). These regulations ensure that all equipment with the potential to emit air pollutants (including air toxics and hazardous air pollutants) at the Project site would be subject to the AVAQMD’s review and approval before installation [Ref. 8].

Figure 2. Western Antelope Blue Sky Ranch (CUP Group 7-29) SGF – Construction Schedule

Year	2014											
Month*	1	2	3	4	5	6	7	8	9	10	11	12
Overall Duration												
Mow and Roll												
Trenching/Infrastructure												
PV Installation												

* 22 days per month

Mow and Roll	
Start Date	1/1/2014
End Date	4/30/2014
Duration (months)	4
Duration (days)	87.27
Total Acreage To Be Disturbed (75%)	118
Calculated Daily Acreage Disturbed	2
Amount (CY)	2,500
Truck Capacity (CY)	20
Round Trips per Day (hauling)	2
Trenching/Infrastructure Construction	
Start Date	5/1/2014
End Date	6/30/2014
Duration (months)	2
Duration (days)	43.27
PV Installation	
Start Date	7/1/2014
End Date	8/31/2014

Figure 3. Construction Equipment

Phase: Mow and Roll
2 Mowers (Grader @ 87 hp) operating at a 0.31 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.60 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Trenching - Infrastructure Construction
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Trencher (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction- PV Installation
1 Bore/Drill Rig (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Crane (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day

4.2.2 Greenhouse Gas Emissions

For this project, the major source of GHG is the combustion of fuel in construction equipment, in vehicles used to haul materials, and in vehicles used by worker commuting to/from the site.

There are three types of GHG from fuel combustion, including carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). GHG emissions are presented as carbon dioxide equivalents (CO_2e). CO_2e is computed based on global warming equivalence. The CH_4 global warming equivalence is 21 times that of CO_2, and the N_2O global warming equivalence is 310 times that of CO_2.

Mathematically, the CO_{2e} can be represented by the following equation:

$$CO_2e \text{ Emissions} = CO_2 \text{ Emissions} + 21 \times CH_4 \text{ Emissions} + 310 \times N_2O \text{ Emissions}$$

The URBEMIS model was used to estimate the GHG emissions during the construction phase of the proposed project. Based on the construction schedule, types and quantities of construction equipment, and haul trucks, etc., the maximum CO_2e emissions were estimated.

The URBEMIS model provides a CO_2 profile only and does not quantify CO_2e, CH_4 and N_2O emissions. The analysis assumed that the CO_2 emissions are CO_2e. For typical diesel-fueled combustion equipment used in construction activities, the emissions factors adjusted with global warming equivalence are:

(1) CO_2 emission factors are 22.4 pounds of CO_2e per gallon consumed;
(2) CH_4 emission factors are 0.065 pounds of CO_2e per gallon consumed; and
(3) N_2O emission factors are 0.068 pounds of CO_2e per gallon consumed.

As shown in these emission factors, the CO_2 profile is 99 percent of the total GHG emissions generated in combustion equipment. Therefore, the CO_2 emissions were assumed to be equivalent to the CO_2e emissions levels.

4.2.3 Health Risk

During construction, toxic emissions are generated mainly from fuel combustion in the construction equipment. To determine the health impacts of these toxic emissions to sensitive receptors, a health risk assessment (HRA) was performed.

A HRA is an estimate of the probability that adverse health effects could occur due to exposure to toxic pollutants. A facility's air emissions, stack information, operation schedule, local weather conditions, chemical dose-response data, etc. are entered into a computer model to produce an estimate of the health risks to nearby sensitive receptors. Sensitive receptors are populations that are more susceptible to the effects of air pollution than are the population at large. While the ambient air quality standards are designed to protect public health and are generally regarded as conservative for healthy adults, there is greater concern to protect adults who are ill or have long-term respiratory problems, and young children whose lungs are not fully developed. According to ARB, sensitive receptors include children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. The AVAQMD identify the following as locations that may contain a high concentration of sensitive receptors; long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, childcare centers, and athletic facilities. The closest sensitive receptor to the project is a single family residence located on 110th Street West, approximately 27 meters east of the project site.

A HRA is performed in 3 steps: hazard identification, exposure assessment, and risk characterization.

Hazard Identification

Hazard identification refers to identifying substances as carcinogens, reproductive toxins, chronic toxins, or acute toxins, or to identifying a type of exposure as hazardous. The toxic air contaminants (TACs) used in the HRA includes diesel particulate matter (DPM) and acrolein. DPM and acrolein are byproducts of diesel fuel combustion. Studies have shown that diesel combustion produces acrolein in the amount equal to 0.013 times that of DPM [Ref. 9]. There are other TACs from diesel combustion besides DPM and acrolein. They are less potent and thus are not included in the HRA.

Exposure Assessment

Exposure assessment identifies and quantifies all routes of human exposure to substances of concern. The SCREEN3 model issued by EPA was used for estimating offsite concentrations of TACs. Based on land use surrounding the proposed project and EPA guidelines, a rural profile

was assumed. Construction activities were modeled as area sources placed over the area of project site. Appendix B provides the SCREEN3 model run.

Risk Characterization

Risk characterization is the final step of the HRA. It quantifies the human health risk based on the exposure assessment and dose-response relationships (cancer potency factors and reference exposure levels). In this assessment, three types of human health effects were considered: (1) cancer; (2) chronic effects; and (3) acute effects. Health risks including cancer, chronic, and acute risks are calculated based on the Office of Environmental Health and Hazard Assessment (OEHHA) guidelines.

Following is a summary of the OEHHA method to determine the cancer, chronic and acute health risk:

Cancer Risk

The cancer risks were calculated as the individual excess lifetime cancer risk (i.e., the probability that an individual may develop cancer from a lifetime exposure to the chemicals of concern). There are different pathways that a toxicant can enter a human body. Gaseous toxicants can enter a human body through the inhalation pathway. Gaseous toxicants also can be deposited on soil, surface water, or plants, which then can enter a human body through ingestion and dermal pathways. Semi-volatile and metal toxicants can enter the body through inhalation, ingestion and dermal pathways.

For inhalation pathway, the cancer risk is computed using the following equation:

$$CRinh = (GLC \times CP \times BR \times EF \times ED \times 10^{-6}) / AT \qquad \text{Eq. 1}$$

Where:

CRinh = Cancer Risk through inhalation
GLC = Annual Average Ground-level concentration (from air dispersion model)
CP = Cancer Potency factor
BR = Daily Breathing Rate
EF = Exposure frequency
ED = Exposure Duration
AT = Average Time Period

For the proposed project, contribution from non-inhalation pathways would not contribute to the overall risk such that the total risk would be above 10 in one million once the multi-pathway risks are added, thus non-inhalation pathway risk estimates are negligible.

Chronic Risk

The potential for long-term chronic health effects is quantified by comparing the predicted level of exposure to a reference exposure level (REL). This ratio of predicted exposure to reference exposure is referred to as a chronic hazard index (HIc). HIc is calculated by summing the ratios of each toxic substance over its REL. The equation for estimating HIc is as follows:

$$HIc = \sum Ci / \text{chronic RELi}$$

Where:

Ci = Ground-level concentration of substance i (annual average concentration)
RELi = Chronic Reference Exposure Level for substance i.

Acute Risk

In the same manner as the quantification of chronic health effects, the potential for short-term acute health effects was quantified using a hazard index. The acute hazard index (HIa) is calculated by dividing the maximum estimated hourly concentration of each toxic air pollutant by its reference short-term exposure levels. The equation for estimating HIa is as follows:

$$HIa = \sum Ci / \text{Acute RELi}$$

Where:

Ci = Maximum hourly ground-level concentration of substance i
RELi = Acute Reference Exposure Level for substance i.

4.3 Indirect Impacts on Air Quality

Indirect impacts are the result of air quality changes that would not occur without the SGF project. The SGF does not have any permanent on-site staff. There will not be construction and operation of retail establishment to support the SGF. Therefore, indirect impact on air quality is expected to be minimal.

4.4 Cumulative Impacts

Cumulative impacts are the combined effect on air quality from the SGF's operation and other emissions sources in the MDAB. In the operation phase, the SGF operation has no major emissions sources. Operation of equipment that emits regulated air pollutants, or requires AVAQMD permits, is not planned at the SGF. The SGF project will not conflict with or obstruct implementation of the applicable air quality plan, which in this case is the Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area). [Ref. 10] A project is deemed inconsistent with air quality plans if it results in population and/or employment growth that exceeds growth estimates in the applicable air quality plan. The ozone attainment plan relies upon future year emission inventories consistent with CARB, which in turn relies upon adopted General Plan growth projections. As the proposed project is not part of an ongoing regulatory program, the AVAQMD recommends that project-specific air quality impacts be used to determine the potential cumulative impacts to regional air quality. As discussed above, peak daily emissions of operation-related pollutants will not exceed AVAQMD significance thresholds.

In addition, estimates state that while the project would generate air and greenhouse gas emissions during construction and a very minimal amount of GHG emissions during operations, the solar energy provided by the project is a much cleaner source of energy than traditional sources used for the generation of electricity, such as the burning of coal, fuel oil, or natural gas. The amount of CO_2 reductions from proposed solar energy generation depends on the type of electric generation to be displaced by the addition of the solar energy. The energy produced by

the proposed 40 MW project is estimated to displace approximately 68,220 tons of CO_2e that would otherwise be emitted by fossil fuel fired power plants. This is more than enough to offset the project's air and GHG emissions.

As a result, the emissions of non-attainment pollutants and precursors generated by project operation in excess of the AVAQMD project-level thresholds will be less than significant. Cumulative impact on air quality is expected to be minimal.

4.5 Conformity Impacts

The SGF is required to comply with all applicable rules and regulations of the AVAQMD. The project does not conflict with or delay implementation of any applicable attainment or maintenance plan, therefore non-conformity is not expected.

5.0 DIRECT IMPACTS ON AIR QUALITY

This section presents the direct impacts on air quality associated with the proposed project. The following sections present information on potentially significant impacts on air quality environment resulting from the project's implementation. Mitigation measures are proposed that can reduce or eliminate any such impacts.

5.1 Direct Impacts from Project Construction

Short-term air quality impacts would occur during the construction of the project site. Three major sources of emissions during constructions include:

- Fugitive dust emissions – Dust is generally associated with excavation, windblown unpaved areas, vehicle and equipment travel on unpaved roads, and dirt/debris pushing. Dust generated during construction activities would vary substantially depending on the level of activity, the specific operations, and weather conditions;
- Construction Equipment – Construction requires usage of heavy-duty equipment, such as bulldozers, excavators, loaders, etc. Exhaust emissions from this equipment during construction activities would vary daily as activity levels change; and
- Vehicles – Transport vehicles travelling to and from the site, including delivery trucks hauling materials and automobiles carrying workers, generate exhaust emission.

The URBEMIS model runs, which estimate the construction emissions, are presented in Appendix A. Table 4 summarizes emissions during construction. As shown, the short-term emissions during the construction phase will not exceed AVAQMD significant thresholds. As such, the project will not exceed thresholds or result in violating air quality standards or contribute substantially to an existing or projected air quality violation.

Table 4. Construction Emissions[a]

Western Antelope Blue Sky Ranch SGF	ROG	NO_x	CO	SO_2	PM_{10}[b]	$PM_{2.5}$	CO_2e
	(lbs/day)						
Mow and Roll	6	46	29	0	13	4	5,423
Trenching/Infrastructure Construction	1	8	4	0	0	0	988
PV Installation	3	22	17	0	1	1	5,189
Maximum Regional Emissions	**6**	**46**	**29**	**0**	**13**	**4**	**5,423**
AVAQMD Significance Threshold	137	137	548	137	82	82	548,000
Over (Under)	(131)	(91)	(519)	(137)	(69)	(78)	(542,577)
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

* Values may not exactly add up due to rounding.

a. Compiled using the URBEMIS emissions inventory model. The equipment mix and use assumption for each phase is provided in Figure 2.

b. PM_{10} emissions estimates are based on compliance with AVAQMD Rule 403 requirements for fugitive dust suppression and mitigation measures listed in Section 6.

Source: Tetra Tech, 2013

Table 5 summarizes the health risk assessment for the construction activities. Note that the EPA SCREEN3 model uses conservative assumptions for screening purposes; therefore, actual concentration levels are expected to be less than what was analyzed in this report. As shown in Table 5, short-term concentration levels during the construction phase do not expose sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1.

Table 5. Health Risk Assessment

	Construction Activities
Diesel Particulate Matter Run (Cancer Risk)	
DPM Emission Sources Modeled as Area Source, m^2	640,000
Emission Rate, g/s	0.02
Emission Rate, g/s-m^2	3.69E-08
Maximum One-Hour Ground-Level Concentration, µg/m^3	1.5060
Annual Average Ground-Level Concentration, µg/m^3	0.1506
DPM Cancer Potency Factor (mg/kg-day)$^{-1}$	1.10E+00
Breathing Rate, (L/kg-day)	302
Exposure Frequency (days/year)	365
Exposure Duration (years)	1
Average Time Period (days)	25,550
Acrolein (Acute and Chronic Risk)	
Emission Rate, g/s-m^2	4.80E-10
Maximum One-Hour Ground-Level Concentration, µg/m^3	1.96E-02
Acrolein Acute Inhalation REL (Eyes; Respiratory System), µg/m^3	2.5
Acrolein Chronic Inhalation REL (Respiratory System), µg/m^3	0.35

Cancer Risk from Exposure to DPM (Chance in a million)	0.71
Cancer risk greater than or equal to 10 in a million?	No
Acute Risk from Exposure to Acrolein	**0.01**
Hazard Index (HI) (non-cancerous) greater than or equal to 1?	No
Chronic Risk from Exposure to Acrolein	**0.01**
Hazard Index (HI) (non-cancerous) greater than or equal to 1?	No

Source: Tetra Tech, 2013

5.2 Direct Impacts from Project Operation

The URBEMIS model runs, which estimate the operation emissions, are presented in Appendix A. Table 6 summarizes the operation emission calculation compared with the annual threshold, since operation is long-term. The primary source of emissions during operation is vehicles used by facility maintenance staff to and from the site. For worst-case analysis, maintenance activities would consist of one water truck for bi-annual panel washing and one light duty truck as needed for maintenance. As shown in Table 6, emissions during the long-term operation do not exceed AVAQMD significant thresholds.

Table 6. Operation Emissions[a]

Western Antelope Blue Sky Ranch SGF	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
	(tons/year)						
Area[b]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy[c]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile[d]	0.11	0.00	0.02	0.00	0.00	0.00	2.30
Water[e]	0.00	0.00	0.00	0.00	0.00	0.00	2.71
Operation Phase Emissions	0.11	0.00	0.02	0.00	0.00	0.00	5.01
Energy Reduction	0.00	0.00	0.00	0.00	0.00	0.00	-68,220
Net Annual Emissions	0.11	0.00	0.02	0.00	0.00	0.00	(68,215)
AVAQMD Significance Threshold	**25**	**25**	**100**	**25**	**15**	**15**	**100,000**
Over / (Under)	(25)	(25)	(100)	(25)	(15)	(15)	(168,215)
Exceed Threshold?	No	No	No	No	No	No	No

***** Values may not exactly add up due to rounding.

a. Compiled using the URBEMIS emissions inventory model. All values were calculated using URBEMIS, unless otherwise stated.

b. Area sources related to the project include minimal consumer products.

c. Project will generate solar energy only; and will not use electricity or natural gas. Emissions were calculated outside of URBEMIS.

d. Mobile emissions are based on project's trip generation. Client indicated two trips per year to the site for maintenance and security. A maximum of 10 trips per year was assumed. The Project Trip Rate is 0.01.

e. Panel washing is estimated to use 1.90 acre feet of water per year.

Source: Tetra Tech, 2013

5.3 Greenhouse Gas Emission Impacts

Construction of the Project would increase GHG generation, which can contribute to global climate change. This analysis is provided in response to recent heightened interest in the subject of global climate change, and specifically, the California legislature's passage and the Governor's signing of AB 32, which is intended to control and reduce the emission of global warming gases in California; and SB 97, which directs the Office of Planning and Research (OPR) and the California Resources Agency to develop CEQA Guidelines on how local agencies should analyze and, if necessary, mitigate for GHG emissions.

Short-term construction and long-term operation of the Project will generate emissions of GHGs. Construction emissions would be associated with vehicle engine exhaust from construction equipment and vehicles, vendor trips, and construction worker commuting trips. Construction-related GHG emissions are considered temporary and short term. As shown in Table 4, short-term construction emissions will not exceed the daily GHG threshold.

As mentioned above, the Project's facility operation will be limited to general maintenance, panel washing, and security. It is anticipated that operation and maintenance will use one water truck for bi-annual panel washing and one light duty truck as needed, which results in 5 tons of CO_2e. According to EPA 2007 GHG inventory guidance, a 40 MW solar generation facility is calculated to displace 68,220 tons of CO_2e per year. Taking into account the solar generation offsets, facility operation will reduce approximately 68,215 tons of CO_2e annually, as shown in Table 6.

Because construction-related emissions will be temporary and finite in nature, below those levels being considered and/or discussed by other government agencies and associations, and consistent with the AB 32 Scoping Plan, the Project's construction-related GHG emissions are not a cumulatively considerable contribution to climate change and, therefore, are less than significant. The Project's operation-related GHG emissions would be negligible and are not a cumulatively considerable contribution to climate change and, therefore, would be less than significant.

When considering net GHG emissions from converting the Project site from operating as an agricultural farm to operating a 40-MW solar PV power-generating facility, there will be a positive impact of a substantial net reduction in GHG emissions at the Project site. In addition, the generation of power from solar energy is a substantial reduction in GHG emissions over conventional power generation from the combustion of fossil fuels. As the intent is to generate emission-free electricity, it is expected that the 40-MW facility will result in a reduction of 68,215 tons of CO_2e per year during operation.

The Project, therefore, will be in accordance with the state's need for the construction of renewable energy power plants to meet the state's GHG reduction objectives including:

- California's Renewable Portfolio Standard (RPS) that requires California's investor-owned electric utilities to obtain, from renewable sources, 20 percent of the electricity that they supply;
- Executive Order S-14-08 that established RPS targets for California that "all retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020."

- Executive Order S-03-05 on climate changes to advance renewable energy and other solutions to reduce California's GHG emissions.
- The California Global Warming Solutions Act of 2006 (Assembly Bill 32) that established a comprehensive program of regulatory and market mechanisms to reduce GHG emissions to 1990 levels by the year 2020.

6.0 MITIGATION MEASURES

The project will be required to comply with regional rules that assist in reducing air pollutant emissions. AVAQMD Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, AVAQMD Rule 402 requires implementing dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Implementing these dust suppression techniques will reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules will reduce impacts on nearby sensitive receptors. Applicable dust suppression techniques include the following:

AQ-1 During construction, apply nontoxic chemical soil stabilizers according to manufacturers' specifications or water active sites at least twice daily (locations where site preparation is to occur will be thoroughly watered before earthmoving);

AQ-2 All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard in accordance with the requirements of California Vehicle Code (CVC) section 23114 (freeboard means vertical space between the top of the load and top of the trailer);

AQ-3 All off-road diesel-powered construction equipment less than 175 horsepower shall meet or exceed Tier 2 off-road emission standards. Off-road diesel-powered construction equipment greater than 175 horsepower shall meet or exceed Tier 3 off-road emissions standards;

AQ-4 During construction, the off-road equipment, vehicles, and trucks shall not idle more than five minutes in any one hour;

AQ-5 The off-road construction equipment drivers shall have proper training in operating the equipment efficiently, taking into account ways to reduce the hours of operation of the equipment and/or operate the equipment at a lower load factor;

AQ-6 Traffic speeds on all unpaved roads shall be reduced to 15 mph or less; and

AQ-7 During construction, there shall be carpools, vanpools, and/or shuttles provided for construction employees.

Implementing these mitigation measures will reduce emissions below AVAQMD thresholds.

7.0 REFERENCES

1. Antelope Valley Air Quality Management District, “California Environmental Quality Act and Federal Conformity Guidelines”, AVAQMD Stationary Sources Section, AVAQMD Surveillance Section, August 2011.

2. California Air Resources Board iADAM: Air Quality Data Statistics Select 8 Summary. Accessed online at: http://www.arb.ca.gov/ada/select8/sc8start.phpAntelope, August 2013.

3. Area Designations. Available at www.arb.ca.gov/desig/desig.htm

4. Intergovernmental Panel on Climate Change (IPCC). Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Geneva, Switzerland. February.

5. Seinfeld and Pandis. Atmospheric Chemistry and Physics from Air Pollution to Climate Change, 1998.

6. CARB’s Urban Emission Model 2007, Version 9.2.4, http://www.urbemis.com/201

7. Antelope Valley Air Quality Management District Rule 403, http://www.avaqmd.ca.gov/index.aspx?page=102

8. Antelope Valley Air Quality Management District Regulation II and XIII, http://www.avaqmd.ca.gov/index.aspx?page=102

9. Southwest Research Institute Study, “Diesel Exhaust Standard Phase I, CRC Project No. AVFL-10A”, August 2003.

10. AVAQMD Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non- attainment Area), May 20, 2008, http://www.arb.ca.gov/planning/sip/planarea/antaqmp/av2008ozone.pdf

APPENDIX A

URBEMIS MODEL RUNS

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

Project Name: Site 2- Western Antelope Blue Sky Ranch

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (tons/year unmitigated)	0.35	2.61	1.71	0.00	0.86	0.14	1.00	0.18	0.13	0.31	368.60
2014 TOTALS (tons/year mitigated)	0.35	2.61	1.71	0.00	0.49	0.09	0.58	0.10	0.08	0.18	368.60
Percent Reduction	0.00	0.00	0.00	0.00	43.32	36.99	42.45	43.23	37.01	40.66	0.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.00						
TOTALS (tons/year, mitigated)	0.00						
Percent Reduction	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.11	0.00	0.02	0.00	0.00	0.00	2.30

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.11	0.00	0.02	0.00	0.00	0.00	2.30

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014	0.35	2.61	1.71	0.00	0.86	0.14	1.00	0.18	0.13	0.31	368.60

Fine Grading 01/01/2014-04/30/2014	0.26	1.96	1.24	0.00	0.86	0.11	0.97	0.18	0.10	0.28	233.19
Fine Grading Dust	0.00	0.00	0.00	0.00	0.86	0.00	0.86	0.18	0.00	0.18	0.00
Fine Grading Off Road Diesel	0.25	1.91	1.13	0.00	0.00	0.11	0.11	0.00	0.10	0.10	209.24
Fine Grading On Road Diesel	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.59
Fine Grading Worker Trips	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.36
Trenching 05/01/2014-06/30/2014	0.02	0.17	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	21.25
Trenching Off Road Diesel	0.02	0.17	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	19.24
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Building 07/01/2014-08/31/2014	0.06	0.48	0.38	0.00	0.00	0.02	0.02	0.00	0.02	0.02	114.16
Building Off Road Diesel	0.05	0.38	0.21	0.00	0.00	0.02	0.02	0.00	0.01	0.01	74.27
Building Vendor Trips	0.01	0.09	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.84
Building Worker Trips	0.00	0.01	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.05

Phase Assumptions

Phase: Fine Grading 1/1/2014 - 4/30/2014 - Mow and Roll

Total Acres Disturbed: 118

Maximum Daily Acreage Disturbed: 2

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 58.08

Off-Road Equipment:

2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 5/1/2014 - 6/30/2014 - Trenching/Infrastructure Construction

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 7/1/2014 - 8/31/2014 - PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014	0.35	2.61	1.71	0.00	0.49	0.09	0.58	0.10	0.08	0.18	368.60
Fine Grading 01/01/2014-04/30/2014	0.26	1.96	1.24	0.00	0.49	0.07	0.55	0.10	0.06	0.16	233.19
Fine Grading Dust	0.00	0.00	0.00	0.00	0.49	0.00	0.49	0.10	0.00	0.10	0.00
Fine Grading Off Road Diesel	0.25	1.91	1.13	0.00	0.00	0.06	0.06	0.00	0.06	0.06	209.24
Fine Grading On Road Diesel	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.59
Fine Grading Worker Trips	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.36
Trenching 05/01/2014-06/30/2014	0.02	0.17	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	21.25
Trenching Off Road Diesel	0.02	0.17	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	19.24
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Building 07/01/2014-08/31/2014	0.06	0.48	0.38	0.00	0.00	0.01	0.02	0.00	0.01	0.01	114.16
Building Off Road Diesel	0.05	0.38	0.21	0.00	0.00	0.01	0.01	0.00	0.01	0.01	74.27
Building Vendor Trips	0.01	0.09	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.84
Building Worker Trips	0.00	0.01	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.05

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 1/1/2014 - 4/30/2014 - Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 5/1/2014 - 6/30/2014 - Trenching/Infrastructure Construction

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 7/1/2014 - 8/31/2014 - PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

Project Name: Site 2- Western Antelope Blue Sky Ranch

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	6.08	45.69	28.86	0.02	20.02	2.52	22.54	4.18	2.31	6.50	5,422.97
2014 TOTALS (lbs/day mitigated)	6.08	45.69	28.86	0.02	11.33	1.56	12.89	2.37	1.43	3.80	5,422.97

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.00						
TOTALS (lbs/day, mitigated)	0.00						
Percent Reduction	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.76	0.01	0.10	0.00	0.02	0.00	13.03

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.76	0.01	0.10	0.00	0.02	0.00	13.03

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-4/30/2014 Active Days: 86	**6.08**	**45.69**	**28.86**	0.01	**20.02**	**2.52**	**22.54**	**4.18**	**2.31**	**6.50**	**5,422.97**
Fine Grading 01/01/2014-04/30/2014	6.08	45.69	28.86	0.01	20.02	2.52	22.54	4.18	2.31	6.50	5,422.97
Fine Grading Dust	0.00	0.00	0.00	0.00	20.00	0.00	20.00	4.18	0.00	4.18	0.00
Fine Grading Off Road Diesel	5.92	44.41	26.34	0.00	0.00	2.46	2.46	0.00	2.26	2.26	4,866.12

Fine Grading On Road Diesel	0.10	1.16	0.47	0.00	0.01	0.05	0.05	0.00	0.04	0.04	246.18
Fine Grading Worker Trips	0.06	0.12	2.05	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.66
Time Slice 5/1/2014-6/30/2014 Active Days: 43	1.12	7.71	4.37	0.00	0.00	0.46	0.46	0.00	0.42	0.43	988.28
Trenching 05/01/2014-06/30/2014	1.12	7.71	4.37	0.00	0.00	0.46	0.46	0.00	0.42	0.43	988.28
Trenching Off Road Diesel	1.10	7.68	3.76	0.00	0.00	0.46	0.46	0.00	0.42	0.42	895.09
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 7/1/2014-8/29/2014 Active Days: 44	2.75	21.90	17.14	**0.02**	0.07	0.90	0.97	0.02	0.82	0.85	5,189.17
Building 07/01/2014-08/31/2014	2.75	21.90	17.14	0.02	0.07	0.90	0.97	0.02	0.82	0.85	5,189.17
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.70	0.70	0.00	0.65	0.65	3,375.70
Building Vendor Trips	0.42	4.28	3.52	0.01	0.04	0.18	0.22	0.01	0.16	0.17	1,174.73
Building Worker Trips	0.12	0.24	4.22	0.01	0.03	0.02	0.05	0.01	0.02	0.03	638.73

Phase Assumptions

Phase: Fine Grading 1/1/2014 - 4/30/2014 - Mow and Roll

Total Acres Disturbed: 118

Maximum Daily Acreage Disturbed: 2

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 58.08

Off-Road Equipment:

2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 5/1/2014 - 6/30/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 7/1/2014 - 8/31/2014 - PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-4/30/2014 Active Days: 86	**6.08**	**45.69**	**28.86**	0.01	11.33	1.56	12.89	2.37	1.43	3.80	**5,422.97**
Fine Grading 01/01/2014-04/30/2014	6.08	45.69	28.86	0.01	11.33	1.56	12.89	2.37	1.43	3.80	5,422.97
Fine Grading Dust	0.00	0.00	0.00	0.00	11.31	0.00	11.31	2.36	0.00	2.36	0.00
Fine Grading Off Road Diesel	5.92	44.41	26.34	0.00	0.00	1.50	1.50	0.00	1.38	1.38	4,866.12
Fine Grading On Road Diesel	0.10	1.16	0.47	0.00	0.01	0.05	0.05	0.00	0.04	0.04	246.18
Fine Grading Worker Trips	0.06	0.12	2.05	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.66
Time Slice 5/1/2014-6/30/2014 Active Days: 43	1.12	7.71	4.37	0.00	0.00	0.26	0.27	0.00	0.24	0.24	988.28
Trenching 05/01/2014-06/30/2014	1.12	7.71	4.37	0.00	0.00	0.26	0.27	0.00	0.24	0.24	988.28
Trenching Off Road Diesel	1.10	7.68	3.76	0.00	0.00	0.26	0.26	0.00	0.24	0.24	895.09
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 7/1/2014-8/29/2014 Active Days: 44	2.75	21.90	17.14	**0.02**	0.07	0.65	0.72	0.02	0.60	0.62	5,189.17
Building 07/01/2014-08/31/2014	2.75	21.90	17.14	0.02	0.07	0.65	0.72	0.02	0.60	0.62	5,189.17
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.46	0.46	0.00	0.42	0.42	3,375.70
Building Vendor Trips	0.42	4.28	3.52	0.01	0.04	0.18	0.22	0.01	0.16	0.17	1,174.73
Building Worker Trips	0.12	0.24	4.22	0.01	0.03	0.02	0.05	0.01	0.02	0.03	638.73

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 1/1/2014 - 4/30/2014 - Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 5/1/2014 - 6/30/2014 - Trenching/Infrastructure Construction

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 7/1/2014 - 8/31/2014 - PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape							
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, unmitigated)	0.00						

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape							

Consumer Products	0.00
Architectural Coatings	
TOTALS (lbs/day, mitigated)	0.00

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.76	0.01	0.10	0.00	0.02	0.00	13.03
TOTALS (lbs/day, unmitigated)	0.76	0.01	0.10	0.00	0.02	0.00	13.03

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.01	acres	118.00	1.18	12.66
					1.18	12.66

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0

Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

Project Name: Site 2- Western Antelope Blue Sky Ranch

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	6.08	45.69	28.86	0.02	20.02	2.52	22.54	4.18	2.31	6.50	5,422.97
2014 TOTALS (lbs/day mitigated)	6.08	45.69	28.86	0.02	11.33	1.56	12.89	2.37	1.43	3.80	5,422.97

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.00						
TOTALS (lbs/day, mitigated)	0.00						
Percent Reduction	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.36	0.01	0.09	0.00	0.02	0.00	11.79

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.36	0.01	0.09	0.00	0.02	0.00	11.79

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-4/30/2014 Active Days: 86	**6.08**	**45.69**	**28.86**	0.01	**20.02**	**2.52**	**22.54**	**4.18**	**2.31**	**6.50**	**5,422.97**
Fine Grading 01/01/2014-04/30/2014	6.08	45.69	28.86	0.01	20.02	2.52	22.54	4.18	2.31	6.50	5,422.97
Fine Grading Dust	0.00	0.00	0.00	0.00	20.00	0.00	20.00	4.18	0.00	4.18	0.00

Fine Grading Off Road Diesel	5.92	44.41	26.34	0.00	0.00	2.46	2.46	0.00	2.26	2.26	4,866.12
Fine Grading On Road Diesel	0.10	1.16	0.47	0.00	0.01	0.05	0.05	0.00	0.04	0.04	246.18
Fine Grading Worker Trips	0.06	0.12	2.05	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.66
Time Slice 5/1/2014-6/30/2014 Active Days: 43	1.12	7.71	4.37	0.00	0.00	0.46	0.46	0.00	0.42	0.43	988.28
Trenching 05/01/2014-06/30/2014	1.12	7.71	4.37	0.00	0.00	0.46	0.46	0.00	0.42	0.43	988.28
Trenching Off Road Diesel	1.10	7.68	3.76	0.00	0.00	0.46	0.46	0.00	0.42	0.42	895.09
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 7/1/2014-8/29/2014 Active Days: 44	2.75	21.90	17.14	**0.02**	0.07	0.90	0.97	0.02	0.82	0.85	5,189.17
Building 07/01/2014-08/31/2014	2.75	21.90	17.14	0.02	0.07	0.90	0.97	0.02	0.82	0.85	5,189.17
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.70	0.70	0.00	0.65	0.65	3,375.70
Building Vendor Trips	0.42	4.28	3.52	0.01	0.04	0.18	0.22	0.01	0.16	0.17	1,174.73
Building Worker Trips	0.12	0.24	4.22	0.01	0.03	0.02	0.05	0.01	0.02	0.03	638.73

Phase Assumptions

Phase: Fine Grading 1/1/2014 - 4/30/2014 - Mow and Roll

Total Acres Disturbed: 118

Maximum Daily Acreage Disturbed: 2

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 58.08

Off-Road Equipment:

2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 5/1/2014 - 6/30/2014 - Trenching/Infrastructure Construction

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 7/1/2014 - 8/31/2014 - PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-4/30/2014 Active Days: 86	**6.08**	**45.69**	**28.86**	0.01	11.33	1.56	12.89	2.37	1.43	3.80	**5,422.97**
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Fine Grading Off Road Diesel	5.92	44.41	26.34	0.00	0.00	1.50	1.50	0.00	1.38	1.38	4,866.12
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Trenching Off Road Diesel	1.10	7.68	3.76	0.00	0.00	0.26	0.26	0.00	0.24	0.24	895.09
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 7/1/2014-8/29/2014 Active Days: 44	2.75	21.90	17.14	**0.02**	0.07	0.65	0.72	0.02	0.60	0.62	5,189.17
Building 07/01/2014-08/31/2014	2.75	21.90	17.14	0.02	0.07	0.65	0.72	0.02	0.60	0.62	5,189.17
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.46	0.46	0.00	0.42	0.42	3,375.70
Building Vendor Trips	0.42	4.28	3.52	0.01	0.04	0.18	0.22	0.01	0.16	0.17	1,174.73
Building Worker Trips	0.12	0.24	4.22	0.01	0.03	0.02	0.05	0.01	0.02	0.03	638.73

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 1/1/2014 - 4/30/2014 - Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 5/1/2014 - 6/30/2014 - Trenching/Infrastructure Construction

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 7/1/2014 - 8/31/2014 - PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

APPENDIX B

SCREEN3 MODEL RUNS

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APPENDIX B

SCREEN3 MODEL RUNS

```
 ****** SCREEN3 MODEL ******
 **** VERSION DATED 13043 ****

 ENTER TITLE FOR THIS RUN (UP TO 79
CHARACTERS):
Site 2- Western Antelope Blue Sky Ranch

 ENTER SOURCE TYPE: P FOR POINT
 F FOR FLARE
 A FOR AREA
 V FOR VOLUME
 ALSO ENTER ANY OF THE FOLLOWING OPTIONS
ON THE SAME LINE:

 N - TO USE THE NON-REGULATORY BUT
CONSERVATIVE BRODE 2
 MIXING HEIGHT OPTION,
 nn.n - TO USE AN ANEMOMETER HEIGHT OTHER
THAN THE REGULATORY
 (DEFAULT) 10 METER HEIGHT.
 SS - TO USE A NON-REGULATORY CAVITY
CALCULATION ALTERNATIVE
 Example - PN 7.0 SS (entry for a point source)

 ENTER SOURCE TYPE AND ANY OF THE ABOVE
OPTIONS:
A
 ENTER EMISSION RATE (G/(S-M**2)):
3.69E-08
 ENTER SOURCE RELEASE HEIGHT (M):
5
 ENTER LENGTH OF LARGER SIDE FOR AREA (M):
800
 ENTER LENGTH OF SMALLER SIDE FOR AREA (M):
800
 ENTER RECEPTOR HEIGHT ABOVE GROUND (FOR
FLAGPOLE RECEPTOR) (M):
0
 ENTER URBAN/RURAL OPTION (U=URBAN,
R=RURAL):
R
 SEARCH THROUGH RANGE OF DIRECTIONS TO
FIND THE MAXIMUM?
 ENTER Y OR N:
Y
 ENTER CHOICE OF METEOROLOGY;
 1 - FULL METEOROLOGY (ALL STABILITIES &
WIND SPEEDS)
 2 - INPUT SINGLE STABILITY CLASS
 3 - INPUT SINGLE STABILITY CLASS AND WIND
SPEED
1

 USE AUTOMATED DISTANCE ARRAY? ENTER Y
OR N:
Y
 ENTER MIN AND MAX DISTANCES TO USE (M):
1
500
 ***********************************
 *** SCREEN AUTOMATED DISTANCES ***
 ***********************************

 *** TERRAIN HEIGHT OF 0. M ABOVE STACK
BASE USED FOR FOLLOWING DISTANCES ***

 DIST CONC U10M USTK MIX HT PLUME MAX DIR
 (M) (UG/M**3) STAB (M/S) (M/S) (M) HT (M) (DEG)
 ------- ---------- ---- ----- ----- ------ ------ -------
 1. 1.436 6 1.0 1.0 10000.0 5.00 45.
 100. 1.695 6 1.0 1.0 10000.0 5.00 45.
 200. 1.932 6 1.0 1.0 10000.0 5.00 45.
 300. 2.150 6 1.0 1.0 10000.0 5.00 45.
 400. 2.352 6 1.0 1.0 10000.0 5.00 45.

 500. 2.539 6 1.0 1.0 10000.0 5.00 45.
 ITERATING TO FIND MAXIMUM
CONCENTRATION . . .

 MAXIMUM 1-HR CONCENTRATION AT OR
BEYOND 1. M:
 673. 2.825 6 1.0 1.0 10000.0 5.00 45.

 USE DISCRETE DISTANCES? ENTER Y OR N:
Y
 TO CEASE, ENTER A DISTANCE OF ZERO (0).

 ***********************************
 *** SCREEN DISCRETE DISTANCES ***
 ***********************************

 *** TERRAIN HEIGHT OF 0. M ABOVE STACK
BASE USED FOR FOLLOWING DISTANCES ***


 DIST CONC U10M USTK MIX HT PLUME MAX DIR
 (M) (UG/M**3) STAB (M/S) (M/S) (M) HT (M) (DEG)
 ------- ---------- ---- ----- ----- ------ ------ -------
 ENTER DISTANCE (M) (0 TO EXIT):
27
 27. 1.506 6 1.0 1.0 10000.0 5.00 45.
 ENTER DISTANCE (M) (0 TO EXIT):

0
```

APPENDIX B

SCREEN3 MODEL RUNS

```
**********************************************
*** SUMMARY OF SCREEN MODEL RESULTS ***
**********************************************

CALCULATION MAX CONC DIST TO TERRAIN
PROCEDURE (UG/M**3) MAX (M) HT (M)
-------------- ----------- --------- -------
SIMPLE TERRAIN 2.825 673. 0.


****************************************************
** REMEMBER TO INCLUDE BACKGROUND
CONCENTRATIONS **
****************************************************
```

APPENDIX B-2.3

PROJECT 3 AMERICAN SOLAR GREENWORKS AIR QUALITY AND GHG TECHNICAL REPORT

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SILVERADO POWER CALIFORNIA

AMERICAN SOLAR GREENWORKS (CUP GROUP 9) AIR QUALITY AND GREENHOUSE GAS TECHNICAL REPORT

Prepared for:

SILVERADO power

2 Embarcadero Center, Suite 410
San Francisco, CA 94111

Prepared by:

Tetra Tech, Inc.
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Irvine, CA 92614-6213

September 2013

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Appendix B SCREEN3 MODEL RUNS

ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
AC	alternating current
AVAQMD	antelope Valley Air Quality Management District
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards (CAAQS)
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
DPM	diesel particulate matter
EPA	Environmental Protection Agency
HIa	acute hazard index
Hic	chronic hazard index
HRA	health risk assessment
MDAB	Mojave Desert Air Basin
MW	megawatts
N_2O	nitrous oxide
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
O_3	ozone
PM_{10}	fine particulate matter equal to or less than 10 microns
$PM_{2.5}$	fine particulate matter equal to or less than 2.5 microns
PV	photovoltaic
REL	reference exposure level
ROG	reactive organic gases
SGF	Solar Energy Generation Facility
Silverado Power	Silverado Power, LLC
SO_2	sulfur dioxide
TAC	toxic air contaminant
TSP	total suspended particulate

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1.0 EXECUTIVE SUMMARY

Silverado Power, LLC (Silverado Power) proposes to develop, own, and operate a photovoltaic (PV) solar energy project in the County of Los Angeles, California. The American Solar Generation project (Project) will consist of a solar energy generating facility (SGF) that employs PV panels to convert sunlight directly into electrical energy without using heat transfer fluid or cooling water.

The Project facilities will operate year-round, producing electric power during daytime hours. The proposed schedule for construction begins with the facility's site preparation and construction in the second quarter of 2014 and completes construction by the fourth quarter of 2014.

The air quality analysis presented in this report analyzes the potential air quality impacts associated with the proposed Project. A health risk assessment (HRA) was performed to determine the health effects from construction activities to the nearest sensitive receptors. Since the Project site is located within the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD), the air quality analysis follows the AVAQMD's guidelines.

This report also provides estimates of greenhouse gas (GHG) emissions from the combustion of fossil fuels, primarily from constructing of the proposed facility, shows operation of the facility will result in reducing of GHG emissions, and addresses the effects of GHGs on climate change.

In summary, the air quality and GHG analysis concludes that emissions during short-term construction and during long-term operation of the project do not exceed the significant thresholds established by the AVAQMD. The HRA concludes that the construction activities would result in a less-than-significant impact regarding health risk. The project does not pose significant adverse impacts on local air quality or global climate change.

This report has been prepared for Silverado Power as part of an environmental review required by the California Environmental Quality Act (CEQA), with Los Angeles County as lead CEQA agency for the Project. The California Air Resources Board (CARB), AVAQMD, and Los Angeles County methods, standards, and significance thresholds used in this analysis are considered appropriate for determining impacts.

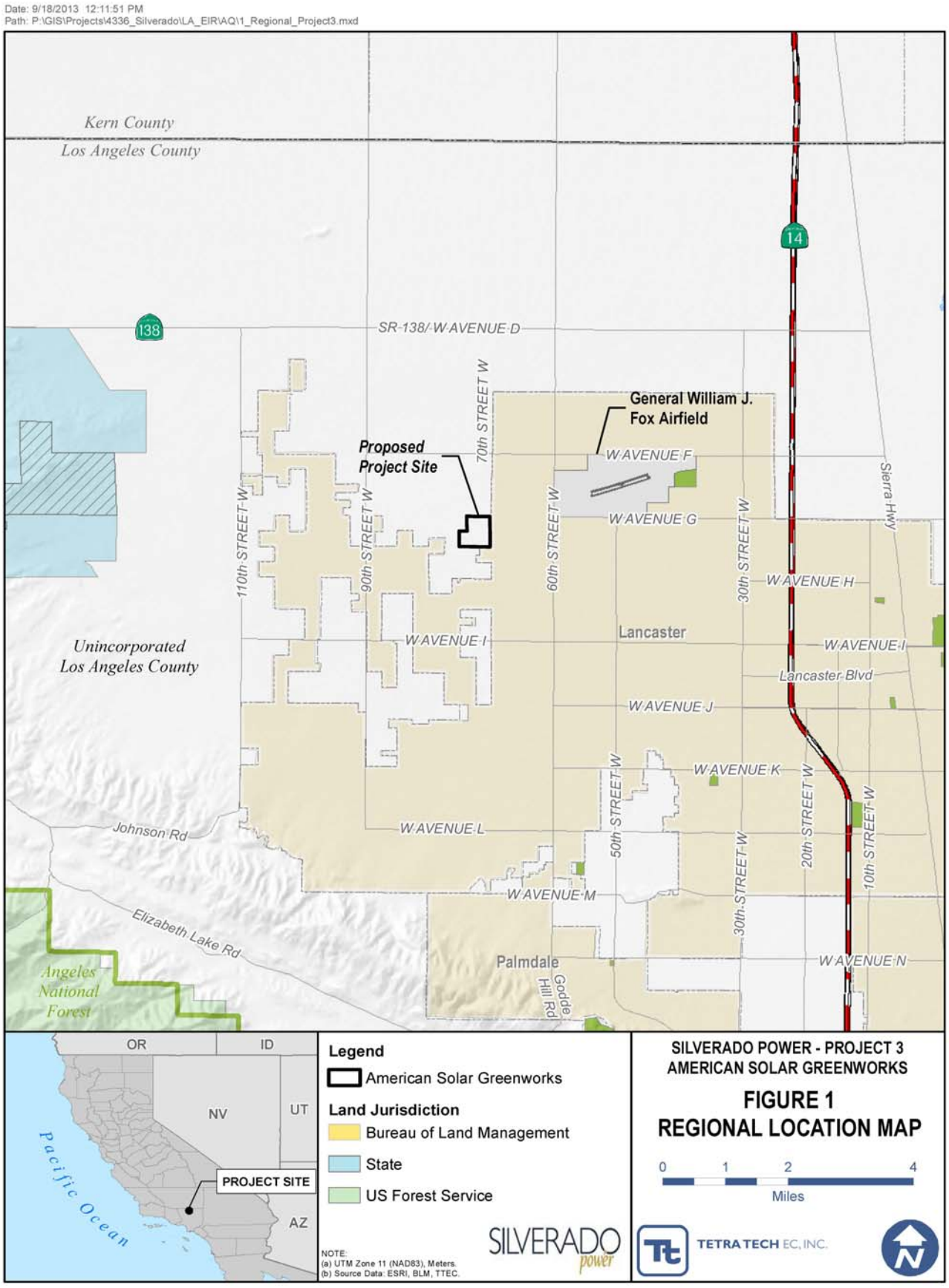
2.0 DESCRIPTION OF PROJECT

2.1 Project Location

The proposed Project is located on 135.61 acres of primarily unproductive agricultural land in the unincorporated northern section of Los Angeles County. The site is located approximately 6.73 miles northwest of the city of Lancaster. It is bordered to the north by West Avenue G, West 75th Street to the west, 70th Street to the east and West Avenue G-8 to the south. Figure 1 presents the project location.

2.2 Project Description

The proposed solar energy generating facility will produce approximately 35 megawatts (MW) of electricity and will consist of the following components:


Date: 9/18/2013 12:11:51 PM
Path: P:\GIS\Projects\4336_Silverado\LA_EIR\AQ\1_Regional_Project3.mxd
Kern County
Los Angeles County
Unincorporated
Los Angeles County
Lancaster
Palmdale
SR-138/W AVENUE D
W AVENUE F
W AVENUE G
W AVENUE H
W AVENUE I
W AVENUE J
W AVENUE K
W AVENUE L
W AVENUE M
W AVENUE N
Lancaster Blvd
Johnson Rd
Elizabeth Lake Rd
Goode Hill Rd
Sierra Hwy
110th STREET W
90th STREET W
70th STREET W
60th STREET W
50th STREET W
30th STREET W
20th STREET W
10th STREET W
Proposed
Project Site
General William J.
Fox Airfield
Angeles
National
Forest
14
138
OR
ID
NV
UT
AZ
Pacific Ocean
PROJECT SITE
Legend
American Solar Greenworks
Land Jurisdiction
Bureau of Land Management
State
US Forest Service
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 3
AMERICAN SOLAR GREENWORKS
FIGURE 1
REGIONAL LOCATION MAP
0 1 2 4
Miles
TETRA TECH EC, INC.
N

- PV modules
- PV module mounting system
- Electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing

The Project will not require the construction of an on-site operations and maintenance facility.

3.0 EXISTING AND AFFECTED ENVIRONMENT

3.1 Existing Air Quality Standards

In California, local responsibility for air quality is assigned to air quality management districts and air pollution control districts. The project site is located in the northern portion of Los Angeles County, which is under the jurisdiction of the AVAQMD. The impact analysis contained in this section was prepared according to the methodologies provided by the AVAQMD [Ref. 1].

The Federal Clean Air Act (42 USC Section 7401-7671q; CAA) requires the adoption of the National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare from the effects of air pollution. Current standards include sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), fine particulate matter equal to or less than 10 microns (PM_{10}), fine particulate matter equal to or less than 2.5 microns ($PM_{2.5}$), and lead. These pollutants are designated criteria pollutants. CARB has established additional state standards for the criteria pollutants that are generally more restrictive than the NAAQS. Federal and state standards are shown in Table 1.

The project site is located within the jurisdiction of the AVAQMD whose mission is to attain and maintain NAAQS and California Ambient Air Quality Standards (CAAQS) and to ensure air pollutants do not pose a nuisance or significant public health threat. Included in AVAQMD's tasks are monitoring air pollution and promulgating Rules and Regulations. Four AVAQMD rules are applicable to the Project: Rule 402 (Nuisance), Rule 403 (Fugitive Dust), Regulation II (Permits), and Regulation XIII (New Sources Review).

Table 1. State and Federal Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O^3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Respirable Particulate Matter (PM_{10})[8]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter ($PM_{2.5}$)[8]	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)[9]	Annual Arithmetic Mean	0.03 ppm (56 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/ m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m^3)		100 ppb	None	
Sulfur Dioxide (SO_2)[10]	24 Hour	0.04 ppm (105 µg/m^3)	Ultraviolet Fluorescence	0.14 ppm (365 µg m^3)	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		0.075 ppm (196 µg/m3)	—	
	Annual Arithmetic Mean	0.075 ppm (196 µg/m^3)		0.03 ppm	—	
Lead (Pb)1[1,12]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[13]	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates (SO_4)	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[11]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]

attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m3 to 12.0 µg/m3. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 µg/m3, as was the annual secondary standard of 15 µg/m3. The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
9. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
10. On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
    Note that the 1-hour national standard is in units of ppb. California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
11. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
12. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
13. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: California Air Resources Board (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, updated 06/04/13), and U.S. Environmental Protection Agency (http://www.epa.gov/air/criteria.html and http://www.epa.gov/air/lead/pdfs/20081015_pb_naaqs_final.pdf [see "FR Notices" at http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html], accessed September 2013]

3.2 Climate

Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.) but also by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall, etc.

The AVAQMD covers a western portion of the Mojave Desert Air Basin (MDAB). This desert region is characterized by wide day-night temperature fluctuations and seasonal strong winds. Days with temperatures exceeding 100°F typically begin in May and can last into October. During July and August minimum nocturnal temperatures in the low to mid-90s can be expected on several nights. Relative humidity is low, below 40 percent most of the year; above 50 percent on most winter nights, during precipitation and on summer evenings after a rain. On a typical summer afternoon the relative humidity is approximately 10 percent; on a winter afternoon, approximately 30 percent. The rainfall pattern is seasonal with most rain falling between November and April. Since 1980, the mean annual precipitation has been 3.5 inches. Prevailing winds in the MDAB are out of the west and southwest.

The most recent data measured in 2012 at the AVAQMD's monitoring station in Lancaster – 43301 Division Street shows that the monthly average ambient temperature is 63 °F, hourly average wind speed is 4.7 miles per hour, and monthly average humidity is 41 percent. [Ref. 2].

3.3 Air Pollutant Constituents and Attainment Status

A state or region is given the status of "attainment" or "unclassified" if either the federal or state ambient air quality standards have not been exceeded. A status of "nonattainment" for particular criteria pollutants is assigned if the ambient air quality standard for that pollutant has been exceeded. Once designated as nonattainment, attainment status may be achieved after three years of data showing non-exceedance of the standard. When an area is reclassified from nonattainment to attainment, it is designated as a maintenance area, which requires establishing and enforcing a plan to maintain attainment with the standard.

Table 2 lists criteria air pollutants and their attainment status in the MDAB.

Table 2. Criteria Pollutants Attainment Status in the Mojave Desert Air Basin

Air Pollutants	State	Federal
Ozone (1-Hour)	Nonattainment, classified Extreme	-
Ozone (8-Hour)	Non-attainment; classified Extreme	Non-attainment; classified Moderate
$PM_{2.5}$	Unclassified	Unclassified/attainment
PM_{10}	Non-attainment	Unclassified
NO_2	Attainment/unclassified	Attainment/unclassified
CO	Attainment	Attainment
SO_2	Attainment/unclassified	Attainment/unclassified
Lead	Attainment	Attainment
Particulate Sulfate	Unclassified	-
Hydrogen Sulfide	Unclassified	-
Visibility Reducing Particles	Unclassified	-

Source: AVAQMD 2013 [Ref. 3]

Ozone

O_3 is a problematic air contaminant in the MDAB because a significant portion of the ozone (and ozone precursors) in the basin is transported from the heavily populated South Coast Air Basin. Maximum ozone concentrations in the South Coast Air Basin and in the MDAB usually are recorded during summer months.

The 2012 measured data at the Lancaster monitoring station shows that the state air quality standard of 1-hour ozone exceeded threshold on 13 days; and the maximum concentration was 0.112. The 8-hour ozone exceeded state air quality standards on 72 days in that year and the maximum concentration was 0.096 ppm. The federal air quality standard for 8-hour ozone was exceeded on 39 days in that year, and the maximum concentration was 0.095 ppm. Under the state standards, the MDAB is classified as an extreme nonattainment area for ozone.

Nitrogen Dioxide

The monitoring data shows that the annual average NO_2 concentration in the MDAB has been within the federal standards for the last three years. The highest annual average concentration has remained nearly constant at 49 ppb. The 2012 measured data at the Lancaster monitoring station shows that the state standard for nitrogen dioxide standard was not exceeded in that year. The MDAB is in attainment status under California and federal standards.

Carbon Monoxide

CO is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. In many areas of California, CO emissions from sources such as wood-burning stoves and fireplaces also can be measurable contributors during cold-weather months. Industrial sources of pollution generally contribute less than 10 percent of ambient CO levels. Peak CO levels occur typically during winter months because of a combination of seasonal contributions from home heating devices and stagnant weather conditions. CO reduces the oxygen-carrying capacity of the blood and in high concentrations can cause death. At lower concentrations, people exposed experience dizziness and headaches.

The 2012 measured data at the Lancaster monitoring station shows that the federal and state standard for CO was not exceeded that year; and the maximum concentration was 1.0 ppm. The MDAB is an attainment area for CO for purposes of state and federal air quality planning.

Sulfur Dioxide

SO_2 is produced when any sulfur-containing fuel is burned. Chemical plants that treat or refine sulfur or sulfur-containing chemicals also emit SO_2. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of the state, depending on local fuel characteristics, weather, and topography. SO_2 can cause bronchia constriction and may aggravate respiratory diseases. In moist environments, SO_2 may combine with water to form sulfuric acid, a component of acid deposition. SO_2 data is not available as it is not monitored at the Lancaster location; nevertheless, the MDAB is an attainment area of the state and federal for SO_2 standards.

Fine Particulates (PM_{10}, $PM_{2.5}$)

Particulate matter in the air is composed of windblown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and oxides of nitrogen. In 1984, CARB adopted standards for fine particulate (PM_{10}), and phased out the total suspended particulate (TSP) standards used up to that time. PM_{10} standards were substituted for TSP standards

because PM_{10} corresponds to the size range of inhalable particulate related to human health. In 1987, the Environmental Protection Agency (EPA) also replaced national TSP standards with PM_{10} standards. In July 1997, the EPA adopted new standards for $PM_{2.5}$.

Particulates are a public health and welfare concern for several reasons. Particulates may be intrinsically toxic because of their inherent chemical and/or physical characteristics. Particulate matter may interfere with one or more of the mechanisms that normally clear the respiratory tract. Finally, fine particulates, which are easily carried deep into the lungs, may act as carriers of absorbed toxic substances. Thus elevated particulate concentrations may exacerbate pre-existing respiratory diseases such as bronchitis. Particulate matter, especially fine particulate, also interferes with visibility. The MDAB is a nonattainment area of the state's PM_{10} standards. The 2012 measured data at the Lancaster monitoring station shows a maximum concentration of 47 micrograms per cubic meter, an annual average of 19.8 micrograms per cubic meter, and shows zero number of days above the 24-hour PM_{10} federal standards. For state air quality standards, the data shows a maximum concentration of 43 micrograms per cubic meter, and an annual average of 18.5 micrograms per cubic meter, and shows zero number of days about the 24-hour standards for that year. For $PM_{2.5,}$ an annual average was not recorded in 2012, but shows a maximum concentration of 14 micrograms per cubic meter, and no exceedances above the 24-hour $PM_{2.5}$ federal or state standard in that year.

Lead

Lead is found in old paints and coatings, plumbing, and various other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The MDAB is an attainment area for the federal and State AAQS for lead.

3.4 Greenhouse Gases

Certain gases in the Earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. A GHG is any gas in the atmosphere that absorbs infrared radiation. As solar radiation enters the earth's atmosphere, a portion of the radiation is absorbed by the earth's surface, and a portion is reflected back through the atmosphere into space. The absorbed radiation is eventually emitted from the earth into the atmosphere, not as solar radiation, but as infrared radiation. Most solar radiation passes through GHGs; infrared radiation is selectively absorbed or "trapped" by GHGs as heat, and then reradiated back toward the earth's surface, resulting in a warming of the lower atmosphere and the earth's surface. This phenomenon, known as the "greenhouse effect," is beneficial for maintaining a habitable climate on the earth. As the atmospheric concentrations of GHGs rise, however, the average temperature of the lower atmosphere gradually increases, thereby increasing the potential for indirect effects such as a decrease in precipitation as snow, a rise in sea level, and changes to plant and animal species and habitat.

GHGs are emitted by natural processes and human activities. Water vapor is the most abundant and variable GHG in the atmosphere and is not considered a pollutant. The main source of water vapor is evaporation from the oceans (approximately 85 percent); other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves. CO_2 also is a naturally emitted GHG.

Natural GHG sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing.

GHGs also are emitted from human activities including industrial/manufacturing, utilities, transportation, residential, and agricultural activities. Prominent GHGs contributing to the greenhouse effect are CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds. O_3 is a GHG; O_3 in the lower atmosphere, however, is relatively short-lived and therefore is not global in nature. Emissions of CO_2 are by-products of fossil fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) largely associated with agricultural practices and landfills. CO_2 is sequestered through photosynthesis and absorption from ocean uptake and vegetation. More CO_2 is currently emitted into the atmosphere than is sequestered by ocean uptake and vegetation.

Human-caused emissions of these GHGs, which exceed natural ambient concentrations, intensify the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. Explaining global climate change during the past 50 years cogently is extremely unlikely without the contribution from human activities [Ref. 4]. Therefore, GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants (TACs), which are pollutants of regional and local concern.

Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed globally. Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, scientific evidence reveals that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54 percent is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46 percent of human-caused CO_2 emissions remains stored in the atmosphere [Ref. 5]. The quantity of GHGs that it takes to ultimately result in climate change is not known precisely; suffice to say that the quantity is enormous, and no single project would be expected to contribute measurably to a noticeable incremental change in the global average temperature, or to global, local, or microclimate.

While climate change has been a concern since at least 1988, the efforts devoted to GHG emissions reduction and climate change policy have increased dramatically in recent years. In 2002, California passed Assembly Bill (AB) 1493, which requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions beginning with the 2009 model year. In June 2005, Executive Order S-3-05 was signed to reduce California's GHG emissions to: (1) 2000 levels by 2010; (2) 1990 levels by the 2020; and (3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of AB 32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including recommendations of the state's Climate Action Team. Senate Bill

97 acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA.

CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions can adversely affect the environment because they contribute, cumulatively, to global climate change. In turn, global climate change could result in rising sea levels, potentially inundating low-lying areas; affect rain and snow fall, leading to changes in water supply; and affect habitats, leading to adverse effects on biological and other resources. Thus, GHG emissions require consideration in CEQA documents.

Federal Legislation

The U.S. Supreme Court ruled on April 2, 2007, that CO_2 is an air pollutant as defined under the CAA, and that the EPA has the authority to regulate emissions of GHGs. Nevertheless, there are no federal regulations or policies regarding GHG emissions applicable to the Project at the time of this writing. Responding to the mounting issue of climate change, the EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, the EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement will provide the EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year. This publically available data will allow the reporters to track their own emissions, compare them to similar facilities, and help identify cost effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial GHGs along with vehicle and engine manufacturers will report at the corporate level. An estimated 85 percent of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act

On December 7, 2009, the EPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). The Endangerment Finding is based on Section 202(a) of the CAA, which states that the Administrator (of EPA) should regulate and develop standards for "emission[s] of air pollution from any class of classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The rule addresses Section 202(a) in two distinct findings. The first addresses whether the concentrations of the six key GHGs (CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) in the atmosphere threaten the health and welfare of current and future generations. The second addresses whether the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and therefore the threat of climate change.

The Administrator found that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this

finding consists of human activity resulting in “high atmospheric levels” of GHG emissions, which are very likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, and higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The Administrator also found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. EPA’s final findings respond to the 2007 U.S. Supreme Court decision that GHGs fit within the CAA definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but rather allow the EPA to define the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.

CARB is the agency responsible for coordinating and overseeing state and local air pollution control programs in California and for implementing the California Clean Air Act, which was adopted in 1988. Various statewide and local initiatives to reduce the state’s contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is underway, and there is a real potential for severe adverse environmental, social, and economic effects in the long term.

4.0 METHODOLOGY AND THRESHOLDS

This section describes the methodologies used to determine the air quality impacts associated with the proposed project.

AVAQMD recommends that air quality analysis for a proposed project shall include: direct impacts, indirect impacts, cumulative impacts, and conformity impacts.

Direct impacts result from SGF construction and operation activities on air quality. Indirect impacts result from air quality changes that would not occur without the SGF project, e.g. building and operating a retail establishment nearby to support the SGF. Cumulative impacts are the combined effect on air quality from the SGF’s operation and other emissions sources in the MDAB. Conformity impacts determine whether the SGF’s operation complies with all applicable AVAQMD’s rules and regulations.

4.1 Threshold of Significance

To meet federal requirements, impact significance is related to conformance with the EPA-approved SIP and with NAAQS. Air quality impacts would be significant if they exceed these standards or contribute to non-conformance. AVAQMD has published thresholds of significance for air quality and global climate change.

A project has significant air quality impact, if the following occurs:

1. Generates total emissions exceeding the AVAQMD significant thresholds shown in Table 3; and/or

2. Generates a violation of any ambient air quality standard when added to the local air quality background; and/or
3. Does not conform with the applicable attainment or maintenance plan(s); and/or
4. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a hazard index (non-cancerous) greater than or equal to 0.1.

A significant project must incorporate mitigation sufficient to reduce its impact to a level that is not significant. A project that cannot be mitigated to a level that is not significant must incorporate all feasible mitigation.

Table 3. Significant Emission Thresholds

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NO_x)	25	137
Reactive Organic Gases (ROG)	25	137
Oxides of Sulfur (SO_x)	25	137
Particulate Matter (PM_{10})	15	82
Particulate Matter ($PM_{2.5}$)	15	82
Hydrogen Sulfide	10	54
Lead	0.6	3
Greenhouse Gases (CO_2e)	100,000	548,000

Source: AVAQMD 2013 [Ref. 1]

4.2 Direct Impacts

4.2.1 Criteria Air Emissions

Air quality and global climate change impacts associated with the proposed project are related to emissions that would occur during construction and subsequent operation of the proposed project. Principal sources of pollutants during construction would be earth-moving activities, construction equipment, trucks bringing materials to the site, and construction crew commuting vehicles. The sources of pollutants during project operations would be limited to the vehicles and equipment used by the operations and maintenance staff. There are numerous air quality modeling tools available to assess air quality impacts of the project. Emissions during construction and operation were estimated based on the air emission modeling software package, CARB's URBEMIS [Ref. 6]. The model contains data specific to each California air basin.

Construction

Construction process will be conducted in phases. As a conservative analysis, construction of the Project would occur over the course of seven months, starting in the second quarter of 2014 and ending in the fourth quarter of 2014. This timeframe important since construction emissions are directly related to the intensity of construction activities (emissions increase as the overall amount of construction activity increases). Actual construction may proceed at a less intensive

pace, which would result in lower daily emissions. For this project, the following construction phases are assumed:

Phase1: Mow and Roll;
Phase 2: Fencing/Trenching/Infrastructure Construction; and
Phase 3: PV Installation.

The URBEMIS model divides the construction processes into phases, including demolition, mass site grading, fine site grading, fencing/infrastructure construction (trenching, transmission line construction, paving), and PV installation. These model settings can be modified to fit applicable features of a specific project. The applicant has committed to using the mow and roll method to prepare the site for construction. The mow and roll method will utilize mowers and rollers, which is a less intensive soil disturbance method than grading and excavating the site. As the URBEMIS model only allows for mass site and fine site grading, the fine site grading phase was used to model mow and roll activities (using a half emission factor for grading equipment; approved by the AVAQMD). Since mowing and rolling of the site will clear vegetation and roll the surface of the site, emission estimates from the model are higher than emissions from actual activity during the mow and roll phase. Activities during the trenching phase were modeled to include trenching and infrastructure construction (road construction, transmission line); and activities during the construction phase were modeled to include construction and installation of the PV panels.

Each construction phase has the potential to generate the following: (1) fugitive dust emissions resulting from soil disturbance activity; (2) emissions of air pollutants from fuel combustion in construction equipment; and (3) emissions of air pollutants from fuel combustion in vehicles used for worker commute and material hauling and construction debris disposal. Silverado Power is committed to implementing “Best Practices” during all construction phases of the Project to further reduce emissions. Figure 2 shows the construction schedules and Figure 3 shows the construction equipment.

During construction, the proposed Project would be subject to AVAQMD Rule 403 (Fugitive Dust). The purpose of Rule 403 is to reduce man-made fugitive dust. Rule 403 requires implementing control measures to prevent, reduce, or mitigate fugitive dust emissions and includes a performance standard that prohibits visible emissions from crossing any property line [Ref. 7]. Dust control measures, such as water application or chemical stabilizers on dry soil, and reducing vehicle travel on unpaved roads, are standard mitigation techniques. The project construction will be required to comply with Rule 403. Implementing the dust suppression techniques specified in Rule 403 can reduce the fugitive dust generation (and thus the PM_{10} component) by 50 percent or more. Therefore, the estimation of fugitive dust emissions during project construction are based on compliance with AVAQMD Rule 403 requirements for fugitive dust suppression. In addition, to further reduce dust emissions during construction, grading shall be limited to no more than 3.5 acres per day.

Figure 2. American Solar Greenworks (Site 3) – Construction Schedule

Year	2014											
Month*	1	2	3	4	5	6	7	8	9	10	11	12
Overall Duration												
Mow and Roll												
Trenching/Infrastructure												
PV Installation												

[a] 22 days per month

Mow and Roll	
Start Date	6/1/2014
End Date	8/31/2014
Duration (months)	3
Duration (days)	66
Total Acreage To Be Disturbed	135.61
Daily Acreage Disturbed	3.5
Trenching/Infrastructure Construction	
Start Date	9/1/2014
End Date	10/31/2014
Duration (months)	2
Duration (days)	44
PV Installation	
Start Date	11/1/2014
End Date	12/31/2014
Duration (months)	2
Duration (days)	44

Figure 3. Construction Equipment

Phase: Mow and Roll
2 Mowers (Grader @ 87 hp) operating at a 0.31 load factor for 6 hours per day
1 Roller (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.60 load factor for 8 hours per day
1 Rubber Tired Dozer (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Trenching - Infrastructure Construction
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Trencher (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction- PV Installation
1 Bore/Drill Rig (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Crane (399 hp) operating at a 0.43 load factor for 7 hours per day
1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day

Operations

During operation, the project does not require the types of equipment that emit a large amount of air pollutants. The sources of pollutants would be limited to the vehicles used by the operations and maintenance staff.

The URBEMIS software was used to compile the vehicle emissions during long-term project operations. In calculating mobile source emissions, the URBEMIS assumptions were applied to arrive at the annual vehicle miles traveled.

The proposed Project will be subject to AVAQMD's Regulation II (Permits) and Regulation XIII (New Source Review). These regulations ensure that all equipment with the potential to emit air pollutants (including air toxics and hazardous air pollutants) at the Project site would be subject to the AVAQMD's review and approval before installation [Ref. 8].

4.2.2 Greenhouse Gas Emissions

For this project, the major source of GHG is the combustion of fuel in construction equipment, in vehicles used to haul materials, and in vehicles used by worker commuting to/from the site.

There are three types of GHG from fuel combustion, including CO_2, CH_4 and N_2O. GHG emissions are presented as carbon dioxide equivalents (CO_2e). CO_2e is computed based on global warming equivalence. The CH_4 global warming equivalence is 21 times that of CO_2, and the N_2O global warming equivalence is 310 times that of CO_2.

Mathematically, the CO_{2e} can be represented by the following equation:

$$CO_2e \text{ Emissions} = CO_2 \text{ Emissions} + 21 \times CH_4 \text{ Emissions} + 310 \times N_2O \text{ Emissions}$$

The URBEMIS model was used to estimate the GHG emissions during the construction phase of the proposed project. Based on the construction schedule, types and quantities of construction equipment, and haul trucks, etc., the maximum CO_2e emissions were estimated.

The URBEMIS model provides a CO_2 profile only and does not quantify CO_2e, CH_4 and N_2O emissions. The analysis assumed that the CO_2 emissions are CO_2e. For typical diesel-fueled combustion equipment used in construction activities, the emissions factors adjusted with global warming equivalence are:

(1) CO_2 emission factors are 22.4 pounds of CO_2e per gallon consumed;
(2) CH_4 emission factors are 0.065 pounds of CO_2e per gallon consumed; and
(3) N_2O emission factors are 0.068 pounds of CO_2e per gallon consumed.

As shown in these emission factors, the CO_2 profile is 99 percent of the total GHG emissions generated in combustion equipment. Therefore, the CO_2 emissions were assumed to be equivalent to the CO_2e emissions levels.

4.2.3 Health Risk

During construction, toxic emissions are generated mainly from fuel combustion in the construction equipment. To determine the health impacts of these toxic emissions to sensitive receptors, a HRA was performed.

A HRA is an estimate of the probability that adverse health effects could occur due to exposure to toxic pollutants. A facility's air emissions, stack information, operation schedule, local weather conditions, chemical dose-response data, etc. are entered into a computer model to produce an estimate of the health risks to nearby sensitive receptors. Sensitive receptors are populations that are more susceptible to the effects of air pollution than are the population at large. While the ambient air quality standards are designed to protect public health and are generally regarded as conservative for healthy adults, there is greater concern to protect adults who are ill or have long-term respiratory problems, and young children whose lungs are not fully developed. According to ARB, sensitive receptors include children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. The SCAQMD identify the following as locations that may contain a high concentration of sensitive receptors; long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, childcare centers, and athletic facilities. The closest sensitive receptors to Project 3 are a 1) a single family residence located on West Avenue G, approximately 21 meters / 69 feet north of the Project site; and 2) a single family residence located 30 meters / 98 feet to the east on 70th Street West. A HRA is performed in 3 steps: hazard identification, exposure assessment, and risk characterization.

Hazard Identification

Hazard identification refers to identifying substances as carcinogens, reproductive toxins, chronic toxins, or acute toxins, or identifying a type of exposure as hazardous. The TACs used in the HRA include diesel particulate matter (DPM) and acrolein. DPM and acrolein are byproducts of diesel fuel combustion. Studies have shown that diesel combustion produces acrolein in the amount equal to 0.013 times that of DPM [Ref. 9]. There are other TACs from diesel combustion besides DPM and acrolein. They are less potent and thus are not included in the HRA.

Exposure Assessment

Exposure assessment identifies and quantifies all routes of human exposure to substances of concern. The SCREEN3 model issued by EPA was used for estimating offsite concentrations of TACs. Based on land use surrounding the proposed project and EPA guidelines, a rural profile was assumed. Construction activities were modeled as area sources placed over the area of project site. Appendix B provides the SCREEN3 model run.

Risk Characterization

Risk characterization is the final step of the HRA. It quantifies the human health risk based on the exposure assessment and dose-response relationships (cancer potency factors and reference exposure levels). In this assessment, three types of human health effects were considered: (1) cancer; (2) chronic effects; and (3) acute effects. Health risks including cancer,

chronic, and acute risks are calculated based on the Office of Environmental Health and Hazard Assessment guidelines.

Following is a summary of the Office of Environmental Health and Hazard Assessment method to determine the cancer, chronic and acute health risk:

Cancer Risk

The cancer risks were calculated as the individual excess lifetime cancer risk (i.e., the probability that an individual may develop cancer from a lifetime exposure to the chemicals of concern). There are different pathways that a toxicant can enter a human body. Gaseous toxicants can enter a human body through the inhalation pathway. Gaseous toxicants also can be deposited on soil, surface water, or plants, which then can enter a human body through ingestion and dermal pathways. Semi-volatile and metal toxicants can enter the body through inhalation, ingestion and dermal pathways.

For inhalation pathway, the cancer risk is computed using the following equation:

$$CRinh = (GLC \times CP \times BR \times EF \times ED \times 10^{-6}) / AT \quad \text{Eq. 1}$$

Where:

CRinh = Cancer Risk through inhalation
GLC = Annual Average Ground-level concentration (from air dispersion model)
CP = Cancer Potency factor
BR = Daily Breathing Rate
EF = Exposure frequency
ED = Exposure Duration
AT = Average Time Period

For the proposed project, contribution from non-inhalation pathways would not contribute to the overall risk such that the total risk would be above 10 in one million once the multi-pathway risks are added, thus non-inhalation pathway risk estimates are negligible.

Chronic Risk

The potential for long-term chronic health effects is quantified by comparing the predicted level of exposure to a reference exposure level (REL). This ratio of predicted exposure to reference exposure is referred to as a chronic hazard index (HIc). HIc is calculated by summing the ratios of each toxic substance over its REL. The equation for estimating HIc is as follows:

$$HIc = \sum Ci / \text{chronic RELi}$$

Where:

Ci = Ground-level concentration of substance i (annual average concentration)
RELi = Chronic Reference Exposure Level for substance i.

Acute Risk

In the same manner as the quantification of chronic health effects, the potential for short-term acute health effects was quantified using a hazard index. The acute hazard index (HIa) is calculated by dividing the maximum estimated hourly concentration of each toxic air pollutant by its reference short-term exposure levels. The equation for estimating HIa is as follows:

$$HIa = \sum Ci / Acute\ RELi$$

Where:

Ci = Maximum hourly ground-level concentration of substance i
RELi = Acute Reference Exposure Level for substance i.

4.3 Indirect Impacts on Air Quality

Indirect impacts are the result of air quality changes that would not occur without the SGF project. The SGF does not have any permanent on-site staff. There will not be construction and operation of retail establishment to support the SGF. Therefore, indirect impact on air quality is expected to be minimal.

4.4 Cumulative Impacts

Cumulative impacts are the combined effect on air quality from the SGF's operation and other emissions sources in the MDAB. In the operation phase, the SGF operation has no major emissions sources. Operation of equipment that emits regulated air pollutants, or requires AVAQMD permits, is not planned at the SGF. The SGF project will not conflict with or obstruct implementation of the applicable air quality plan, which in this case is the Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area). [Ref. 10] A project is deemed inconsistent with air quality plans if it results in population and/or employment growth that exceeds growth estimates in the applicable air quality plan. The ozone attainment plan relies upon future year emission inventories consistent with CARB, which in turn relies upon adopted General Plan growth projections. As the proposed project is not part of an ongoing regulatory program, the AVAQMD recommends that project-specific air quality impacts be used to determine the potential cumulative impacts to regional air quality. As discussed above, peak daily emissions of operation-related pollutants will not exceed AVAQMD significance thresholds.

In addition, estimates state that while the project would generate air and greenhouse gas emissions during construction and a very minimal amount of GHG emissions during operations, the solar energy provided by the project is a much cleaner source of energy than traditional sources used for the generation of electricity, such as the burning of coal, fuel oil, or natural gas. The amount of CO_2 reductions from proposed solar energy generation depends on the type of electric generation to be displaced by the addition of the solar energy. The energy produced by the proposed 35 MW project is estimated to displace approximately 59,640 tons of CO_2e that would otherwise be emitted by fossil fuel fired power plants. This is more than enough to offset the project's air and GHG emissions.

As a result, the emissions of non-attainment pollutants and precursors generated by project operation exceeding the AVAQMD project-level thresholds will be less than significant. Cumulative impact on air quality is expected to be minimal.

4.5 Conformity Impacts

The SGF is required to comply with all applicable rules and regulations of the AVAQMD. The project does not conflict with or delay implementation of any applicable attainment or maintenance plan; therefore, non-conformity is not expected.

5.0 DIRECT IMPACTS ON AIR QUALITY

This section presents the direct impacts on air quality associated with the proposed project. The following sections present information on potentially significant impacts on air quality environment resulting from the project's implementation. Mitigation measures are proposed that can reduce or eliminate any such impacts.

5.1 Direct Impacts from Project Construction

Short-term air quality impacts would occur during the construction of the project site. Three major sources of emissions during constructions include:

- Fugitive dust emissions - Dust is generally associated with excavation, windblown unpaved areas, vehicle and equipment travel on unpaved roads, and dirt/debris pushing. Dust generated during construction activities would vary substantially depending on the level of activity, the specific operations, and weather conditions;
- Construction Equipment - Construction requires usage of heavy-duty equipment, such as bulldozers, excavators, loaders, etc. Exhaust emissions from this equipment during construction activities would vary daily as activity levels change; and
- Vehicles – Transport vehicles travelling to and from the site, including delivery trucks hauling materials and automobiles carrying workers, generate exhaust emission.

The URBEMIS model runs, which estimate the construction emissions, are presented in Appendix A. Table 4 summarizes emissions during construction. As shown, the short-term emissions during the construction phase will not exceed AVAQMD significant thresholds. As such, the project will not exceed thresholds or result in violating air quality standards or contribute substantially to an existing or projected air quality violation.

Table 4. Construction Emissions[a]

American Solar SGF	ROG	NOx	CO	SO_2	PM_{10}[b]	$PM_{2.5}$	CO_2e
	(lbs/day)						
Mow and Roll	4	29	18	0	21	5	3645
Trenching/Infrastructure Construction	1	8	4	0	0	0	988
PV Installation	3	22	18	0	1	1	5,335
Maximum Regional Emissions	4	29	18	0	21	5	5,335
AVAQMD Significance Threshold (lbs/day)	**137**	**137**	**548**	**137**	**82**	**82**	**548,000**
Over (Under)	(133)	(108)	(530)	(137)	(61)	(77)	(542,665)
Exceed Threshold?	No	No	No	No	No	No	No

* Values may not exactly add up due to rounding.

[a] Compiled using the URBEMIS emissions inventory model. The equipment mix and use assumption for each phase is provided in Figure 2.

[b] PM_{10} emissions estimates are based on compliance with AVAQMD Rule 403 requirements for fugitive dust suppression and mitigation measures listed in Section 6.

Source: Tetra Tech, 2013

Table 5 summarizes the health risk assessment for construction activities. Note that the EPA SCREEN3 model uses conservative assumptions for screening purposes; therefore, actual concentration levels are expected to be less than what was analyzed in this report. As shown in Table 5, short-term concentration levels during the construction phase do not expose sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a hazard index (non-cancerous) greater than or equal to 0.1.

Table 5. Health Risk Assessment

	Construction Activities
Diesel Particulate Matter Run (Cancer Risk)	
DPM Emission Sources Modeled as Area Source, m^2	148,634
Emission Rate, g/s	0.0143
Emission Rate, g/s-m^2	9.62E-08
Maximum One-Hour Ground-Level Concentration, µg/m^3	1.8540
Annual Average Ground-Level Concentration, µg/m^3	0.18540
DPM Cancer Potency Factor (mg/kg-day)$^{-1}$	1.10E+00
Breathing Rate, (L/kg-day)	302
Exposure Frequency (days/year)	365
Exposure Duration (years)	1
Average Time Period (days)	25,550
Acrolein (Acute and Chronic Risk)	
Emission Rate, g/s-m^2	1.25E-09
Maximum One-Hour Ground-Level Concentration, µg/m^3	2.41E-02
Acrolein Acute Inhalation REL (Eyes; Respiratory System), µg/m^3	2.5
Acrolein Chronic Inhalation REL (Respiratory System), µg/m^3	0.35
Cancer Risk from Exposure to DPM (Chance in a million)	0.88
Cancer risk greater than or equal to 10 in a million?	No
Acute Risk from Exposure to Acrolein	0.01
Hazard Index (non-cancerous) greater than or equal to 1?	No
Chronic Risk from Exposure to Acrolein	0.01
Hazard Index non-cancerous) greater than or equal to 1?	No

Source: Tetra Tech, 2013

5.2 Direct Impacts from Project Operation

The URBEMIS model runs, which estimate the operation emissions, are presented in Appendix A. Table 6 summarizes the operation emission calculation compared with the annual threshold, since operation is long-term. The primary sources of emissions during operation are vehicles used by facility maintenance staff to and from the site. For worst-case analysis, maintenance activities would consist of one water truck and one light duty truck for bi-annual panel washing. As shown in Table 6, emissions during the long-term operation do not exceed AVAQMD significant thresholds.

Table 6. Operation Emissions

American Solar SGF	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
	(tons/year)						
Area[a]	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Energy[b]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile[c]	0.13	0.00	0.02	0.00	0.00	0.00	2.65
Water[d]	0.00	0.00	0.00	0.00	0.00	0.00	2.37
Operation Phase	0.15	0.00	0.30	0.00	0.00	0.00	5.53
Energy Reduction[b]	0.00	0.00	0.00	0.00	0.00	0.00	-59,640
Net Annual Emissions	0.08	0.00	0.01	0.00	0.00	0.00	(59,634)
AVAQMD Significance Threshold (tons/year)	**25**	**25**	**100**	**25**	**15**	**15**	**100,000**
Over / (Under)	(24)	(25)	(100)	(25)	(15)	(15)	(159,634)
Exceed Threshold?	No	No	No	No	No	No	No

*All values were calculated using URBEMIS, unless otherwise stated. Values may not exactly add up due to rounding.

[a] Area sources related to the project include minimal consumer products.

[b] Project will generate solar energy only; and will not use electricity or natural gas. Emissions were calculated outside of URBEMIS.

[c] Mobile emissions are based on project's trip generation. Client indicated two trips per year to the site for maintenance and security. A maximum of 10 trips per year was assumed. The Project Trip Rate is 0.01.

[d] Panel washing is estimated to use 1.70 acre feet of water per year.

Source: Tetra Tech, 2013

5.3 Greenhouse Gas Emission Impacts

Construction of the Project would increase GHG generation, which can contribute to global climate change. This analysis is provided in response to recent heightened interest in the subject of global climate change, and specifically, the California legislature's passage and the Governor's signing of AB 32, which is intended to control and reduce the emission of global warming gases in California; and SB 97, which directs the Office of Planning and Research and the California Resources Agency to develop CEQA Guidelines on how local agencies should analyze and, if necessary, mitigate for GHG emissions.

Short-term construction and long-term operation of the Project will generate emissions of GHGs. Construction emissions would be associated with vehicle engine exhaust from construction equipment and vehicles, vendor trips, and construction worker commuting trips. Construction-related GHG emissions are considered temporary and short term. As shown in Table 4, short-term construction emissions will not exceed the daily GHG threshold.

As mentioned above, the Project's facility operation will be limited to general maintenance, panel washing, and security. A water well is located on-site that may be used, however for purposes of this analysis, operation and maintenance will use one water truck for bi-annual panel washing and one light duty truck as needed. This results to about 5.53 tons of CO_2e annually. According to EPA 2007 GHG Inventory guidance, a 35 MW solar generation facility is calculated to displace 59,640 tons of CO_2e per year. Taking into account the solar generation offsets, facility operation will reduce approximately 59,634 tons of CO_2e annually, as shown in Table 6.

Because construction-related emissions will be temporary and finite in nature, below those levels being considered and/or discussed by other government agencies and associations, and consistent with the AB 32 Scoping Plan, the Project's construction-related GHG emissions are not a cumulatively considerable contribution to climate change and, therefore, are less than significant. The Project's operation-related GHG emissions will be negligible and are not a cumulatively considerable contribution to climate change and, therefore, are less than significant.

When considering net GHG emissions from converting the Project site from operating as an agricultural farm to operating a 35 MW solar PV power-generating facility, there will be a positive impact of a substantial net reduction in GHG emissions at the Project site. In addition, the generation of power from solar energy is a substantial reduction in GHG emissions over conventional power generation from the combustion of fossil fuels. The energy produced by the proposed project is estimated at the 35 MW, and would reduce more than 59,634 tons of CO_2e per year during operation.

The Project, therefore, will be in accordance with the state's need for the construction of renewable energy power plants to meet the state's GHG reduction objectives including:

- California's Renewable Portfolio Standard that requires California's investor-owned electric utilities to obtain, from renewable sources, 20 percent of the electricity that they supply;
- Executive Order S-14-08 that established Renewable Portfolio Standard targets for California that "all retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020."
- Executive Order S-03-05 on climate change to advance renewable energy and other solutions to reduce California's GHG emissions.
- The California Global Warming Solutions Act of 2006 (AB 32) that established a comprehensive program of regulatory and market mechanisms to reduce GHG emissions to 1990 levels by the year 2020.

6.0 MITIGATION MEASURES

The project will be required to comply with regional rules that assist in reducing air pollutant emissions. AVAQMD Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, AVAQMD Rule 402 requires implementing dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Implementing these dust suppression techniques will reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules will reduce impacts on nearby sensitive receptors. Applicable dust suppression techniques include the following:

AQ-1 During construction, apply nontoxic chemical soil stabilizers according to manufacturers' specifications or water active sites at least twice daily (locations where site preparation is to occur will be thoroughly watered before earthmoving);

AQ-2 All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard in accordance with the requirements of California Vehicle

Code section 23114 (freeboard means vertical space between the top of the load and top of the trailer);

AQ-3 All off-road diesel-powered construction equipment less than 175 horsepower shall meet or exceed Tier 2 off-road emission standards. Off-road diesel-powered construction equipment greater than 175 horsepower shall meet or exceed Tier 3 off-road emissions standards;

AQ-4 During construction, the off-road equipment, vehicles, and trucks shall not be idle more than five minutes in any one hour;

AQ-5 The off-road construction equipment drivers shall have proper training in operating equipment efficiently, taking into account ways to reduce the hours of operation of the equipment and/or operate the equipment at a lower load factor;

AQ-6 Traffic speeds on all unpaved roads shall be reduced to 15 miles per hour or less; and

AQ-7 During construction, there shall be carpools, vanpools, and/or shuttles provided for construction employees.

Implementing these mitigation measures will reduce emissions below AVAQMD thresholds.

7.0 REFERENCES

1. Antelope Valley Air Quality Management District, “California Environmental Quality Act and Federal Conformity Guidelines”, AVAQMD Stationary Sources Section, AVAQMD Surveillance Section, August 2011.

2. California Air Resources Board iADAM: Air Quality Data Statistics Select 8 Summary. Accessed online at: http://www.arb.ca.gov/ada/select8/sc8start.php August 2013.

3. California Air Resources Board Area Designations. Available at www.arb.ca.gov/desig/desig.htm

4. Intergovernmental Panel on Climate Change (IPCC). Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Geneva, Switzerland. February.

5. Seinfeld and Pandis. Atmospheric Chemistry and Physics from Air Pollution to Climate Change, 1998.

6. CARB’s Urban Emission Model 2007, Version 9.2.4, http://www.urbemis.com/

7. Antelope Valley Air Quality Management District Rule 403, http://www.avaqmd.ca.gov/index.aspx?page=102

8. Antelope Valley Air Quality Management District Regulation II and XIII, http://www.avaqmd.ca.gov/index.aspx?page=102

9. Southwest Research Institute Study, “Diesel Exhaust Standard Phase I, CRC Project No. AVFL-10A”, August 2003.

10. AVAQMD Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area), May 20, 2008, http://www.arb.ca.gov/planning/sip/planarea/antaqmp/av2008ozone.pdf

APPENDIX A

URBEMIS MODEL RUNS

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

Project Name: Site 3- American Solar Greenworks

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (tons/year unmitigated)	0.21	1.58	1.06	0.00	1.14	0.08	1.22	0.24	0.07	0.31	255.41
2014 TOTALS (tons/year mitigated)	0.21	1.58	1.06	0.00	0.65	0.05	0.70	0.14	0.05	0.18	255.41
Percent Reduction	0.00	0.00	0.00	0.00	43.35	35.68	42.84	43.28	35.72	41.48	0.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51
TOTALS (tons/year, mitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Percent Reduction	0.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.13	0.00	0.02	0.00	0.00	0.00	2.65

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2

TOTALS (tons/year, unmitigated)	0.15	0.00	0.30	0.00	0.00	0.00	3.16

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014	0.21	1.58	1.06	0.00	1.14	0.08	1.22	0.24	0.07	0.31	255.41
Fine Grading 06/01/2014-08/31/2014	0.12	0.94	0.59	0.00	1.14	0.05	1.19	0.24	0.05	0.29	118.48
Fine Grading Dust	0.00	0.00	0.00	0.00	1.14	0.00	1.14	0.24	0.00	0.24	0.00
Fine Grading Off Road Diesel	0.12	0.87	0.51	0.00	0.00	0.05	0.05	0.00	0.05	0.05	97.32
Fine Grading On Road Diesel	0.01	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.09
Fine Grading Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.07
Trenching 09/01/2014-10/31/2014	0.03	0.17	0.10	0.00	0.00	0.01	0.01	0.00	0.01	0.01	22.24
Trenching Off Road Diesel	0.02	0.17	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	20.14
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.10
Building 11/01/2014-12/31/2014	0.06	0.47	0.38	0.00	0.00	0.02	0.02	0.00	0.02	0.02	114.70
Building Off Road Diesel	0.04	0.35	0.19	0.00	0.00	0.01	0.01	0.00	0.01	0.01	69.77
Building Vendor Trips	0.01	0.11	0.09	0.00	0.00	0.00	0.01	0.00	0.00	0.00	29.11
Building Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.83

Phase Assumptions

Phase: Fine Grading 6/1/2014 - 8/31/2014 - Mow and Roll

Total Acres Disturbed: 136

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 102.27

Off-Road Equipment:

2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 9/1/2014 - 10/31/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 11/1/2014 - 12/31/2014 - PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014	0.21	1.58	1.06	0.00	0.65	0.05	0.70	0.14	0.05	0.18	255.41

Fine Grading 06/01/2014-08/31/2014	0.12	0.94	0.59	0.00	0.64	0.03	0.68	0.13	0.03	0.16	118.48
Fine Grading Dust	0.00	0.00	0.00	0.00	0.64	0.00	0.64	0.13	0.00	0.13	0.00
Fine Grading Off Road Diesel	0.12	0.87	0.51	0.00	0.00	0.03	0.03	0.00	0.03	0.03	97.32
Fine Grading On Road Diesel	0.01	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.09
Fine Grading Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.07
Trenching 09/01/2014-10/31/2014	0.03	0.17	0.10	0.00	0.00	0.01	0.01	0.00	0.01	0.01	22.24
Trenching Off Road Diesel	0.02	0.17	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	20.14
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.10
Building 11/01/2014-12/31/2014	0.06	0.47	0.38	0.00	0.00	0.01	0.02	0.00	0.01	0.01	114.70
Building Off Road Diesel	0.04	0.35	0.19	0.00	0.00	0.01	0.01	0.00	0.01	0.01	69.77
Building Vendor Trips	0.01	0.11	0.09	0.00	0.00	0.00	0.01	0.00	0.00	0.00	29.11
Building Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.83

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 6/1/2014 - 8/31/2014 - Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 9/1/2014 - 10/31/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Building Construction 11/1/2014 - 12/31/2014 - PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Consumer Products	0.00						

Architectural Coatings							
TOTALS (tons/year, unmitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Consumer Products	0.00						
Architectural Coatings							
TOTALS (tons/year, mitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.13	0.00	0.02	0.00	0.00	0.00	2.65
TOTALS (tons/year, unmitigated)	0.13	0.00	0.02	0.00	0.00	0.00	2.65

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.01	acres	136.00	1.36	14.59
					1.36	14.59

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0

Motor Home		0.8	0.0		87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

Project Name: Site 3- American Solar Greenworks

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	3.83	28.83	18.07	0.02	35.02	1.60	36.63	7.32	1.47	8.79	5,335.00
2014 TOTALS (lbs/day mitigated)	3.83	28.83	18.07	0.02	19.82	0.99	20.81	4.14	0.91	5.06	5,335.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81
TOTALS (lbs/day, mitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Percent Reduction	0.00	0.00	0.00	#NUM!	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.87	0.01	0.11	0.00	0.03	0.00	15.02

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.99	0.03	1.66	0.00	0.04	0.01	17.83

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 6/2/2014-8/29/2014 Active Days: 65	**3.83**	**28.83**	**18.07**	0.01	**35.02**	**1.60**	**36.63**	**7.32**	**1.47**	**8.79**	3,645.40
Fine Grading 06/01/2014-08/31/2014	3.83	28.83	18.07	0.01	35.02	1.60	36.63	7.32	1.47	8.79	3,645.40
Fine Grading Dust	0.00	0.00	0.00	0.00	35.00	0.00	35.00	7.31	0.00	7.31	0.00
Fine Grading Off Road Diesel	3.60	26.71	15.80	0.00	0.00	1.52	1.52	0.00	1.40	1.40	2,994.47
Fine Grading On Road Diesel	0.18	2.04	0.83	0.00	0.01	0.08	0.09	0.00	0.07	0.08	433.47
Fine Grading Worker Trips	0.04	0.08	1.44	0.00	0.01	0.01	0.02	0.00	0.01	0.01	217.46
Time Slice 9/1/2014-10/31/2014 Active Days: 45	1.12	7.71	4.37	0.00	0.00	0.46	0.46	0.00	0.42	0.43	988.28
Trenching 09/01/2014-10/31/2014	1.12	7.71	4.37	0.00	0.00	0.46	0.46	0.00	0.42	0.43	988.28
Trenching Off Road Diesel	1.10	7.68	3.76	0.00	0.00	0.46	0.46	0.00	0.42	0.42	895.09
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 11/3/2014-12/31/2014 Active Days: 43	2.71	21.69	17.55	**0.02**	0.08	0.88	0.96	0.03	0.81	0.84	**5,335.00**
Building 11/01/2014-12/31/2014	2.71	21.69	17.55	0.02	0.08	0.88	0.96	0.03	0.81	0.84	5,335.00
Building Off Road Diesel	2.09	16.49	8.63	0.00	0.00	0.66	0.66	0.00	0.61	0.61	3,244.91
Building Vendor Trips	0.48	4.93	4.05	0.01	0.05	0.20	0.25	0.02	0.19	0.20	1,353.93
Building Worker Trips	0.14	0.27	4.87	0.01	0.03	0.02	0.06	0.01	0.02	0.03	736.17

Phase Assumptions

Phase: Fine Grading 6/1/2014 - 8/31/2014 - Mow and Roll

Total Acres Disturbed: 136

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 102.27

Off-Road Equipment:

2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 9/1/2014 - 10/31/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 11/1/2014 - 12/31/2014 - PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 6/2/2014-8/29/2014 Active Days: 65	**3.83**	**28.83**	**18.07**	0.01	19.82	0.99	20.81	4.14	0.91	5.06	3,645.40
Fine Grading 06/01/2014-08/31/2014	3.83	28.83	18.07	0.01	19.82	0.99	20.81	4.14	0.91	5.06	3,645.40
Fine Grading Dust	0.00	0.00	0.00	0.00	19.79	0.00	19.79	4.13	0.00	4.13	0.00
Fine Grading Off Road Diesel	3.60	26.71	15.80	0.00	0.00	0.91	0.91	0.00	0.84	0.84	2,994.47
Fine Grading On Road Diesel	0.18	2.04	0.83	0.00	0.01	0.08	0.09	0.00	0.07	0.08	433.47
Fine Grading Worker Trips	0.04	0.08	1.44	0.00	0.01	0.01	0.02	0.00	0.01	0.01	217.46
Time Slice 9/1/2014-10/31/2014 Active Days: 45	1.12	7.71	4.37	0.00	0.00	0.26	0.27	0.00	0.24	0.24	988.28
Trenching 09/01/2014-10/31/2014	1.12	7.71	4.37	0.00	0.00	0.26	0.27	0.00	0.24	0.24	988.28
Trenching Off Road Diesel	1.10	7.68	3.76	0.00	0.00	0.26	0.26	0.00	0.24	0.24	895.09
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 11/3/2014-12/31/2014 Active Days: 43	2.71	21.69	17.55	**0.02**	0.08	0.66	0.74	0.03	0.60	0.63	**5,335.00**
Building 11/01/2014-12/31/2014	2.71	21.69	17.55	0.02	0.08	0.66	0.74	0.03	0.60	0.63	5,335.00
Building Off Road Diesel	2.09	16.49	8.63	0.00	0.00	0.44	0.44	0.00	0.40	0.40	3,244.91
Building Vendor Trips	0.48	4.93	4.05	0.01	0.05	0.20	0.25	0.02	0.19	0.20	1,353.93
Building Worker Trips	0.14	0.27	4.87	0.01	0.03	0.02	0.06	0.01	0.02	0.03	736.17

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 6/1/2014 - 8/31/2014 - Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 9/1/2014 - 10/31/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Building Construction 11/1/2014 - 12/31/2014 - PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, unmitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, mitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.87	0.01	0.11	0.00	0.03	0.00	15.02
TOTALS (lbs/day, unmitigated)	0.87	0.01	0.11	0.00	0.03	0.00	15.02

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.01	acres	136.00	1.36	14.59
					1.36	14.59

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8

Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

Project Name: Site 3- American Solar Greenworks

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	3.83	28.83	18.07	0.02	35.02	1.60	36.63	7.32	1.47	8.79	5,335.00
2014 TOTALS (lbs/day mitigated)	3.83	28.83	18.07	0.02	19.82	0.99	20.81	4.14	0.91	5.06	5,335.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.00						
TOTALS (lbs/day, mitigated)	0.00						
Percent Reduction	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.41	0.01	0.11	0.00	0.03	0.00	13.59

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.41	0.01	0.11	0.00	0.03	0.00	13.59

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 6/2/2014-8/29/2014 Active Days: 65	**3.83**	**28.83**	**18.07**	0.01	**35.02**	**1.60**	**36.63**	**7.32**	**1.47**	**8.79**	3,645.40
Fine Grading 06/01/2014-08/31/2014	3.83	28.83	18.07	0.01	35.02	1.60	36.63	7.32	1.47	8.79	3,645.40
Fine Grading Dust	0.00	0.00	0.00	0.00	35.00	0.00	35.00	7.31	0.00	7.31	0.00
Fine Grading Off Road Diesel	3.60	26.71	15.80	0.00	0.00	1.52	1.52	0.00	1.40	1.40	2,994.47
Fine Grading On Road Diesel	0.18	2.04	0.83	0.00	0.01	0.08	0.09	0.00	0.07	0.08	433.47
Fine Grading Worker Trips	0.04	0.08	1.44	0.00	0.01	0.01	0.02	0.00	0.01	0.01	217.46
Time Slice 9/1/2014-10/31/2014 Active Days: 45	1.12	7.71	4.37	0.00	0.00	0.46	0.46	0.00	0.42	0.43	988.28
Trenching 09/01/2014-10/31/2014	1.12	7.71	4.37	0.00	0.00	0.46	0.46	0.00	0.42	0.43	988.28
Trenching Off Road Diesel	1.10	7.68	3.76	0.00	0.00	0.46	0.46	0.00	0.42	0.42	895.09
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 11/3/2014-12/31/2014 Active Days: 43	2.71	21.69	17.55	**0.02**	0.08	0.88	0.96	0.03	0.81	0.84	**5,335.00**
Building 11/01/2014-12/31/2014	2.71	21.69	17.55	0.02	0.08	0.88	0.96	0.03	0.81	0.84	5,335.00
Building Off Road Diesel	2.09	16.49	8.63	0.00	0.00	0.66	0.66	0.00	0.61	0.61	3,244.91
Building Vendor Trips	0.48	4.93	4.05	0.01	0.05	0.20	0.25	0.02	0.19	0.20	1,353.93
Building Worker Trips	0.14	0.27	4.87	0.01	0.03	0.02	0.06	0.01	0.02	0.03	736.17

Phase Assumptions

Phase: Fine Grading 6/1/2014 - 8/31/2014 - Mow and Roll

Total Acres Disturbed: 136

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 102.27

Off-Road Equipment:

2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 9/1/2014 - 10/31/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 11/1/2014 - 12/31/2014 - PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 6/2/2014-8/29/2014 Active Days: 65	**3.83**	**28.83**	**18.07**	0.01	19.82	0.99	20.81	4.14	0.91	5.06	3,645.40
Fine Grading 06/01/2014-08/31/2014	3.83	28.83	18.07	0.01	19.82	0.99	20.81	4.14	0.91	5.06	3,645.40
Fine Grading Dust	0.00	0.00	0.00	0.00	19.79	0.00	19.79	4.13	0.00	4.13	0.00
Fine Grading Off Road Diesel	3.60	26.71	15.80	0.00	0.00	0.91	0.91	0.00	0.84	0.84	2,994.47
Fine Grading On Road Diesel	0.18	2.04	0.83	0.00	0.01	0.08	0.09	0.00	0.07	0.08	433.47
Fine Grading Worker Trips	0.04	0.08	1.44	0.00	0.01	0.01	0.02	0.00	0.01	0.01	217.46
Time Slice 9/1/2014-10/31/2014 Active Days: 45	1.12	7.71	4.37	0.00	0.00	0.26	0.27	0.00	0.24	0.24	988.28
Trenching 09/01/2014-10/31/2014	1.12	7.71	4.37	0.00	0.00	0.26	0.27	0.00	0.24	0.24	988.28
Trenching Off Road Diesel	1.10	7.68	3.76	0.00	0.00	0.26	0.26	0.00	0.24	0.24	895.09
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 11/3/2014-12/31/2014 Active Days: 43	2.71	21.69	17.55	**0.02**	0.08	0.66	0.74	0.03	0.60	0.63	**5,335.00**
Building 11/01/2014-12/31/2014	2.71	21.69	17.55	0.02	0.08	0.66	0.74	0.03	0.60	0.63	5,335.00
Building Off Road Diesel	2.09	16.49	8.63	0.00	0.00	0.44	0.44	0.00	0.40	0.40	3,244.91
Building Vendor Trips	0.48	4.93	4.05	0.01	0.05	0.20	0.25	0.02	0.19	0.20	1,353.93
Building Worker Trips	0.14	0.27	4.87	0.01	0.03	0.02	0.06	0.01	0.02	0.03	736.17

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 6/1/2014 - 8/31/2014 - Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 9/1/2014 - 10/31/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Building Construction 11/1/2014 - 12/31/2014 - PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, unmitigated)	0.00						

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, mitigated)	0.00						

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.41	0.01	0.11	0.00	0.03	0.00	13.59
TOTALS (lbs/day, unmitigated)	0.41	0.01	0.11	0.00	0.03	0.00	13.59

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.01	acres	136.00	1.36	14.59
					1.36	14.59

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0

Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

APPENDIX B

SCREEN3 MODEL RUNS

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APPENDIX B

SCREEN3 MODEL RUNS

```
******  SCREEN3 MODEL  ******
  **** VERSION DATED 13043 ****

 ENTER TITLE FOR THIS RUN (UP TO 79
CHARACTERS):
Site 3- American Solar Greenworks

 ENTER SOURCE TYPE: P    FOR POINT
                    F    FOR FLARE
                    A    FOR AREA
                    V    FOR VOLUME
   ALSO ENTER ANY OF THE FOLLOWING OPTIONS
ON THE SAME LINE:

      N    - TO USE THE NON-REGULATORY BUT
CONSERVATIVE BRODE 2
             MIXING HEIGHT OPTION,
      nn.n - TO USE AN ANEMOMETER HEIGHT OTHER
THAN THE REGULATORY
             (DEFAULT) 10 METER HEIGHT.
      SS   - TO USE A NON-REGULATORY CAVITY
CALCULATION ALTERNATIVE
   Example - PN 7.0 SS (entry for a point source)

  ENTER SOURCE TYPE AND ANY OF THE ABOVE
OPTIONS:
a
 ENTER EMISSION RATE (G/(S-M**2)):
9.62e-8
 ENTER SOURCE RELEASE HEIGHT (M):
5
 ENTER LENGTH OF LARGER SIDE FOR AREA (M):
397
 ENTER LENGTH OF SMALLER SIDE FOR AREA (M):
374
 ENTER RECEPTOR HEIGHT ABOVE GROUND (FOR
FLAGPOLE RECEPTOR) (M):
0
 ENTER URBAN/RURAL OPTION (U=URBAN,
R=RURAL):
r
 SEARCH THROUGH RANGE OF DIRECTIONS TO
FIND THE MAXIMUM?
 ENTER Y OR N:
y
 ENTER CHOICE OF METEOROLOGY;
 1 - FULL METEOROLOGY (ALL STABILITIES & WIND
SPEEDS)
 2 - INPUT SINGLE STABILITY CLASS
 3 - INPUT SINGLE STABILITY CLASS AND WIND
SPEED
1
 USE AUTOMATED DISTANCE ARRAY? ENTER Y OR
N:
y
 ENTER MIN AND MAX DISTANCES TO USE (M):
1
500

 **********************************
 *** SCREEN AUTOMATED DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE
USED FOR FOLLOWING DISTANCES ***


   DIST     CONC           U10M   USTK  MIX HT
PLUME  MAX DIR
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)
(DEG)
 -------  ----------  ----  -----  -----  ------  ------  -------
      1.   1.705       4    1.0    1.0   320.0    5.00    43.
    100.   2.408       5    1.0    1.0 10000.0    5.00
43.
    200.   3.042       6    1.0    1.0 10000.0    5.00
43.
    300.   3.780       6    1.0    1.0 10000.0    5.00
43.
    400.   4.242       6    1.0    1.0 10000.0    5.00
43.
    500.   4.012       6    1.0    1.0 10000.0    5.00
43.
 ITERATING TO FIND MAXIMUM CONCENTRATION .
. .

 MAXIMUM 1-HR CONCENTRATION AT OR BEYOND
1. M:
    402.   4.242       6    1.0    1.0 10000.0    5.00
43.

 USE DISCRETE DISTANCES?  ENTER Y OR N:
y
 TO CEASE, ENTER A DISTANCE OF ZERO (0).

 **********************************
 *** SCREEN DISCRETE DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE
USED FOR FOLLOWING DISTANCES ***


   DIST     CONC           U10M   USTK  MIX HT
PLUME  MAX DIR
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)
(DEG)
 -------  ----------  ----  -----  -----  ------  ------  -------
 ENTER DISTANCE (M) (0 TO EXIT):
21
     21.   1.854       5    1.0    1.0 10000.0    5.00
43.
 ENTER DISTANCE (M) (0 TO EXIT):
```

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APPENDIX B-2.4

PROJECT 4 ANTELOPE SOLAR GREENWORKS AIR QUALITY AND GHG TECHNICAL REPORT

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SILVERADO POWER CALIFORNIA

DRAFT

ANTELOPE SOLAR GREENWORKS (CUP GROUP 10A) AIR QUALITY AND GREENHOUSE GAS TECHNICAL REPORT

Prepared for:

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September 2013

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Appendix A URBEMIS MODEL RUNS
Appendix B SCREEN3 MODEL RUNS

ABBREVIATIONS AND ACRONYMS

AC	Alternating current
AVAQMD	Antelope Valley Air Quality Management District
CAA	Clean Air Act
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DPM	Diesel particulate matter
EPA	Environmental Protection Agency
GHG	Greenhouse gas
H_2S	Hydrogen sulfide
HI	Hazardous Index
HRA	Health Risk Assessment
MDAB	Mojave Desert Air Basin
mph	Miles per hour
MW	Megawatts
NAAQS	National Ambient Air Quality Standards
NO_2	Nitrogen dioxide
N_2O	Nitrous Oxide
O&M	Operations and maintenance
O_3	Ozone
OEHHA	Office of Environmental Health and Hazard Assessment
PM_{10}	Fine particulate matter equal to or less than 10 microns
$PM_{2.5}$	Fine particulate matter equal to or less than 2.5 microns
PV	Photovoltaic
ROG	Reactive organic gases
RPS	Renewable Portfolio Standards
SCAB	South Coast Air Basin
SGF	Solar Energy Generation Facility
SO_2	Sulfur dioxide
TAC	Toxic air contaminants
TSP	Total suspended particulate

SECTION 1

EXECUTIVE SUMMARY

Silverado Power, LLC, (Silverado Power) proposes to develop, own, and operate a photovoltaic (PV) solar energy project in the County of Los Angeles, California. The Antelope Solar Greenworks Generation project (Project) will consist of a solar energy generating facility (SGF) that employs PV panels to convert sunlight directly into electrical energy without using heat transfer fluid or cooling water.

The Project facilities will operate year-round, producing electric power during daytime hours. The proposed schedule for construction begins with the facility's site preparation and construction in the first quarter of 2014 and completes construction by the last quarter of 2014.

The air quality analysis presented in this report analyzes the potential air quality impacts associated with the proposed Project. A health risk assessment (HRA) was performed to determine the health effects from construction activities to the nearest sensitive receptors. Since the Project site is located within the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD), the air quality analysis follows the AVAQMD's guidelines.

This report also provides estimates of greenhouse gas (GHG) emissions from the combustion of fossil fuels, primarily from constructing the proposed facility, shows operation results in reducing GHG emissions, and addresses the effects of GHGs on climate change.

In summary, the air quality and GHG analysis concludes that emissions during short-term construction and during long-term operation of the project do not exceed the significant thresholds established by the AVAQMD. The HRA concludes that the construction activities would result in a less-than-significant impact regarding health risk. The project does not pose significant adverse impacts on local air quality or global climate change.

This report has been prepared for Silverado Power as part of an environmental review required by the California Environmental Quality Act (CEQA), with Los Angeles County as lead CEQA agency for the Project. The California Air Resources Board (CARB), AVAQMD, and Los Angeles County methods, standards, and significance thresholds used in this analysis are considered appropriate for determining impacts.

SECTION 2

DESCRIPTION OF PROJECT

2.1 Project Location

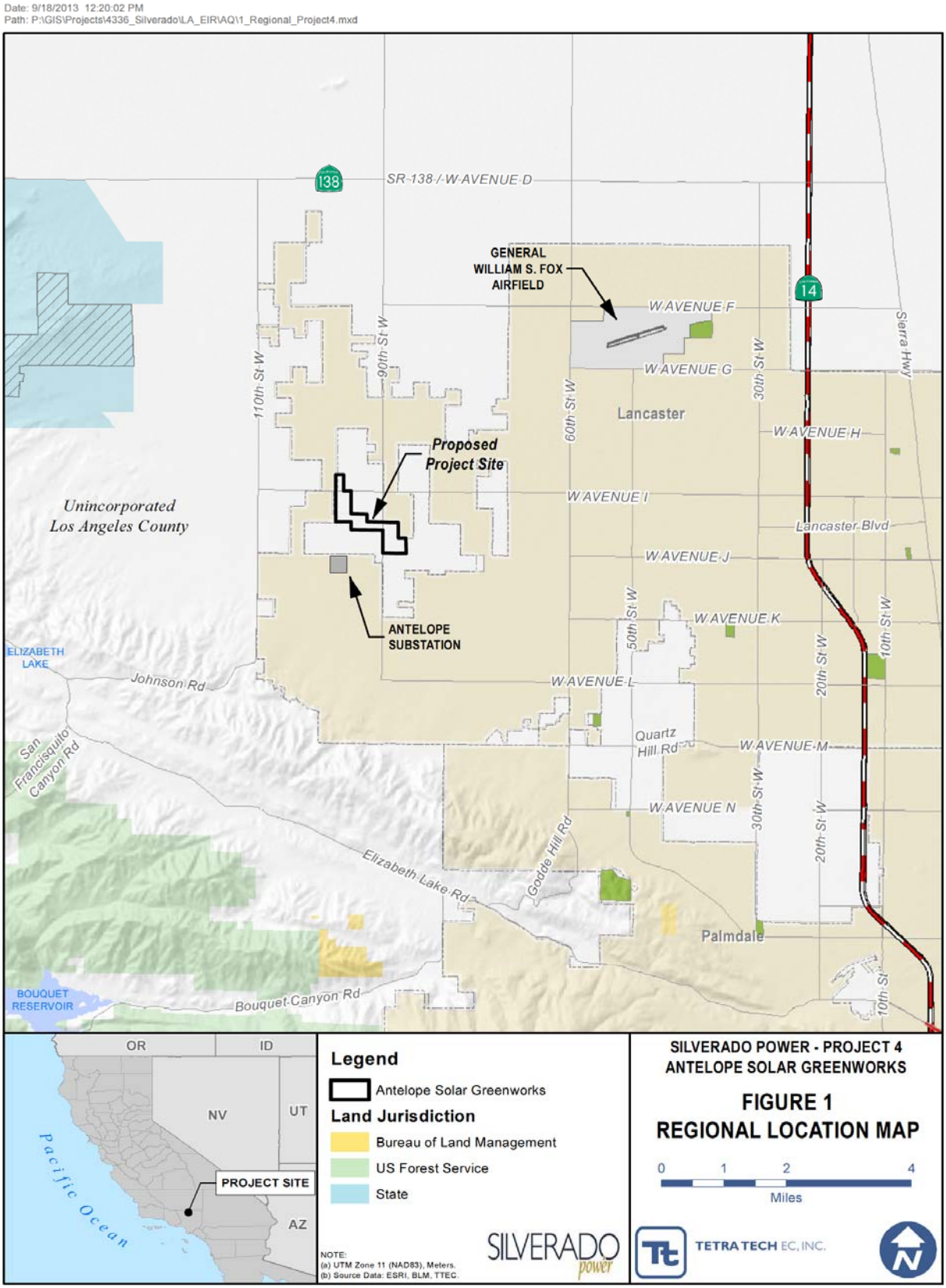
The proposed Project is located on 256 acres of primarily unproductive agricultural land in the unincorporated northern section of Los Angeles County. The site is approximately located 8.0 miles northwest of the city of Lancaster. It is bordered by West Avenue I to the north, 97th Street West to the west, West Avenue J to the south, and 90th Street West to the east. Figure 1 presents the project location.

2.2 Project Description

The proposed solar generating facilities will produce approximately 52 megawatts (MW) of electricity and will consist of the following components:

- PV modules
- PV module mounting system
- Electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing

Figure 1. Project Location



SECTION 3

EXISTING AND AFFECTED ENVIRONMENT

3.1 Existing Air Quality Standards

In California, local responsibility for air quality is assigned to air quality management districts and air pollution control districts. The project site is located in the northern portion of Los Angeles County, which is under the jurisdiction of the AVAQMD. The impact analysis contained in this section was prepared according to the methodologies provided by the AVAQMD [Ref. 1].

The Federal Clean Air Act (CAA) (42 USC Section 7401-7671q; CAA) requires the adoption of the National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare from the effects of air pollution. Current standards include sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), fine particulate matter equal to or less than 10 microns (PM_{10}), fine particulate matter equal to or less than 2.5 microns ($PM_{2.5}$), and lead. These pollutants are designated criteria pollutants. CARB has established additional state standards for the criteria pollutants that are generally more restrictive than the NAAQS. Federal and state standards are shown in Table 1.

The project site is located within the jurisdiction of the AVAQMD whose mission is to attain and maintain NAAQS and California Ambient Air Quality Standards and to ensure air pollutants do not pose a nuisance or significant public health threat. Included in AVAQMD's tasks are monitoring air pollution and promulgating Rules and Regulations. Four AVAQMD rules are applicable to the Project: Rule 402 (Nuisance), Rule 403 (Fugitive Dust), Regulation II (Permits), and Regulation XIII (New Sources Review).

3.2 Climate

Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.) but also by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall, etc.

The AVAQMD covers a western portion of the Mojave Desert Air Basin (MDAB). This desert region is characterized by wide day-night temperature fluctuations and seasonal strong winds. Days with temperatures exceeding 100°F typically begin in May and can last into October. During July and August minimum nocturnal temperatures in the low- to mid-90s can be expected on several nights. Relative humidity is low, below 40 percent most of the year; above 50 percent on most winter nights, during precipitation and on summer evenings after a rain. On a typical summer afternoon the relative humidity is approximately 10 percent; on a winter afternoon, approximately 30 percent.

The rainfall pattern is seasonal with most rain falling between November and April. Since 1980, the mean annual precipitation has been 3.5 inches. Prevailing winds in the MDAB are out of the west and southwest.

The most recent data measured in 2012 at the AVAQMD's monitoring station in Lancaster- 43301 Division Street shows that the monthly average ambient temperature is 63°F, hourly average wind speed is 4.7 miles per hour (mph), and monthly average humidity is 41 percent. [Ref. 2].

3.3 Air Pollutant Constituents and Attainment Status

A state or region is given the status of "attainment" or "unclassified" if either the federal or state ambient air quality standards have not been exceeded. A status of "nonattainment" for particular criteria pollutants is assigned if the ambient air quality standard for that pollutant has been exceeded. Once designated as nonattainment, attainment status may be achieved after three years of data showing non-exceedance of the standard. When an area is reclassified from nonattainment to attainment, it is designated as a maintenance area, which requires establishing and enforcing a plan to maintain attainment with the standard.

Table 2 lists criteria air pollutants and their attainment status in the MDAB.

Ozone

O_3 is a problematic air contaminant in the MDAB because a significant portion of the ozone (and ozone precursors) in the basin is transported from the heavily populated South Coast Air Basin (SCAB). Maximum ozone concentrations in the SCAB and in the MDAB usually are recorded during summer months.

The 2012 measured data at the Lancaster monitoring station shows that the state air quality standard of 1-hour ozone exceeded threshold on 13 days; and the maximum concentration was 0.112. The 8-hour ozone exceeded state air quality standards on 72 days in that year, and the maximum concentration was 0.096 ppm. The federal air quality standard for 8-hour ozone was exceeded by 39 days in that year, and the maximum concentration was 0.095 ppm. Under the state standards, the MDAB is classified as an extreme nonattainment area for ozone.

Nitrogen Dioxide

The monitoring data shows that the annual average NO_2 concentration in the MDAB has been within the federal standards for the last three years. The highest annual average concentration has remained nearly constant at 49 ppb. The 2012 measured data at the Lancaster monitoring station show that the state standard for nitrogen dioxide standard is not exceeded in the year. The MDAB is in attainment status under California and federal standards.

Carbon Monoxide

Carbon monoxide (CO) is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. In many areas of California, CO emissions from sources such as wood-burning stoves and fireplaces also can be measurable contributors during cold-weather months. Industrial sources of pollution generally contribute less than 10 percent of ambient CO levels. Peak CO levels occur typically during winter months because of a combination of seasonal contributions from home heating devices and stagnant weather conditions. CO reduces the oxygen-carrying capacity of the blood and in high concentrations can cause death. At lower concentrations, people exposed experience dizziness and headaches.

The 2012 measured data at the Lancaster monitoring station show that the federal and state standard for CO was not exceeded in that year; and the maximum concentration was 1.0 ppm. The MDAB is an attainment area for CO for purposes of state and federal air quality planning.

Sulfur Dioxide

SO_2 is produced when any sulfur-containing fuel is burned. Chemical plants that treat or refine sulfur or sulfur-containing chemicals also emit SO_2. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of the state, depending on local fuel characteristics, weather, and topography. SO_2 can cause bronchial constriction and may aggravate respiratory diseases. In moist environments, SO_2 may combine with water to form sulfuric acid, a component of acid deposition. SO_2 data is not available as it is not monitored at the Lancaster location; nevertheless, the MDAB is an attainment area of the state and federal SO_2 standards.

Fine Particulates (PM_{10}, $PM_{2.5}$)

Particulate matter in the air is composed of windblown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and oxides of nitrogen. In 1984, CARB adopted standards for fine particulate (PM_{10} – particulate matter of less than 10 microns), and phased out the total suspended particulate (TSP) standards used up to that time. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of inhalable particulate related to human health. In 1987, the Environmental Protection Agency (EPA) also replaced national TSP standards with PM_{10} standards. In July 1997, the EPA adopted new standards for fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$).

Particulates are a public health and welfare concern for several reasons. Particulates may be intrinsically toxic because of their inherent chemical and/or physical characteristics. Particulate matter may interfere with one or more of the mechanisms

that normally clear the respiratory tract. Finally, fine particulates, which are easily carried deep into the lungs, may act as carriers of absorbed toxic substances. Thus elevated particulate concentrations may exacerbate pre- existing respiratory diseases such as bronchitis. Particulate matter, especially fine particulate, also interferes with visibility. The MDAB is a nonattainment area of the state's PM_{10} standards. The 2012 measured data at the Lancaster monitoring station shows a maximum concentration of 47 micrograms per cubic meter, an annual average of 19.8 micrograms per cubic meter and shows zero number of days above the 24-hour PM_{10} federal standards. For state air quality standards, the data shows a maximum concentration of 43 micrograms per cubic meter, and an annual average of 18.5 micrograms per cubic meter, and shows zero number of days about the 24-hour standards for that year. For $PM_{2.5,}$ an annual average was not recorded in 2012, but shows a maximum concentration of 14 micrograms per cubic meter, and no exceedances of one day above the 24-hour $PM_{2.5}$ federal or state standard in that year.

Lead

Lead is found in old paints and coatings, plumbing, and various other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The MDAB is an attainment area for the federal and State AAQS for lead.

Table 1. State and Federal Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})[8]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter ($PM_{2.5}$)[8]	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)[9]	Annual Arithmetic Mean	0.03 ppm (56 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m^3)		100 ppb	None	
Sulfur Dioxide (SO_2)[10]	24 Hour	0.04 ppm (105 µg/m^3)	Ultraviolet Fluorescence	0.14 ppm (365 µg/m^3)	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		0.075 ppm (196 µg/m^3)	—	
	Annual Arithmetic Mean	0.075 ppm (196 µg/m^3)		0.03 ppm	—	
Lead (Pb)[11,12]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Visibility Reducing Particles[13]	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates (SO_4)	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[11]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

1. *California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.*
2. *National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.*
3. *Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.*
4. *Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.*
5. *National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.*
6. *National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.*
7. *Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.*
8. *On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m3 to 12.0 µg/m3. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 µg/m3, as was the annual secondary standard of 15 µg/m3. The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.*
9. *To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.*
10. *On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.*
    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
11. *The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.*
12. *The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.*
13. *In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.*

Source: California Air Resources Board (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, updated 06/04/13), and U.S. Environmental Protection Agency (http://www.epa.gov/air/criteria.html and http://www.epa.gov/air/lead/pdfs/20081015_pb_naaqs_final.pdf [see "FR Notices" at http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html], accessed September 2013]

Table 2. Criteria Pollutants Attainment Status in the Mojave Desert Air Basin

Air Pollutants	State	Federal
Ozone (1-Hour)	Nonattainment, classified Extreme	-
Ozone (8-Hour)	Non-attainment; classified Extreme	Non-attainment; classified Moderate
$PM_{2.5}$	Unclassified	Unclassified/attainment
PM_{10}	Non-attainment	Unclassified
NO_2	Attainment/unclassified	Attainment/unclassified
CO	Attainment	Attainment
SO_2	Attainment/unclassified	Attainment/unclassified
Lead	Attainment	Attainment
Particulate Sulfate	Unclassified	-
Hydrogen Sulfide	Unclassified	-
Visibility Reducing Particles	Unclassified	-

Source: AVAQMD 2013 [Ref. 3]

3.4 Greenhouse Gases

Certain gases in the Earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. A GHG is any gas in the atmosphere that absorbs infrared radiation. As solar radiation enters the earth's atmosphere, a portion of the radiation is absorbed by the earth's surface, and a portion is reflected back through the atmosphere into space. The absorbed radiation is eventually emitted from the earth into the atmosphere, not as solar radiation, but as infrared radiation. Most solar radiation passes through GHGs; infrared radiation is selectively absorbed or "trapped" by GHGs as heat, and then reradiated back toward the earth's surface, resulting in a warming of the lower atmosphere and the earth's surface. This phenomenon, known as the "greenhouse effect," is beneficial for maintaining a habitable climate on the earth. As the atmospheric concentrations of GHGs rise, however, the average temperature of the lower atmosphere gradually increases, thereby increasing the potential for indirect effects such as a decrease in precipitation as snow, a rise in sea level, and changes to plant and animal species and habitat.

GHGs are emitted by natural processes and human activities. Water vapor is the most abundant and variable GHG in the atmosphere and is not considered a pollutant. The main source of water vapor is evaporation from the oceans (approximately 85 percent); other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves. Carbon dioxide (CO_2) also is a naturally emitted GHG.

Natural GHG sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing.

GHGs also are emitted from human activities including industrial/manufacturing, utilities, transportation, residential, and agricultural activities. Prominent GHGs contributing to the greenhouse effect are CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds. O_3 is a GHG; O_3 in the lower atmosphere, however, is relatively short-lived and therefore is not global in nature. Emissions of CO_2 are by-products of fossil fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) largely associated with agricultural practices and landfills. CO_2 is sequestered or absorbed through photosynthesis and dissolution from ocean uptake and vegetation. More CO_2 is currently emitted into the atmosphere than is sequestered by ocean uptake and vegetation.

Human-caused emissions of these GHGs, which exceed natural ambient concentrations, intensify the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. Explaining global climate change during the past 50 years cogently is extremely unlikely without the

contribution from human activities [Ref. 4]. Therefore, GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern.

Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed globally. Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, scientific evidence reveals that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54 percent is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46 percent of human-caused CO_2 emissions remains stored in the atmosphere [Ref. 5]. The quantity of GHGs that it takes to ultimately result in climate change is not known precisely; suffice to say that the quantity is enormous, and no single project would be expected to contribute measurably to a noticeable incremental change in the global average temperature, or to global, local, or microclimate.

While climate change has been a concern since at least 1988, the efforts devoted to GHG emissions reduction and climate change policy have increased dramatically in recent years. In 2002, California passed Assembly Bill (AB) 1493, which requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions beginning with the 2009 model year. In June 2005, Executive Order S-3-05 was signed to reduce California's GHG emissions to: (1) 2000 levels by 2010; (2) 1990 levels by the 2020; and (3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of AB32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including recommendations of the state's Climate Action Team. Senate Bill 97 acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA.

CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions can adversely affect the environment because they contribute, cumulatively, to global climate change. In turn, global climate change could raise sea levels, potentially inundating low-lying areas; affect rain and snow fall, leading to changes in water supply; and affect habitats, leading to adverse effects on biological and other resources. Thus, GHG emissions require consideration in CEQA documents.

Federal Legislation

The U.S. Supreme Court ruled on April 2, 2007, that CO2 is an air pollutant as defined under the CAA and that the EPA has the authority to regulate emissions of GHGs. Nevertheless, there are no federal regulations or policies regarding GHG emissions applicable to the Project at the time of this writing. Responding to the mounting issue of climate change, the EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, the EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement will provide the EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year. This publically available data will allow the reporters to track their own emissions, compare them to similar facilities, and help identify cost effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial GHGs along with vehicle and engine manufacturers will report at the corporate level. An estimated 85 percent of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act

On December 7, 2009, the EPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). The Endangerment Finding is based on Section 202(a) of the CAA, which states that the Administrator (of EPA) should regulate and develop standards for "emission[s] of air pollution from any class of classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The rule addresses Section 202(a) in two distinct findings. The first addresses whether the concentrations of the six key GHGs (carbon dioxide [CO_2], methane [CH_4], nitrous oxide [N_2O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]) in the atmosphere threaten the health and welfare of current and future generations. The second addresses whether the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and therefore the threat of climate change.

The Administrator found that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are very likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected

results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, and higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The Administrator also found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHGs fit within the CAA definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but rather allow the EPA to define the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.

CARB is the agency responsible for coordinating and overseeing state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), which was adopted in 1988. Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is underway, and there is a real potential for severe adverse environmental, social, and economic effects in the long term.

SECTION 4

METHODOLOGY AND THRESHOLDS

This section describes the methodologies used to determine the air quality impacts associated with the proposed project.

AVAQMD recommends that air quality analysis for a proposed project shall include: direct impacts, indirect impacts, cumulative impacts, and conformity impacts.

Direct impacts result from SGF construction and operation activities on air quality. Indirect impacts result from air quality changes that would not occur without the SGF project, e.g. building and operating a retail establishment nearby to support the SGF. Cumulative impacts are the combined effect on air quality from the SGF's operation and other emissions sources in the MDAB. Conformity impacts determine whether the SGF's operation complies with all applicable AVAQMD's rules and regulations.

4.1 Threshold of Significance

To meet federal requirements, impact significance is related to conformance with the EPA-approved SIP and with NAAQS. Air quality impacts would be significant if they exceed these standards or contribute to non-conformance. AVAQMD has published thresholds of significance for air quality and global climate change.

A project has significant air quality impact, if the following occurs:

1. Generates total emissions exceeding the AVAQMD significant thresholds shown in Table 3; and/or
2. Generates a violation of any ambient air quality standard when added to the local air quality background; and/or
3. Does not conform with the applicable attainment or maintenance plan(s); and/or
4. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1.

A significant project must incorporate mitigation sufficient to reduce its impact to a level that is not significant. A project that cannot be mitigated to a level that is not significant must incorporate all feasible mitigation.

4.2 Direct Impacts

4.2.1 Criteria Air Emissions

Air quality and global climate change impacts associated with the proposed project are related to emissions that would occur during construction and subsequent operation of the proposed project. The Principal sources of pollutants during construction would be earth-moving activities, construction equipment, trucks bringing materials to the site, and construction crew commuting vehicles. The sources of pollutants during project operations would be limited to the vehicles and equipment used by the operations and maintenance staff. There are numerous air quality modeling tools available to assess air quality impacts of the project. Emissions during construction and operation were estimated based on the air emission modeling software package, CARB's URBEMIS 2007 [Ref. 6]. The model contains data specific to each California air basin.

Construction

Construction will be conducted in phases. As a conservative analysis, construction of the Project would occur over the course of twelve months, starting in the first quarter of 2014 and ending in fourth quarter of 2014. This timeframe is important since construction emissions are directly related to the intensity of construction activities (emissions increase as the overall amount of construction activity increases). Actual construction may proceed at a less intensive pace, which would result in lower daily emissions.

For Phase I of this project, the following construction phases are assumed:

Phase 1: Mow and Roll;

Phase 2: Fencing/Trenching/Infrastructure Construction; and

Phase 3: PV Installation.

For Phase II of this project, the following construction phases are assumed:

Phase 1: Demolition

Phase 2: Mow and Roll

Phase 3: Fencing/Trenching/Infrastructure Construction; and

Phase 4: PV Installation.

The URBEMIS model divides the construction processes into phases, including demolition, mass site grading, fine site grading, fencing/infrastructure construction (trenching, transmission line construction, paving), and PV installation. These model settings can be modified to fit applicable features of a specific project. The applicant has committed to using the mow and roll method to prepare the site for construction. The mow and roll method will utilize mowers and rollers, which is a less intensive soil

disturbance method than grading and excavating the site. As the URBEMIS model only allows for mass site and fine site grading, the fine site grading phase was used to model mow and roll activities (using a half emission factor for grading equipment; approved by the AVAQMD). Since mowing and rolling of the site will clear vegetation and roll the surface of the site, emission estimates from the model are higher than emissions from actual activity during the mow and roll phase. Activities during the trenching phase were modeled to include trenching and infrastructure construction (road construction, transmission line and generation-tie line); and activities during the construction phase were modeled to include construction and installation of the PV panels.

Each construction phase has the potential to generate the following: (1) fugitive dust emissions resulting from soil disturbance activity; (2) emissions of air pollutants from fuel combustion in construction equipment; and (3) emissions of air pollutants from fuel combustion in vehicles used for worker commute and material hauling and construction debris disposal. Silverado Power is committed to implementing "Best Practices" during all construction phases of the Project to further reduce emissions. Figure 2 shows the construction schedules and Figure 3 shows the construction equipment.

During construction, the proposed Project would be subject to AVAQMD Rules 403 (Fugitive Dust). The purpose of Rule 403 is to reduce man-made fugitive dust. Rule 403 requires implementing control measures to prevent, reduce, or mitigate fugitive dust emissions and includes a performance standard that prohibits visible emissions from crossing any property line [Ref. 7]. Dust control measures, such as water application or chemical stabilizers on dry soil and reducing vehicle travel on unpaved roads, are standard mitigation techniques. The project construction will be required to comply with Rule 403. Implementing the dust suppression techniques specified in Rule 403 can reduce the fugitive dust generation (and thus the PM_{10} component) by 50 percent or more. Therefore, the estimation of fugitive dust emissions during project construction are based on compliance with AVAQMD Rule 403 requirements for fugitive dust suppression. In addition, to further reduce dust emissions during construction, site preparation shall be limited to no more than two acres per day.

Operations

During operation, the project does not require the types of equipment that emit a large amount of air pollutants. The sources of pollutants would be limited to the vehicles used by the operations and maintenance staff.

The URBEMIS 2007 software was used to compile the vehicle emissions during long-term project operations. In calculating mobile source emissions, the URBEMIS 2007 assumptions were applied to arrive at the annual vehicle miles traveled (VMT).

The proposed Project will be subject to AVAQMD's Regulation II (Permits) and Regulation XIII (New Source Review). These regulations ensure that all equipment with the potential to emit air pollutants (including air toxics and hazardous air pollutants) at

the Project site would be subject to the AVAQMD's review and approval before installation [Ref. 8].

4.2.2 Greenhouse Gas Emissions

For this project, the major source of GHG is the combustion of fuel in construction equipment, in vehicles used to haul materials, and in vehicles used by worker commuting to/from the site.

There are three types of GHG from fuel combustion, including CO_2, CH_4 and N_2O. GHG emissions are presented as carbon dioxide equivalents (CO_2e). CO_2e is computed based on global warming equivalence. The CH_4 global warming equivalence is 21 times that of CO_2, and the N_2O global warming equivalence is 310 times that of CO_2.

Mathematically, the CO_2e can be represented by the following equation:

$$CO_2e \text{ Emissions} = CO_2 \text{ Emissions} + 21 \times CH_4 \text{ Emissions} + 310 \times N_2O \text{ Emissions}$$

The URBEMIS model was used to estimate the GHG emissions during the construction phase of the proposed project. Based on the construction schedule, types and quantities of construction equipment and haul trucks, etc., the maximum CO_2 emissions were estimated.

The URBEMIS model provides a CO_2 profile only and does not quantify CO_2e, CH_4 and N_2O emissions. The analysis assumed that the CO_2 emissions are CO_2e. For typical diesel-fueled combustion equipment used in construction activities, the emissions factors adjusted with global warming equivalence are:

(1) CO_2 emission factors are 22.4 pounds of CO_2e per gallon consumed;

(2) CH_4 emission factors are 0.065 pounds of CO_2e per gallon consumed; and

(3) N_2O emission factors are 0.068 pounds of CO_2e per gallon consumed.

As shown in these emission factors, the CO_2 profile is 99 percent of the total GHG emissions generated in combustion equipment. Therefore, the CO_2 emissions were assumed to be equivalent to the CO_2e emissions levels.

4.2.3 Health Risk

During construction, toxic emissions are generated mainly from fuel combustion in the construction equipment. To determine the health impacts of these toxic emissions, a health risk assessment (HRA) was performed.

A HRA is an estimate of the probability that adverse health effects could occur due to exposure to toxic pollutants. A facility's air emissions, stack information, operation schedule, local weather conditions, chemical dose-response data, etc. are entered into

a computer model to produce an estimate of the health risks to nearby sensitive receptors. Sensitive receptors are populations that are more susceptible to the effects of air pollution than are the population at large. While the ambient air quality standards are designed to protect public health and are generally regarded as conservative for healthy adults, there is greater concern to protect adults who are ill or have long-term respiratory problems, and young children whose lungs are not fully developed. According to CARB, sensitive receptors include children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. The SCAQMD identify the following as locations that may contain a high concentration of sensitive receptors: long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, childcare centers, and athletic facilities. The closest sensitive receptors to the project are single family residences adjacent to the east and west of the project site, approximately six meters from the project site. HRA is performed in 3 steps: hazard identification, exposure assessment, and risk characterization.

Hazard Identification

Hazard identification refers to identifying substances as carcinogens, reproductive toxins, chronic toxins, or acute toxins, or to identifying a type of exposure as hazardous. The toxic air contaminants (TACs) used in the HRA includes diesel particulate matter (DPM) and acrolein. DPM and acrolein are byproducts of diesel fuel combustion. Studies have shown that diesel combustion produces acrolein in the amount equal to 0.013 times that of DPM [Ref. 9]. There are other TACs from diesel combustion besides DPM and acrolein. They are less potent and thus are not included in the HRA.

Exposure Assessment

Exposure assessment identifies and quantifies all routes of human exposure to substances of concern. The SCREEN3 model issued by EPA was used for estimating offsite concentrations of TACs. Based on land use surrounding the proposed project and EPA guidelines, a rural profile was assumed. Construction activities were modeled as area sources placed over the area of project site. Appendix B provides the SCREEN3 model run.

Risk Characterization

Risk characterization is the final step of the HRA. It quantifies the human health risk based on the exposure assessment and dose-response relationships (cancer potency factors and reference exposure levels). In this assessment, three types of human health effects were considered: (1) cancer, (2) chronic effects, and (3) acute effects. Health risks, including cancer, chronic and acute risks, are calculated based on the Office of Environmental Health and Hazard Assessment (OEHHA) guidelines.

Following is a summary of the OEHHA method to determine the cancer, chronic

and acute health risk:

Cancer Risk

The cancer risks were calculated as the individual excess lifetime cancer risk (i.e., the probability that an individual may develop cancer from a lifetime exposure to the chemicals of concern). There are different pathways that a toxicant can enter a human body. Gaseous toxicants can enter a human body through the inhalation pathway. Gaseous toxicants also can be deposited on soil, surface water, or plants, which then can enter a human body through ingestion and dermal pathways. Semi-volatile and metal toxicants can enter the body through inhalation, ingestion and dermal pathways.

For inhalation pathway, the cancer risk is computed using the following equation:

$$CRinh = (GLC \times CP \times BR \times EF \times ED \times 10^{-6}) / AT \quad \text{Eq. 1}$$

Where:

CRinh = Cancer Risk through inhalation
GLC = Annual Average Ground-level concentration (from air dispersion model)
CP = Cancer Potency factor
BR = Daily Breathing Rate
EF = Exposure frequency
ED = Exposure Duration
AT = Average Time Period

For the proposed project, contribution from non-inhalation pathways would not contribute to the overall risk such that the total risk would be above 10 in one million once the multi-pathway risks are added, thus non-inhalation pathway risk estimates are negligible.

Chronic Risk

The potential for long-term chronic health effects is quantified by comparing the predicted level of exposure to a reference exposure level (REL). This ratio of predicted exposure to reference exposure is referred to as a chronic hazard index (HIc). HIc is calculated by summing the ratios of each toxic substance over its REL. The equation for estimating HIc is as follows:

$$HIc = \sum Ci / \text{chronic RELi}$$

Where:
Ci = Ground-level concentration of substance i (annual average concentration)
RELi = Chronic Reference Exposure Level for substance i.

Acute

Risk

In the same manner as the quantification of chronic health effects, the potential for short-term acute health effects was quantified using a hazard index. The acute hazard index (HIa) is calculated by dividing the maximum estimated hourly concentration of each toxic air pollutant by its reference short-term exposure levels. The equation for estimating HIa is as follows:

$$HIa = \sum Ci / Acute\ RELi$$

Where:

Ci = Maximum hourly ground-level concentration of substance i
RELi = Acute Reference Exposure Level for substance i.

4.3 Indirect Impacts on Air Quality

Indirect impacts are the result of air quality changes that would not occur without the SGF project. The SGF does not have any permanent on-site staff. There will not be construction or operation of a retail establishment to support the SGF. Therefore, indirect impact on air quality is expected to be minimal.

4.4 Cumulative Impacts

Cumulative impacts are the combined effect on air quality from the SGF's operation and other emissions sources in the MDAB. In the operation phase, the SGF operation has no major emissions sources. Operation of equipment that emits regulated air pollutants, or requires AVAQMD permits, is not planned at the SGF. The SGF project will not conflict with or obstruct implementation of the applicable air quality plan, which in this case is the Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area). [Ref. 10] A project is deemed inconsistent with air quality plans if it results in population and/or employment growth that exceeds growth estimates in the applicable air quality plan. The ozone attainment plan relies upon future year emission inventories consistent with CARB, which in turn relies upon adopted General Plan growth projections. As the proposed project is not part of an ongoing regulatory program, the AVAQMD recommends that project-specific air quality impacts be used to determine the potential cumulative impacts to regional air quality. As discussed above, peak daily emissions of operation-related pollutants will not exceed AVAQMD significance thresholds.

In addition, estimates state that while the project would generate air and greenhouse gas emissions during construction and a minimal amount of GHG emissions during operations, the solar energy provided by the project is a much cleaner source of energy than traditional sources used for the generation of electricity, such as the burning of coal, fuel oil, or natural gas. The amount of CO_2 reductions from solar energy generation depends on the type of electric generation to be displaced by the addition of the solar

energy. The energy produced by the proposed 52 MW project is estimated to displace approximately 88,764 tons of CO_2e that would otherwise be emitted by fossil fuel fired power plants. This is more than enough to offset the project's air and GHG emissions.

As a result, the emissions of non-attainment pollutants and precursors generated by project operation exceeding the AVAQMD project-level thresholds will be less than significant. Cumulative impact on air quality is expected to be minimal.

4.5 Conformity Impacts

The SGF is required to comply with all applicable rules and regulations of the AVAQMD. The project does not conflict with or delay implementation of any applicable attainment or maintenance plan; therefore, non-conformity is not expected.

Table 3. Significant Emission Thresholds

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NOx)	25	137
Reactive Organic Gases (ROG)	25	137
Oxides of Sulfur (SOx)	25	137
Particulate Matter (PM_{10})	15	82
Particulate Matter ($PM_{2.5}$)	15	82
Hydrogen Sulfide (H_2S)	10	54
Lead	0.6	3
Greenhouse Gases (CO_2e)	100,000	548,000

Source: AVAQMD 2013 [Ref. 1]

Figure 2. Site 4- Central Antelope Dry Ranch - Construction Schedule

Construction Schedule

Year	2014											
Month*	1	2	3	4	5	6	7	8	9	10	11	12
Phase 1												
Mow and Roll												
Trenching/Infrastructure												
PV Installation												
Phase 2												
Demolition												
Mow and Roll												
Trenching/Infrastructure												
PV Installation												

Demolition	**Phase 1**	**Phase 2**
Start Date	N/A	4/1/2014
End Date	N/A	4/30/2014
Duration (months)		1
Duration (days)		21
Total Volume of all Buildings (CY)		1,423
Amount (CY)		67
Truck Capacity (CY)		20
Total Truck Trips		71
Truck Trips per Day		4
Mow and Roll	**Phase 1**	**Phase 2**
Start Date	1/1/2014	5/1/2014
End Date	3/15/2014	9/30/2014
Duration (months)	2.5	5.0
Duration (days)	54	109
Total Acreage To Be Disturbed	63	193
Max Daily Acreage Disturbed	2	2
Trenching/Infrastructure Construction	**Phase 1**	**Phase 2**
Start Date	3/16/2014	10/1/2014
End Date	3/31/2014	10/30/2014
Duration (months)	1	1
Duration (days)	11.00	21
PV Installation	**Phase 1**	**Phase 2**
Start Date	4/1/2014	11/1/2014
End Date	4/30/2014	12/31/2014
Duration (months)	1	2
Duration (days)	21	44

Figure 3. Construction Equipment

Phase: Demolition
1 Excavator (168 hp) operating at a 0.57 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Mow and Roll
2 Mowers (Grader @ 87 hp) operating at a 0.31 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.60 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Trenching - Infrastructure Construction
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Trencher (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction - PV Installation
1 Bore/Drill Rig (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Crane (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day

SECTION 5

DIRECT IMPACTS ON AIR QUALITY

This section presents the direct impacts on air quality associated with the proposed project. The following sections present information on potentially significant impacts on air quality environment resulting from the project's implementation. Mitigation measures are proposed that can reduce or eliminate any such impacts.

5.1 Direct Impacts from Project Construction

Short-term air quality impacts would occur during the construction of the project site. Three major sources of emissions during constructions include:

- Fugitive dust emissions – Dust is generally associated with excavation, windblown unpaved areas, vehicle and equipment travel on unpaved roads, and dirt/debris pushing. Dust generated during construction activities would vary substantially depending on the level of activity, the specific operations, and weather conditions;

- Construction Equipment - Construction requires usage of heavy-duty equipment, such as bulldozers, excavators, loaders, etc. Exhaust emissions from this equipment during construction activities would vary daily as activity levels change; and
- Vehicles – Transport vehicles travelling to and from the site, including delivery trucks hauling materials and automobiles carrying workers, generate exhaust emission.

The URBEMIS model runs, which estimate the construction emissions, are presented in Appendix A. Table 4 summarizes emissions during construction. As shown, the short-term emissions during the construction phase will not exceed AVAQMD significant thresholds. As such, the project will not exceed thresholds or result in violating air quality standards or contribute substantially to an existing or projected air quality violation.

Table 6 summarizes the health risk assessment for construction activities. Note that the EPA SCREEN3 model uses conservative assumptions for screening purposes; therefore, actual concentration levels are expected to be less than what was analyzed in this report. As shown in Table 6, short-term concentration levels during the construction phase do not expose sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or

equal to 1.

5.2 Direct Impacts from Project Operation

The URBEMIS model runs, which estimate the operation emissions, are presented in Appendix A. Table 5 summarizes the operation emission calculation compared with the annual threshold, since operation is long-term. The primary source of emissions during operation is mainly the vehicles used by facility maintenance staff to and from the site. Maintenance activities would use an onsite well for bi-annual panel washing, but for a worst-case analysis, include one water truck and one light duty truck as needed for maintenance. As shown in Table 5, emissions during the long-term operation do not exceed AVAQMD significant thresholds.

5.3 Greenhouse Gas Emission Impacts

Construction of the Project would increase GHG generation, which can contribute to global climate change. This analysis is provided in response to recent heightened interest in the subject of global climate change, and specifically, the California legislature's passage and the Governor's signing of AB 32, which is intended to control and reduce the emission of global warming gases in California; and SB 97, which directs the Office of Planning and Research and the California Resources Agency to develop CEQA Guidelines on how local agencies should analyze and, if necessary, mitigate for GHG emissions.

Short-term construction and long-term operation of the Project will generate emissions of GHGs. Construction emissions would be associated with vehicle engine exhaust from construction equipment and vehicles, vendor trips, and construction worker commuting trips. Construction-related GHG emissions are considered temporary and short term. As shown in Table 4, short-term construction emissions will not exceed the daily GHG threshold.

As mentioned above, the Project's facility operation will be limited to general maintenance, panel washing, and security. It is anticipated that operation and maintenance will use one water truck for bi-annual panel washing and one light duty truck as needed, which results in 9.59 tons of CO_2e annually. According to EPA 2007 GHG Inventory guidance, a 52 MW facility is calculated to reduce 88,764 tons of CO_2e per year. Taking into account the solar generation offsets, facility operation will thus reduce approximately 88,754 tons of CO_2e annually, as shown in Table 5.

Because construction-related emissions will be temporary and finite in nature, below those levels being considered and/or discussed by other government agencies and associations, and consistent with the AB 32 Scoping Plan, the Project's construction-related GHG emissions are not a cumulatively considerable contribution to climate change and, therefore, are less than significant. The Project's operation-related GHG emissions will be negligible and are not a cumulatively considerable contribution to climate change and, therefore, are less than significant.

When considering net GHG emissions from converting the Project site from operating as an agricultural farm to operating a 52-MW solar PV power-generating facility, there will be a positive impact of a substantial net reduction in GHG emissions at the Project site. In addition, the generation of power from solar energy is a substantial reduction in GHG emissions over conventional power generation from the combustion of fossil fuels. As the intent is to generate emission-free electricity, it is expected that the 52-MW facility will result in a reduction of 88,754 tons of CO_2e per year during operation.

The Project, therefore, will be in accordance with the state's need for the construction of renewable energy power plants to meet the state's GHG reduction objectives including:

- California's Renewable Portfolio Standard (RPS) that requires California's investor- owned electric utilities to obtain, from renewable sources, 20 percent of the electricity that they supply;
- Executive Order S-14-08 that established RPS targets for California that "all retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020."
- Executive Order S-03-05 on climate change to advance renewable energy and other solutions to reduce California's GHG emissions.
- The California Global Warming Solutions Act of 2006 (Assembly Bill 32) that established a comprehensive program of regulatory and market mechanisms to reduce GHG emissions to 1990 levels by the year 2020.

Table 4. Construction Emissions[a]

Antelope Solar	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2
Phase 1							
Mow and Roll	5	38	25	0	13	4	4472
Trenching/Infrastructure Construction	1	10	6	0	0	0	1275
PV Installation	3	27	26	0	1	1	7310
Phase 2							
Demolition	4	33	18	0	3	1	3898
Mow and Roll	5	38	25	0	13	4	4472
Trenching/Infrastructure Construction	1	10	6	0	0	0	1275
PV Installation	3	27	26	0	1	1	7310
Concurrent emissions[a]	7	60	44	0	4	2	11208
Maximum Regional Emissions	**7**	**60**	**44**	**0**	**13**	**4**	**11,208**
Regional Significance Threshold (lbs/day)	137	137	548	137	82	82	548,000
Over (Under)	(130)	(77)	(504)	(137)	(69)	(78)	(536792)
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: Tetra Tech, 2013

**Values may not exactly add up due to rounding.*

a. Compiled using the URBEMIS emissions inventory model. The equipment mix and use assumption for each phase is provided in Figure 2.

b. PM_{10} emissions estimates are based on compliance with AVAQMD Rule 403 requirements for fugitive dust suppression and mitigation measures listed in Section 6.

Table 5. Operation Emissions

Antelope Solar	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
	(tons/year)						
Area[a]	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Energy[b]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile[c]	0.28	0.01	0.04	0.00	0.01	0.00	5.56
Water[d]	0.00	0.00	0.00	0.00	0.00	0.00	3.52
Waste[e]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Operation Emissions	0.30	0.01	0.32	0.00	0.01	0.01	9.59
Solar Energy Reduction	0	0	0	0	0	0	-88,764
Net Annual Operation Emissions	0.30	0.02	0.32	0.00	0.02	0.01	(88,754)
AVAQMD Regional Emissions	**25**	**25**	**100**	**25**	**15**	**15**	**100,000**
Over / (Under)	(25)	(25)	(100)	(25)	(15)	(15)	(188,754)
Exceed Threshold?	No	No	No	No	No	No	No

All values were calculated using URBEMIS, unless otherwise stated. Values may not exactly add up due to rounding.

Source: Tetra Tech, 2013

a. Area sources related to the project include minimal consumer products.
b. Project will generate solar energy only; and will not use electricity or natural gas. Emissions were calculated outside of the model.
c. Mobile emissions are based on project's trip generation. Client indicated two trips per year to the site for maintenance and security. A maximum of 10 trips per year was assumed. The Project Trip Rate is 0.01.
d. Water use is estimated at 2.50 acre feet per year.
e. No waste will be generated.

Table 3. Health Risk Assessment

	Construction Activities
Diesel Particulate Matter Run (Cancer Risk)	
DPM Emission Sources Modeled as Area Source, m^2	3,400,336
Emission Rate, g/s	0.0204
Emission Rate, g/s-m^2	5.99E-09
Maximum One-Hour Ground-Level Concentration, µg/m^3	1.29
Annual Average Ground-Level Concentration, µg/m^3	0.129
DPM Cancer Potency Factor (mg/kg-day)$^{-1}$	1.10E+00
Breathing Rate, (L/kg-day)	302
Exposure Frequency (days/year)	365
Exposure Duration (years)	1
Average Time Period (days)	25,550
Acrolein (Acute and Chronic Risk)	
Emission Rate, g/s-m^2	7.79E-11
Maximum One-Hour Ground-Level Concentration, µg/m^3	6.31E-03
Acrolein Acute Inhalation REL (Eyes; Respiratory System), µg/m^3	2.5
Acrolein Chronic Inhalation REL (Respiratory System), µg/m^3	0.35
Cancer Risk from Exposure to DPM (Chance in a million)	**0.23**
Cancer risk greater than or equal to 10 in a million?	No
Acute Risk from Exposure to Acrolein	**0.0**
Hazard Index (HI) (non-cancerous) greater than or equal to 1?	No
Chronic Risk from Exposure to Acrolein	**0.0**
Hazard Index (HI) (non-cancerous) greater than or equal to 1?	No

Source: Tetra Tech, 2013.

6.0 MITIGATION MEASURES

The project will be required to comply with regional rules that assist in reducing air pollutant emissions. AVAQMD Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, AVAQMD Rule 402 requires implementing dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Implementing these dust suppression techniques will reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules would reduce impacts on nearby sensitive receptors. Applicable dust suppression techniques include the following:

AQ-1 During construction, apply nontoxic chemical soil stabilizers according to manufacturers' specifications or water active sites at least twice daily (locations where site preparation is to occur will be thoroughly watered before earthmoving);

AQ-2 All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard in accordance with the requirements of California Vehicle Code (CVC) section 23114 (freeboard means vertical space between the top of the load and top of the trailer);

AQ-3 All off-road diesel-powered construction equipment less than 175 horsepower shall meet or exceed Tier 2 off-road emission standards. Off-road diesel-powered construction equipment greater than 175 horsepower shall meet or exceed Tier 3 off-road emissions standards;

AQ-4 During construction, the off-road equipment, vehicles, and trucks shall not be idle more than five minutes in any one hour;

AQ-5 The off-road construction equipment drivers shall have proper training in operating the equipment efficiently, taking into account ways to reduce the hours of operation of the equipment and/or operate the equipment at a lower load factor;

AQ-6 Traffic speeds on all unpaved roads shall be reduced to 15 mph or less; and

AQ-7 During construction, there shall be carpools, vanpools, and/or shuttles provided for construction employees.

Implementing these mitigation measures will reduce emissions below AVAQMD requirements.

SECTION 7

REFERENCES

1. Antelope Valley Air Quality Management District, "California Environmental Quality Act and Federal Conformity Guidelines", AVAQMD Stationary Sources Section, AVAQMD Surveillance Section, August 2011.

2. California Air Resources Board iADAM: Air Quality Data Statistics Select 8 Summary. Accessed online at: http://www.arb.ca.gov/ada/select8/sc8start.php August 2012

3. California Air Resources Board Area Designations. Available at www.arb.ca.gov/desig/desig.htm

4. Intergovernmental Panel on Climate Change (IPCC). Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Geneva, Switzerland. February.

5. Seinfeld and Pandis. Atmospheric Chemistry and Physics from Air Pollution to Climate Change, 1998.

6. CARB's Urban Emission Model 2007, Version 9.2.4, http://www.urbemis.com/

7. Antelope Valley Air Quality Management District Rule 403, http://www.avaqmd.ca.gov/index.aspx?page=102

8. Antelope Valley Air Quality Management District Regulation II and XIII, http://www.avaqmd.ca.gov/index.aspx?page=102

9. Southwest Research Institute Study, "Diesel Exhaust Standard Phase I, CRC Project No. AVFL-10A", August 2003.

APPENDIX A

URBEMIS MODEL RUNS

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

Project Name: Site 4- Central Antelope Dry Ranch

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (tons/year unmitigated)	0.60	4.48	3.16	0.00	1.64	0.24	1.88	0.34	0.22	0.56	664.37
2014 TOTALS (tons/year mitigated)	0.60	4.48	3.16	0.00	0.94	0.15	1.09	0.20	0.14	0.34	664.37
Percent Reduction	0.00	0.00	0.00	0.00	42.81	36.84	42.06	42.70	36.87	40.43	0.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51
TOTALS (tons/year, mitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Percent Reduction	0.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.25	0.00	0.04	0.00	0.01	0.00	5.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2

TOTALS (tons/year, unmitigated)	0.27	0.00	0.32	0.00	0.01	0.00	5.51

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014	0.60	4.48	3.16	0.00	1.64	0.24	1.88	0.34	0.22	0.56	664.37
Fine Grading 01/01/2014-03/15/2014	0.14	1.00	0.65	0.00	0.53	0.06	0.59	0.11	0.05	0.16	118.51
Fine Grading Dust	0.00	0.00	0.00	0.00	0.53	0.00	0.53	0.11	0.00	0.11	0.00
Fine Grading Off Road Diesel	0.14	1.00	0.60	0.00	0.00	0.06	0.06	0.00	0.05	0.05	110.28
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.23
Trenching 03/16/2014-03/31/2014	0.01	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.01
Trenching Off Road Diesel	0.01	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.50
Trenching Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
Building 04/01/2014-04/30/2014	0.04	0.30	0.29	0.00	0.00	0.01	0.01	0.00	0.01	0.01	80.41
Building Off Road Diesel	0.02	0.19	0.10	0.00	0.00	0.01	0.01	0.00	0.01	0.01	37.13
Building Vendor Trips	0.01	0.10	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.00	28.03
Building Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.24
Demolition 04/01/2014-04/30/2014	0.04	0.36	0.20	0.00	0.02	0.01	0.03	0.00	0.01	0.02	42.88
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.04	0.35	0.19	0.00	0.00	0.01	0.01	0.00	0.01	0.01	39.36
Demo On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16

Demo Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.37
Fine Grading 05/01/2014-09/30/2014	0.28	2.06	1.35	0.00	1.09	0.12	1.21	0.23	0.11	0.34	243.73
Fine Grading Dust	0.00	0.00	0.00	0.00	1.09	0.00	1.09	0.23	0.00	0.23	0.00
Fine Grading Off Road Diesel	0.28	2.06	1.23	0.00	0.00	0.12	0.12	0.00	0.11	0.11	226.80
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.93
Trenching 10/01/2014-10/31/2014	0.02	0.12	0.07	0.00	0.00	0.01	0.01	0.00	0.01	0.01	14.66
Trenching Off Road Diesel	0.02	0.12	0.07	0.00	0.00	0.01	0.01	0.00	0.01	0.01	13.59
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.07
Building 11/01/2014-12/31/2014	0.07	0.58	0.56	0.00	0.00	0.02	0.03	0.00	0.02	0.02	157.17
Building Off Road Diesel	0.05	0.37	0.20	0.00	0.00	0.02	0.02	0.00	0.01	0.01	72.58
Building Vendor Trips	0.02	0.20	0.16	0.00	0.00	0.01	0.01	0.00	0.01	0.01	54.79
Building Worker Trips	0.01	0.01	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.79

Phase Assumptions

Phase: Demolition 4/1/2014 - 4/30/2014 - Phase 2 Demolition

Building Volume Total (cubic feet): 38410

Building Volume Daily (cubic feet): 3841

On Road Truck Travel (VMT): 46.23

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Fine Grading 1/1/2014 - 3/15/2014 - Phase 1 Mow and Roll

Total Acres Disturbed: 63

Maximum Daily Acreage Disturbed: 2
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Fine Grading 5/1/2014 - 9/30/2014 - Phase 2 Mow and Roll
Total Acres Disturbed: 193
Maximum Daily Acreage Disturbed: 2
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 3/16/2014 - 3/31/2014 - Phase 1 Trenching/Infrastructure Construction
Off-Road Equipment:
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2014 - 10/31/2014 - Phase 2 Trenching/Infrastructure Construction
Off-Road Equipment:
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 4/1/2014 - 4/30/2014 - Phase 1 PV Installation
Off-Road Equipment:
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 11/1/2014 - 12/31/2014 - Phase 2 PV Installation
Off-Road Equipment:
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014	0.60	4.48	3.16	0.00	0.94	0.15	1.09	0.20	0.14	0.34	664.37

Fine Grading 01/01/2014-03/15/2014	0.14	1.00	0.65	0.00	0.30	0.03	0.33	0.06	0.03	0.09	118.51
Fine Grading Dust	0.00	0.00	0.00	0.00	0.30	0.00	0.30	0.06	0.00	0.06	0.00
Fine Grading Off Road Diesel	0.14	1.00	0.60	0.00	0.00	0.03	0.03	0.00	0.03	0.03	110.28
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.23
Trenching 03/16/2014-03/31/2014	0.01	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.01
Trenching Off Road Diesel	0.01	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.50
Trenching Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
Building 04/01/2014-04/30/2014	0.04	0.30	0.29	0.00	0.00	0.01	0.01	0.00	0.01	0.01	80.41
Building Off Road Diesel	0.02	0.19	0.10	0.00	0.00	0.01	0.01	0.00	0.00	0.00	37.13
Building Vendor Trips	0.01	0.10	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.00	28.03
Building Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.24
Demolition 04/01/2014-04/30/2014	0.04	0.36	0.20	0.00	0.02	0.01	0.03	0.00	0.01	0.01	42.88
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.04	0.35	0.19	0.00	0.00	0.01	0.01	0.00	0.01	0.01	39.36
Demo On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.16
Demo Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.37
Fine Grading 05/01/2014-09/30/2014	0.28	2.06	1.35	0.00	0.62	0.07	0.69	0.13	0.07	0.19	243.73
Fine Grading Dust	0.00	0.00	0.00	0.00	0.62	0.00	0.62	0.13	0.00	0.13	0.00
Fine Grading Off Road Diesel	0.28	2.06	1.23	0.00	0.00	0.07	0.07	0.00	0.06	0.06	226.80
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.93
Trenching 10/01/2014-10/31/2014	0.02	0.12	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.66

Trenching Off Road Diesel	0.02	0.12	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.59
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.07
Building 11/01/2014-12/31/2014	0.07	0.58	0.56	0.00	0.00	0.02	0.02	0.00	0.02	0.02	157.17
Building Off Road Diesel	0.05	0.37	0.20	0.00	0.00	0.01	0.01	0.00	0.01	0.01	72.58
Building Vendor Trips	0.02	0.20	0.16	0.00	0.00	0.01	0.01	0.00	0.01	0.01	54.79
Building Worker Trips	0.01	0.01	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.79

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Demolition 4/1/2014 - 4/30/2014 - Phase 2 Demolition

For Excavators, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Fine Grading 1/1/2014 - 3/15/2014 - Phase 1 Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Fine Grading 5/1/2014 - 9/30/2014 - Phase 2 Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 3/16/2014 - 3/31/2014 - Phase 1 Trenching/Infrastructure Construction

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 10/1/2014 - 10/31/2014 - Phase 2 Trenching/Infrastructure Construction

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 4/1/2014 - 4/30/2014 - Phase 1 PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 11/1/2014 - 12/31/2014 - Phase 2 PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							

Landscape	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Consumer Products	0.00						
Architectural Coatings							
TOTALS (tons/year, unmitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Consumer Products	0.00						
Architectural Coatings							
TOTALS (tons/year, mitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.25	0.00	0.04	0.00	0.01	0.00	5.00

TOTALS (tons/year, unmitigated)	0.25	0.00	0.04	0.00	0.01	0.00	5.00

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.01	acres	256.00	2.56	27.46
					2.56	27.46

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0

Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

Project Name: Site 4- Central Antelope Dry Ranch

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	7.38	59.83	44.38	0.04	20.01	2.46	22.19	4.18	2.26	6.18	11,208.39
2014 TOTALS (lbs/day mitigated)	7.38	59.83	44.38	0.04	11.32	1.84	12.63	2.37	1.69	3.57	11,208.39

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81
TOTALS (lbs/day, mitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Percent Reduction	0.00	0.00	0.00	#NUM!	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.64	0.02	0.21	0.00	0.05	0.01	28.27

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.76	0.04	1.76	0.00	0.06	0.02	31.08

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-3/14/2014 Active Days: 53	5.16	37.84	24.70	0.00	**20.01**	2.18	**22.19**	**4.18**	2.00	**6.18**	4,472.13
Fine Grading 01/01/2014-03/15/2014	5.16	37.84	24.70	0.00	20.01	2.18	22.19	4.18	2.00	6.18	4,472.13
Fine Grading Dust	0.00	0.00	0.00	0.00	20.00	0.00	20.00	4.18	0.00	4.18	0.00
Fine Grading Off Road Diesel	5.09	37.73	22.64	0.00	0.00	2.17	2.17	0.00	1.99	1.99	4,161.46
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.12	2.05	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.66
Time Slice 3/17/2014-3/31/2014 Active Days: 11	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching 03/16/2014-03/31/2014	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.64	0.64	0.00	0.59	0.59	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 4/1/2014-4/30/2014 Active Days: 22	**7.38**	**59.83**	**44.38**	**0.04**	1.78	**2.46**	4.24	0.39	**2.26**	2.66	**11,208.39**
Building 04/01/2014-04/30/2014	3.39	27.18	26.19	0.04	0.15	1.12	1.28	0.05	1.03	1.08	7,310.00
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.70	0.70	0.00	0.65	0.65	3,375.70
Building Vendor Trips	0.91	9.29	7.63	0.02	0.09	0.38	0.47	0.03	0.35	0.38	2,548.57
Building Worker Trips	0.27	0.51	9.16	0.01	0.07	0.04	0.10	0.02	0.03	0.06	1,385.73
Demolition 04/01/2014-04/30/2014	3.99	32.65	18.20	0.00	1.63	1.34	2.97	0.34	1.23	1.57	3,898.39
Fugitive Dust	0.00	0.00	0.00	0.00	1.61	0.00	1.61	0.34	0.00	0.34	0.00

Demo Off Road Diesel	3.88	31.68	17.00	0.00	0.00	1.30	1.30	0.00	1.20	1.20	3,578.17
Demo On Road Diesel	0.08	0.92	0.37	0.00	0.01	0.04	0.04	0.00	0.03	0.04	195.96
Demo Worker Trips	0.02	0.05	0.82	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.27
Time Slice 5/1/2014-9/30/2014 Active Days: 109	5.16	37.84	24.70	0.00	**20.01**	2.18	**22.19**	**4.18**	2.00	**6.18**	4,472.13
Fine Grading 05/01/2014-09/30/2014	5.16	37.84	24.70	0.00	20.01	2.18	22.19	4.18	2.00	6.18	4,472.13
Fine Grading Dust	0.00	0.00	0.00	0.00	20.00	0.00	20.00	4.18	0.00	4.18	0.00
Fine Grading Off Road Diesel	5.09	37.73	22.64	0.00	0.00	2.17	2.17	0.00	1.99	1.99	4,161.46
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.12	2.05	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.66
Time Slice 10/1/2014-10/31/2014 Active Days: 23	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching 10/01/2014-10/31/2014	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.64	0.64	0.00	0.59	0.59	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 11/3/2014-12/31/2014 Active Days: 43	3.39	27.18	26.19	0.04	0.15	1.12	1.28	0.05	1.03	1.08	7,310.00
Building 11/01/2014-12/31/2014	3.39	27.18	26.19	0.04	0.15	1.12	1.28	0.05	1.03	1.08	7,310.00
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.70	0.70	0.00	0.65	0.65	3,375.70
Building Vendor Trips	0.91	9.29	7.63	0.02	0.09	0.38	0.47	0.03	0.35	0.38	2,548.57
Building Worker Trips	0.27	0.51	9.16	0.01	0.07	0.04	0.10	0.02	0.03	0.06	1,385.73

Phase Assumptions

Phase: Demolition 4/1/2014 - 4/30/2014 - Phase 2 Demolition

Building Volume Total (cubic feet): 38410

Building Volume Daily (cubic feet): 3841

On Road Truck Travel (VMT): 46.23
Off-Road Equipment:
1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Fine Grading 1/1/2014 - 3/15/2014 - Phase 1 Mow and Roll
Total Acres Disturbed: 63
Maximum Daily Acreage Disturbed: 2
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Fine Grading 5/1/2014 - 9/30/2014 - Phase 2 Mow and Roll
Total Acres Disturbed: 193
Maximum Daily Acreage Disturbed: 2
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 3/16/2014 - 3/31/2014 - Phase 1 Trenching/Infrastructure Construction
Trenching/Infrastructure Construction
Off-Road Equipment:
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2014 - 10/31/2014 - Phase 2 Trenching/Infrastructure Construction
Off-Road Equipment:
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 4/1/2014 - 4/30/2014 - Phase 1 PV Installation
Off-Road Equipment:
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 11/1/2014 - 12/31/2014 - Phase 2 PV Installation
Off-Road Equipment:
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-3/14/2014 Active Days: 53	5.16	37.84	24.70	0.00	11.32	1.30	12.63	2.37	1.20	3.57	4,472.13
Fine Grading 01/01/2014-03/15/2014	5.16	37.84	24.70	0.00	11.32	1.30	12.63	2.37	1.20	3.57	4,472.13
Fine Grading Dust	0.00	0.00	0.00	0.00	11.31	0.00	11.31	2.36	0.00	2.36	0.00
Fine Grading Off Road Diesel	5.09	37.73	22.64	0.00	0.00	1.29	1.29	0.00	1.19	1.19	4,161.46
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.12	2.05	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.66
Time Slice 3/17/2014-3/31/2014 Active Days: 11	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching 03/16/2014-03/31/2014	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.35	0.35	0.00	0.32	0.32	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 4/1/2014-4/30/2014 Active Days: 22	**7.38**	**59.83**	**44.38**	**0.04**	1.78	1.84	3.62	0.39	1.69	2.08	**11,208.39**
Building 04/01/2014-04/30/2014	3.39	27.18	26.19	0.04	0.15	0.88	1.03	0.05	0.80	0.86	7,310.00
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.46	0.46	0.00	0.42	0.42	3,375.70
Building Vendor Trips	0.91	9.29	7.63	0.02	0.09	0.38	0.47	0.03	0.35	0.38	2,548.57
Building Worker Trips	0.27	0.51	9.16	0.01	0.07	0.04	0.10	0.02	0.03	0.06	1,385.73
Demolition 04/01/2014-04/30/2014	3.99	32.65	18.20	0.00	1.63	0.96	2.59	0.34	0.88	1.22	3,898.39
Fugitive Dust	0.00	0.00	0.00	0.00	1.61	0.00	1.61	0.34	0.00	0.34	0.00

Demo Off Road Diesel	3.88	31.68	17.00	0.00	0.00	0.92	0.92	0.00	0.85	0.85	3,578.17
Demo On Road Diesel	0.08	0.92	0.37	0.00	0.01	0.04	0.04	0.00	0.03	0.04	195.96
Demo Worker Trips	0.02	0.05	0.82	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.27
Time Slice 5/1/2014-9/30/2014 Active Days: 109	5.16	37.84	24.70	0.00	11.32	1.30	12.63	2.37	1.20	3.57	4,472.13
Fine Grading 05/01/2014-09/30/2014	5.16	37.84	24.70	0.00	11.32	1.30	12.63	2.37	1.20	3.57	4,472.13
Fine Grading Dust	0.00	0.00	0.00	0.00	11.31	0.00	11.31	2.36	0.00	2.36	0.00
Fine Grading Off Road Diesel	5.09	37.73	22.64	0.00	0.00	1.29	1.29	0.00	1.19	1.19	4,161.46
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.12	2.05	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.66
Time Slice 10/1/2014-10/31/2014 Active Days: 23	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching 10/01/2014-10/31/2014	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.35	0.35	0.00	0.32	0.32	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 11/3/2014-12/31/2014 Active Days: 43	3.39	27.18	26.19	0.04	0.15	0.88	1.03	0.05	0.80	0.86	7,310.00
Building 11/01/2014-12/31/2014	3.39	27.18	26.19	0.04	0.15	0.88	1.03	0.05	0.80	0.86	7,310.00
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.46	0.46	0.00	0.42	0.42	3,375.70
Building Vendor Trips	0.91	9.29	7.63	0.02	0.09	0.38	0.47	0.03	0.35	0.38	2,548.57
Building Worker Trips	0.27	0.51	9.16	0.01	0.07	0.04	0.10	0.02	0.03	0.06	1,385.73

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Demolition 4/1/2014 - 4/30/2014 - Phase 2 Demolition

For Excavators, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
The following mitigation measures apply to Phase: Fine Grading 1/1/2014 - 3/15/2014 - Phase 1 Mow and Roll
For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%
For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
The following mitigation measures apply to Phase: Fine Grading 5/1/2014 - 9/30/2014 - Phase 2 Mow and Roll
For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%
For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 3/16/2014 - 3/31/2014 - Phase 1 Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 10/1/2014 - 10/31/2014 - Phase 2 Trenching/Infrastructure Construction

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 4/1/2014 - 4/30/2014 - Phase 1 PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 11/1/2014 - 12/31/2014 - Phase 2 PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%
For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:
PM10: 50% PM25: 50%
For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:
PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, unmitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81

Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, mitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	1.64	0.02	0.21	0.00	0.05	0.01	28.27
TOTALS (lbs/day, unmitigated)	1.64	0.02	0.21	0.00	0.05	0.01	28.27

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.01	acres	256.00	2.56	27.46

			2.56	27.46

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)			
General light industry	50.0	25.0	25.0

Operational Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

Project Name: Site 4- Central Antelope Dry Ranch

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	7.38	59.83	44.38	0.04	20.01	2.46	22.19	4.18	2.26	6.18	11,208.39
2014 TOTALS (lbs/day mitigated)	7.38	59.83	44.38	0.04	11.32	1.84	12.63	2.37	1.69	3.57	11,208.39

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.00						
TOTALS (lbs/day, mitigated)	0.00						
Percent Reduction	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.78	0.03	0.20	0.00	0.05	0.01	25.58

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.78	0.03	0.20	0.00	0.05	0.01	25.58

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-3/14/2014 Active Days: 53	5.16	37.84	24.70	0.00	**20.01**	2.18	**22.19**	**4.18**	2.00	**6.18**	4,472.13
Fine Grading 01/01/2014-03/15/2014	5.16	37.84	24.70	0.00	20.01	2.18	22.19	4.18	2.00	6.18	4,472.13
Fine Grading Dust	0.00	0.00	0.00	0.00	20.00	0.00	20.00	4.18	0.00	4.18	0.00
Fine Grading Off Road Diesel	5.09	37.73	22.64	0.00	0.00	2.17	2.17	0.00	1.99	1.99	4,161.46
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.12	2.05	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.66
Time Slice 3/17/2014-3/31/2014 Active Days: 11	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching 03/16/2014-03/31/2014	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.64	0.64	0.00	0.59	0.59	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 4/1/2014-4/30/2014 Active Days: 22	**7.38**	**59.83**	**44.38**	**0.04**	1.78	**2.46**	4.24	0.39	**2.26**	2.66	**11,208.39**
Building 04/01/2014-04/30/2014	3.39	27.18	26.19	0.04	0.15	1.12	1.28	0.05	1.03	1.08	7,310.00
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.70	0.70	0.00	0.65	0.65	3,375.70
Building Vendor Trips	0.91	9.29	7.63	0.02	0.09	0.38	0.47	0.03	0.35	0.38	2,548.57
Building Worker Trips	0.27	0.51	9.16	0.01	0.07	0.04	0.10	0.02	0.03	0.06	1,385.73
Demolition 04/01/2014-04/30/2014	3.99	32.65	18.20	0.00	1.63	1.34	2.97	0.34	1.23	1.57	3,898.39
Fugitive Dust	0.00	0.00	0.00	0.00	1.61	0.00	1.61	0.34	0.00	0.34	0.00

Demo Off Road Diesel	3.88	31.68	17.00	0.00	0.00	1.30	1.30	0.00	1.20	1.20	3,578.17
Demo On Road Diesel	0.08	0.92	0.37	0.00	0.01	0.04	0.04	0.00	0.03	0.04	195.96
Demo Worker Trips	0.02	0.05	0.82	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.27
Time Slice 5/1/2014-9/30/2014 Active Days: 109	5.16	37.84	24.70	0.00	**20.01**	2.18	**22.19**	**4.18**	2.00	**6.18**	4,472.13
Fine Grading 05/01/2014-09/30/2014	5.16	37.84	24.70	0.00	20.01	2.18	22.19	4.18	2.00	6.18	4,472.13
Fine Grading Dust	0.00	0.00	0.00	0.00	20.00	0.00	20.00	4.18	0.00	4.18	0.00
Fine Grading Off Road Diesel	5.09	37.73	22.64	0.00	0.00	2.17	2.17	0.00	1.99	1.99	4,161.46
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.12	2.05	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.66
Time Slice 10/1/2014-10/31/2014 Active Days: 23	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching 10/01/2014-10/31/2014	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.64	0.64	0.00	0.59	0.59	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 11/3/2014-12/31/2014 Active Days: 43	3.39	27.18	26.19	0.04	0.15	1.12	1.28	0.05	1.03	1.08	7,310.00
Building 11/01/2014-12/31/2014	3.39	27.18	26.19	0.04	0.15	1.12	1.28	0.05	1.03	1.08	7,310.00
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.70	0.70	0.00	0.65	0.65	3,375.70
Building Vendor Trips	0.91	9.29	7.63	0.02	0.09	0.38	0.47	0.03	0.35	0.38	2,548.57
Building Worker Trips	0.27	0.51	9.16	0.01	0.07	0.04	0.10	0.02	0.03	0.06	1,385.73

Phase Assumptions

Phase: Demolition 4/1/2014 - 4/30/2014 - Phase 2 Demolition

Building Volume Total (cubic feet): 38410

Building Volume Daily (cubic feet): 3841

On Road Truck Travel (VMT): 46.23
Off-Road Equipment:
1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Fine Grading 1/1/2014 - 3/15/2014 - Phase 1 Mow and Roll
Total Acres Disturbed: 63
Maximum Daily Acreage Disturbed: 2
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day
2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Fine Grading 5/1/2014 - 9/30/2014 - Phase 2 Mow and Roll
Total Acres Disturbed: 193
Maximum Daily Acreage Disturbed: 2
Fugitive Dust Level of Detail: Low
Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 3/16/2014 - 3/31/2014 - Phase 1 Trenching/Infrastructure Construction
Trenching/Infrastructure Construction
Off-Road Equipment:
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 10/1/2014 - 10/31/2014 - Phase 2 Trenching/Infrastructure Construction
Off-Road Equipment:
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 4/1/2014 - 4/30/2014 - Phase 1 PV Installation
Off-Road Equipment:
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 11/1/2014 - 12/31/2014 - Phase 2 PV Installation
Off-Road Equipment:
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 1/1/2014-3/14/2014 Active Days: 53	5.16	37.84	24.70	0.00	11.32	1.30	12.63	2.37	1.20	3.57	4,472.13
Fine Grading 01/01/2014-03/15/2014	5.16	37.84	24.70	0.00	11.32	1.30	12.63	2.37	1.20	3.57	4,472.13
Fine Grading Dust	0.00	0.00	0.00	0.00	11.31	0.00	11.31	2.36	0.00	2.36	0.00
Fine Grading Off Road Diesel	5.09	37.73	22.64	0.00	0.00	1.29	1.29	0.00	1.19	1.19	4,161.46
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.12	2.05	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.66
Time Slice 3/17/2014-3/31/2014 Active Days: 11	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching 03/16/2014-03/31/2014	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.35	0.35	0.00	0.32	0.32	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 4/1/2014-4/30/2014 Active Days: 22	**7.38**	**59.83**	**44.38**	**0.04**	1.78	1.84	3.62	0.39	1.69	2.08	**11,208.39**
Building 04/01/2014-04/30/2014	3.39	27.18	26.19	0.04	0.15	0.88	1.03	0.05	0.80	0.86	7,310.00
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.46	0.46	0.00	0.42	0.42	3,375.70
Building Vendor Trips	0.91	9.29	7.63	0.02	0.09	0.38	0.47	0.03	0.35	0.38	2,548.57
Building Worker Trips	0.27	0.51	9.16	0.01	0.07	0.04	0.10	0.02	0.03	0.06	1,385.73
Demolition 04/01/2014-04/30/2014	3.99	32.65	18.20	0.00	1.63	0.96	2.59	0.34	0.88	1.22	3,898.39
Fugitive Dust	0.00	0.00	0.00	0.00	1.61	0.00	1.61	0.34	0.00	0.34	0.00

Demo Off Road Diesel	3.88	31.68	17.00	0.00	0.00	0.92	0.92	0.00	0.85	0.85	3,578.17
Demo On Road Diesel	0.08	0.92	0.37	0.00	0.01	0.04	0.04	0.00	0.03	0.04	195.96
Demo Worker Trips	0.02	0.05	0.82	0.00	0.01	0.00	0.01	0.00	0.00	0.01	124.27
Time Slice 5/1/2014-9/30/2014 Active Days: 109	5.16	37.84	24.70	0.00	11.32	1.30	12.63	2.37	1.20	3.57	4,472.13
Fine Grading 05/01/2014-09/30/2014	5.16	37.84	24.70	0.00	11.32	1.30	12.63	2.37	1.20	3.57	4,472.13
Fine Grading Dust	0.00	0.00	0.00	0.00	11.31	0.00	11.31	2.36	0.00	2.36	0.00
Fine Grading Off Road Diesel	5.09	37.73	22.64	0.00	0.00	1.29	1.29	0.00	1.19	1.19	4,161.46
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.12	2.05	0.00	0.01	0.01	0.02	0.01	0.01	0.01	310.66
Time Slice 10/1/2014-10/31/2014 Active Days: 23	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching 10/01/2014-10/31/2014	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.35	0.35	0.00	0.32	0.32	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 11/3/2014-12/31/2014 Active Days: 43	3.39	27.18	26.19	0.04	0.15	0.88	1.03	0.05	0.80	0.86	7,310.00
Building 11/01/2014-12/31/2014	3.39	27.18	26.19	0.04	0.15	0.88	1.03	0.05	0.80	0.86	7,310.00
Building Off Road Diesel	2.21	17.38	9.40	0.00	0.00	0.46	0.46	0.00	0.42	0.42	3,375.70
Building Vendor Trips	0.91	9.29	7.63	0.02	0.09	0.38	0.47	0.03	0.35	0.38	2,548.57
Building Worker Trips	0.27	0.51	9.16	0.01	0.07	0.04	0.10	0.02	0.03	0.06	1,385.73

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Demolition 4/1/2014 - 4/30/2014 - Phase 2 Demolition

For Excavators, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Fine Grading 1/1/2014 - 3/15/2014 - Phase 1 Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Fine Grading 5/1/2014 - 9/30/2014 - Phase 2 Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 3/16/2014 - 3/31/2014 - Phase 1 Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 10/1/2014 - 10/31/2014 - Phase 2 Trenching/Infrastructure Construction

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 4/1/2014 - 4/30/2014 - Phase 1 PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

The following mitigation measures apply to Phase: Building Construction 11/1/2014 - 12/31/2014 - Phase 2 PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, unmitigated)	0.00						

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscaping - No Winter Emissions							

Consumer Products	0.00
Architectural Coatings	
TOTALS (lbs/day, mitigated)	0.00

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.78	0.03	0.20	0.00	0.05	0.01	25.58
TOTALS (lbs/day, unmitigated)	0.78	0.03	0.20	0.00	0.05	0.01	25.58

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.01	acres	256.00	2.56	27.46

			2.56	27.46

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)			
General light industry	50.0	25.0	25.0

Operational Changes to Defaults

APPENDIX B

SCREEN3 MODEL RUNS

```
 ******  SCREEN3 MODEL  ******
 **** VERSION DATED 13043 ****

 ENTER TITLE FOR THIS RUN (UP TO 79 CHARACTERS):
Site 4- Antelope Solar Greenworks

 ENTER SOURCE TYPE: P     FOR POINT
                    F     FOR FLARE
                    A     FOR AREA
                    V     FOR VOLUME
    ALSO ENTER ANY OF THE FOLLOWING OPTIONS ON
THE SAME LINE:

      N     - TO USE THE NON-REGULATORY BUT
CONSERVATIVE BRODE 2
              MIXING HEIGHT OPTION,
      nn.n  - TO USE AN ANEMOMETER HEIGHT OTHER
THAN THE REGULATORY
              (DEFAULT) 10 METER HEIGHT.
      SS    - TO USE A NON-REGULATORY CAVITY
CALCULATION ALTERNATIVE
    Example - PN 7.0 SS (entry for a point source)

  ENTER SOURCE TYPE AND ANY OF THE ABOVE
OPTIONS:
a
 ENTER EMISSION RATE (G/(S-M**2)):
5.99e-9
 ENTER SOURCE RELEASE HEIGHT (M):
5
 ENTER LENGTH OF LARGER SIDE FOR AREA (M):
1844
 ENTER LENGTH OF SMALLER SIDE FOR AREA (M):
1844
 ENTER RECEPTOR HEIGHT ABOVE GROUND (FOR
FLAGPOLE RECEPTOR) (M):
0
 ENTER URBAN/RURAL OPTION (U=URBAN, R=RURAL):
r
 SEARCH THROUGH RANGE OF DIRECTIONS TO FIND
THE MAXIMUM?
 ENTER Y OR N:
y
 ENTER CHOICE OF METEOROLOGY;
 1 - FULL METEOROLOGY (ALL STABILITIES & WIND
SPEEDS)
 2 - INPUT SINGLE STABILITY CLASS
 3 - INPUT SINGLE STABILITY CLASS AND WIND SPEED
1
 USE AUTOMATED DISTANCE ARRAY? ENTER Y OR N:
y
 ENTER MIN AND MAX DISTANCES TO USE (M):
1
500

 **********************************
 *** SCREEN AUTOMATED DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF     0. M ABOVE STACK BASE
USED FOR FOLLOWING DISTANCES ***


   DIST     CONC            U10M   USTK  MIX HT   PLUME
MAX DIR
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)
(DEG)
 -------  ----------  ----  -----  -----  ------  ------  -------
      1.   0.4840       6    1.0    1.0 10000.0    5.00     45.
    100.   0.5231       6    1.0    1.0 10000.0    5.00     43.
    200.   0.5548       6    1.0    1.0 10000.0    5.00     45.
    300.   0.5610       6    1.0    1.0 10000.0    5.00     45.
    400.   0.5846       6    1.0    1.0 10000.0    5.00     45.
    500.   0.6073       6    1.0    1.0 10000.0    5.00     45.
 ITERATING TO FIND MAXIMUM CONCENTRATION . . .

 MAXIMUM 1-HR CONCENTRATION AT OR BEYOND      1.
M:
   1386.   0.7844       6    1.0    1.0 10000.0    5.00     45.

USE DISCRETE DISTANCES?  ENTER Y OR N:
y
 TO CEASE, ENTER A DISTANCE OF ZERO (0).

 **********************************
 *** SCREEN DISCRETE DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF     0. M ABOVE STACK BASE
USED FOR FOLLOWING DISTANCES ***


   DIST     CONC            U10M   USTK  MIX HT   PLUME
MAX DIR
    (M)   (UG/M**3)   STAB  (M/S)  (M/S)    (M)   HT (M)
(DEG)
 -------  ----------  ----  -----  -----  ------  ------  -------
 ENTER DISTANCE (M) (0 TO EXIT):
6
      6.   0.4854       6    1.0    1.0 10000.0    5.00     45.
 ENTER DISTANCE (M) (0 TO EXIT):
```

APPENDIX B-2.5

PROJECT 5 SILVER SUN GREENWORKS
AIR QUALITY AND GHG TECHNICAL REPORT

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SILVERADO POWER CALIFORNIA

SILVER SUN GREENWORKS
(CUP 11-26)
AIR QUALITY AND GREENHOUSE GAS TECHNICAL REPORT

Prepared for:

SILVERADO power

2 Embarcadero Center, Suite 410
San Francisco, CA 94111

Prepared by:

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17885 Von Karman Avenue, Site 500
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September 2013

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Appendix A URBEMIS MODEL RUNS
Appendix B SCREEN3 MODEL RUNS

ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
AC	alternating current
AVAQMD	Antelope Valley Air Quality Management District
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards (CAAQS)
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
EPA	Environmental Protection Agency
H_2S	hydrogen sulfide
HIa	acute hazard index
HIc	chronic hazard index
HRA	Health Risk Assessment
MDAB	Mojave Desert Air Basin
MW	megawatts
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
O_3	ozone
Pb	lead
PM_{10}	fine particulate matter equal to or less than 10 microns
$PM_{2.5}$	fine particulate matter equal to or less than 2.5 microns
PV	photovoltaic
REL	reference exposure level
ROG	reactive organic gases
RPS	Renewable Portfolio Standards
SCAB	South Coast Air Basin
SCE	Southern California Edison
SGF	Solar Energy Generation Facility
SO_2	sulfur dioxide
TAC	toxic air contaminant
TSP	total suspended particulate

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1.0 EXECUTIVE SUMMARY

Silverado Power, LLC (Silverado Power) proposes to develop, own, and operate a photovoltaic (PV) solar energy project in the County of Los Angeles, California. The Silver Sun Solar Greenworks Generation project (Project) will consist of a solar energy generating facility (SGF) that employs PV panels to convert sunlight directly into electrical energy without using heat transfer fluid or cooling water.

The Project facilities will operate year-round, producing electric power during daytime hours. The proposed schedule for construction begins with the facility's site preparation and construction in the third quarter of 2014 and completes construction by the fourth quarter of 2014.

The air quality analysis presented in this report analyzes the potential air quality impacts associated with the proposed Project. A health risk assessment (HRA) was performed to determine the health effects from construction activities to the nearest sensitive receptors. Since the Project site is located within the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD), the air quality analysis follows the AVAQMD's guidelines.

This report also provides estimates of greenhouse gas (GHG) emissions from the combustion of fossil fuels, primarily from constructing the proposed facility, shows operation of the facility results in a reduction of GHG emissions, shows operation will results in reducing GHG emissions, and addresses the effects of GHGs on climate change.

In summary, the air quality and greenhouse gas analysis concludes that emissions during short-term construction and during long-term operation of the project do not exceed the significant thresholds established by the AVAQMD. The HRA concludes that the construction activities would result in a less-than-significant impact regarding health risk. The Project does not pose significant adverse impacts on local air quality and global climate change.

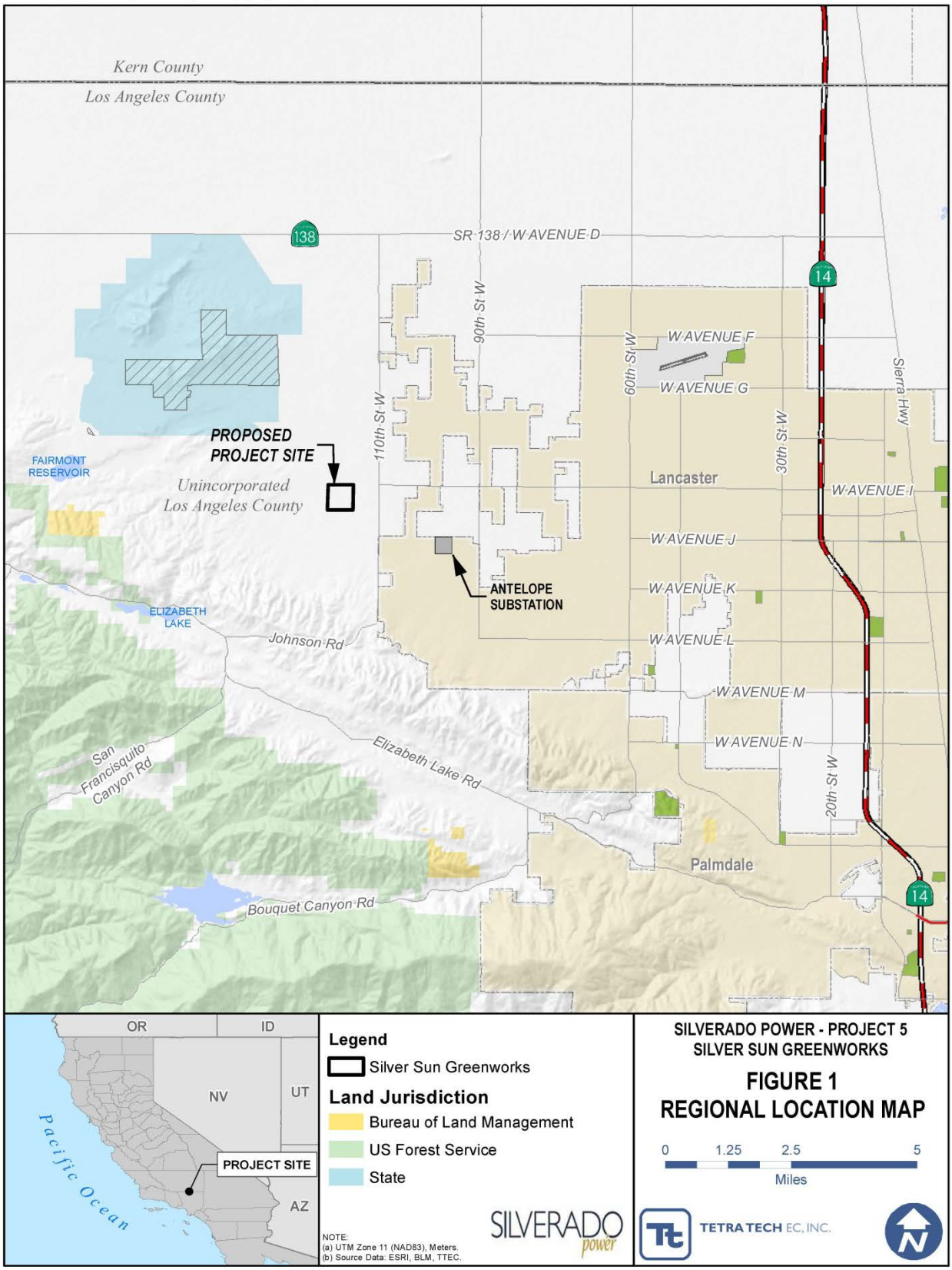
This report has been prepared for Silverado Power as part of an environmental review required by the California Environmental Quality Act (CEQA) with Los Angeles County as lead CEQA agency for the Project. The California Air Resources Board (CARB), AVAQMD, and Los Angeles County methods, standards, and significance thresholds used in this analysis are considered appropriate for determining impacts.

2.0 DESCRIPTION OF PROJECT

2.1 Project Location

The proposed Project is located on 160 acres of primarily unproductive agricultural land in the unincorporated northern section of Los Angeles County. The site is approximately 10.59 miles northwest of the city of Lancaster. It is in the block bordered by West Avenue I to the north, 120th Street West to the west, West Avenue J to the south, and 112th Street West to the east. Figure 1 presents the project location.

Date: 9/18/2013 12:18:34 PM
Path: P:\GIS\Projects\4336_Silverado\LA_EIR\AQ\1_Regional_Project5.mxd



2.2 Proposed Project Description

The proposed solar energy generating facility will produce approximately 20 megawatts (MW) of electricity. The 20 MW facility would consist of the following:

- PV modules
- PV module mounting system
- Electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing
- Generation tie (underground connection to the substation) of 2.4 miles.

The Project will not require the construction of an on-site operations and maintenance (O&M) facility.

3.0 EXISTING AND AFFECTED ENVIRONMENT

3.1 Existing Air Quality Standards

In California, local responsibility for air quality is assigned to air quality management districts and air pollution control districts. The project site is located in the northern portion of Los Angeles County, which is under the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD). The impact analysis contained in this section was prepared according to the methodologies provided by the AVAQMD [Ref. 1].

The Federal Clean Air Act (42 USC Section 7401-7671q; CAA) requires the adoption of the National Ambient Air Quality Standards (NAAQS) to decrease the potential impact of air pollution on the public health and welfare. Current standards include sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), fine particulate matter equal to or less than 10 microns (PM_{10}), fine particulate matter equal to or less than 2.5 microns ($PM_{2.5}$), and lead (Pb). These pollutants are designated criteria pollutants. CARB has established additional state standards for the criteria pollutants that are generally more restrictive than the NAAQS. Federal and state standards are shown in Table 1.

Table 1. State and Federal Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary	Inertial Separation and Gravimetric

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Matter (PM_{10})[8]	Annual Arithmetic Mean	20 µg/m^3		—	Standard	Analysis
Fine Particulate Matter ($PM_{2.5}$)[8]	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12 µg/m^3	15 µg/m3	
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)[9]	Annual Arithmetic Mean	0.03 ppm (56 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m^3)		100 ppb	None	
Sulfur Dioxide (SO_2)[10]	24 Hour	0.04 ppm (105 µg/m^3)	Ultraviolet Fluorescence	0.14 ppm (365 µg/m^3)	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m3)		0.075 ppm (196 µg/m3)	—	
	Annual Arithmetic Mean	0.075 ppm (196 µg/m^3)		0.03 ppm	—	
Lead (Pb)[11,12]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[13]	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates (SO_4)	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[11]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.
8. On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
9. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
10. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
11. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
12. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
13. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: California Air Resources Board (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, updated 06/04/13), and U.S. Environmental Protection Agency (http://www.epa.gov/air/criteria.html and http://www.epa.gov/air/lead/pdfs/20081015_ pb_naaqs_final.pdf [see “FR Notices” at http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html], accessed September 2013]

The project site is located within the jurisdiction of the AVAQMD whose mission is to attain and maintain NAAQS and California Ambient Air Quality Standards (CAAQS) and to ensure air pollutants do not pose a nuisance or significant public health threat. Included in AVAQMD's tasks are monitoring air pollution and promulgating Rules and Regulations. Four AVAQMD rules are applicable to the Project: Rule 402 (Nuisance), Rule 403 (Fugitive Dust), Regulation II (Permits) and Regulation XIII (New Sources Review).

3.2 Climate

Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.) but also by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall, etc.

The AVAQMD covers a western portion of the Mojave Desert Air Basin (MDAB). This desert region is characterized by wide day-night temperature fluctuations and seasonal strong winds. Days with temperatures exceeding 100°F typically begin in May and can last into October. During July and August minimum nocturnal temperatures in the low to mid-90s can be expected on several nights. Relative humidity is low, below 40 percent most of the year; above 50 percent on most winter nights, during precipitation and on summer evenings after a rain. On a typical summer afternoon the relative humidity is approximately 10 percent; on a winter afternoon, approximately 30 percent. The rainfall pattern is seasonal with most rain falling between November and April. Since 1980, the mean annual precipitation has been 3.5 inches. Prevailing winds in the MDAB are out of the west and southwest.

The most recent data measured in 2012 at the AVAQMD's monitoring station in Lancaster-433301 Division Street shows that the monthly average ambient temperature is 63°F, hourly average wind speed is 4.7 miles per hour, and monthly average humidity is 41 percent. [Ref. 2].

3.3 Air Pollutant Constituents and Attainment Status

A state or region is given the status of "attainment" or "unclassified" if either the federal or state ambient air quality standards have not been exceeded. A status of "nonattainment" for particular criteria pollutants is assigned if the ambient air quality standard for that pollutant has been exceeded. Once designated as nonattainment, attainment status may be achieved after three years of data showing non-exceedance of the standard. When an area is reclassified from nonattainment to attainment, it is designated as a maintenance area, which requires establishing and enforcing a plan to maintain attainment with the standard.

Table 2 lists criteria air pollutants and their attainment status in the Mojave Desert Air Basin (MDAB).

Table 2. Criteria Pollutants Attainment Status in the Mojave Desert Air Basin

Air Pollutants	State	Federal
Ozone (1-Hour)	Nonattainment, classified Extreme	-
Ozone (8-Hour)	Non-attainment; classified Extreme	Non-attainment; classified Moderate
$PM_{2.5}$	Unclassified	Unclassified/attainment
PM_{10}	Non-attainment	Unclassified
NO_2	Attainment/unclassified	Attainment/unclassified
CO	Attainment	Attainment
SO_2	Attainment/unclassified	Attainment/unclassified
Lead	Attainment	Attainment
Particulate Sulfate	Unclassified	-
Hydrogen Sulfide	Unclassified	-
Visibility Reducing Particles	Unclassified	-

Source: AVAQMD 2013 [Ref. 3]

Ozone

O_3 is a problematic air contaminant in the MDAB because a significant portion of the ozone (and ozone precursors) in the basin is transported from the heavily populated South Coast Air Basin (SCAB). Maximum ozone concentrations in the SCAB and in the MDAB usually are recorded during summer months.

The 2012 measured data at the Lancaster monitoring station shows that the state air quality standard of 1-hour ozone exceeded threshold on 13 days; and the maximum concentration was 0.112. and the 8-hour ozone exceeded state air quality standards on 72 days in that year, and the maximum concentration was 0.096. The federal air quality standard for 8-hour ozone was exceeded on 39 days in that year, and the maximum concentration was 0.095 ppm. Under the state standards, the MDAB is classified as an extreme nonattainment area for ozone.

Nitrogen Dioxide

The monitoring data shows that the annual average NO_2 concentration in the MDAB has been within the federal standards for the last three years. The highest annual average concentration has remained nearly constant at 49 ppb. The 2012 measured data at the Lancaster monitoring stations shows that the state standard for nitrogen dioxide standard was not exceeded in that year. The MDAB is in attainment status under California and federal standards.

Carbon Monoxide

CO is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. In many areas of California, CO emissions from sources such as wood-burning stoves and fireplaces also can be measurable contributors during cold-weather months. Industrial sources of pollution generally contribute less than 10 percent of ambient CO levels. Peak CO levels occur typically during winter months because of a combination of seasonal contributions from home heating devices and stagnant weather conditions. CO reduces the oxygen-carrying capacity of the blood and in high concentrations can cause death. At lower concentrations, people exposed experience dizziness and headaches.

The 2012 measured data at the Lancaster monitoring station show that the federal and state standard for CO was not exceeded in that year; and the maximum concentration was 1.0 ppm. The MDAB is an attainment area for CO for purposes of state and federal air quality planning.

Sulfur Dioxide

SO_2 is produced when any sulfur-containing fuel is burned. Chemical plants that treat or refine sulfur or sulfur-containing chemicals also emit SO_2. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of the state, depending on local fuel characteristics, weather, and topography. SO_2 can cause bronchia constriction and may aggravate respiratory diseases. In moist environments, SO_2 may combine with water to form sulfuric acid, a component of acid deposition. SO_2 data is not available as it is not monitored at the Lancaster location; nevertheless, the MDAB is considered to be an attainment area of the state and federal SO_2 standards.

Fine Particulates (PM_{10}, $PM_{2.5}$)

Particulate matter in the air is composed of windblown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and oxides of nitrogen. In 1984, CARB adopted standards for fine particulate (PM_{10} – particulate matter of less than 10 microns), and phased out the total suspended particulate (TSP) standards used up to that time. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of inhalable particulate related to human health. In 1987, the Environmental Protection Agency (EPA) also replaced national TSP standards with PM_{10} standards. In July 1997, the EPA adopted new standards for $PM_{2.5}$.

Particulates are a public health and welfare concern for several reasons. Particulates may be intrinsically toxic because of their inherent chemical and/or physical characteristics. Particulate matter may interfere with one or more of the mechanisms that normally clear the respiratory tract. Finally, fine particulates, which are easily carried deep into the lungs, may act as carriers of absorbed toxic substances. Thus elevated particulate concentrations may exacerbate pre-existing respiratory diseases such as bronchitis. Particulate matter, especially fine particulate, also interferes with visibility. The MDAB is considered to a nonattainment of the state's PM_{10} standards. The 2012 measured data at the Lancaster monitoring station shows a maximum concentration of 47 micrograms per cubic meter, an annual average of 19.8 micrograms per cubic meter, and shows zero number of days above the 24-hour PM_{10} federal standards. For state air quality standards, the data shows a maximum concentration of 43 micrograms per cubic meter, and an annual average of 18.5 micrograms per cubic meter, and shows zero number of days about the 24-hour standards for that year. For $PM_{2.5,}$ an annual average was not recorded in 2012, but shows a maximum concentration of 14 micrograms per cubic meter, and no exceedances of one day above the 24-hour $PM_{2.5}$ federal standard or standard in that year.

Lead

Lead is found in old paints and coatings, plumbing, and various other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The entire MDAB is an attainment area for the federal and State AAQS for lead.

3.4 Greenhouse Gases

Certain gases in the Earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. A GHG is any gas in the atmosphere that absorbs infrared radiation. As solar radiation enters the earth's atmosphere, a portion of the radiation is absorbed by the earth's surface, and a portion is reflected back through the atmosphere into space. The absorbed radiation is eventually emitted from the earth into the atmosphere, not as solar radiation, but as infrared radiation. Most solar radiation passes through GHGs; infrared radiation is selectively absorbed or "trapped" by GHGs as heat, and then reradiated back toward the earth's surface, resulting in a warming of the lower atmosphere and the earth's surface. This phenomenon, known as the "greenhouse effect," is beneficial for maintaining a habitable climate on the earth. As the atmospheric concentrations of GHGs rise, however, the average temperature of the lower atmosphere gradually increases, thereby increasing the potential for

indirect effects such as a decrease in precipitation as snow, a rise in sea level, and changes to plant and animal species and habitat.

GHGs also are emitted by natural processes and human activities. Water vapor is the most abundant and variable GHG in the atmosphere and is not considered a pollutant. The main source of water vapor is evaporation from the oceans (approximately 85 percent); other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves. Carbon dioxide (CO_2) also is a naturally emitted GHG.

Natural GHG sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing.

GHGs also are emitted from human activities including industrial/manufacturing, utilities, transportation, residential, and agricultural activities. Prominent GHGs contributing to the greenhouse effect are CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds. O_3 is a GHG; O_3 in the lower atmosphere, however, is relatively short-lived and therefore is not global in nature. Emissions of CO_2 are by-products of fossil fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) largely associated with agricultural practices and landfills. CO_2 is sequestered through photosynthesis and absorption from ocean uptake and vegetation. More CO_2 is currently emitted into the atmosphere than is sequestered by ocean uptake and vegetation.

Human-caused emissions of these GHGs, which exceed natural ambient concentrations, intensify the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. Explaining global climate during the past 50 years cogently is extremely unlikely without the contribution from human activities [Ref. 4]. Therefore, GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants (TACs), which are pollutants of regional and local concern.

Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed globally. Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, scientific evidence reveals that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54 percent is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46 percent of human-caused CO_2 emissions remains stored in the atmosphere [Ref. 5]. The quantity of GHGs that it takes to ultimately result in climate change is not known precisely; suffice to say that the quantity is enormous, and no single project would be expected to contribute measurably to a noticeable incremental change in the global average temperature, or to global, local, or microclimate.

While climate change has been a concern since at least 1988, the efforts devoted to GHG emissions reduction and climate change policy have increased dramatically in recent years. In 2002, California passed Assembly Bill (AB) 1493, which requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions beginning with the

2009 model year. In June 2005, Executive Order S-3-05 was signed to reduce California's GHG emissions to: (1) 2000 levels by 2010; (2) 1990 levels by the 2020; and (3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of AB 32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including recommendations of the state's Climate Action Team. Senate Bill 97 acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA.

CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions can adversely affect the environment because they contribute, cumulatively, to global climate change. In turn, global climate change could raise sea levels, potentially inundating low-lying areas; affect rain and snow fall, leading to changes in water supply; and affect habitats, leading to adverse effects on biological and other resources. Thus, GHG emissions require consideration in CEQA documents.

Federal Legislation

The U.S. Supreme Court ruled on April 2, 2007, that CO_2 is an air pollutant as defined under the CAA, and that the EPA has the authority to regulate emissions of GHGs. Nevertheless, there are no federal regulations or policies regarding GHG emissions applicable to the Project at the time of this writing. Responding to the mounting issue of climate change, the EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, the EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement will provide the EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year. This publically available data will allow the reporters to track their own emissions, compare them to similar facilities, and help identify cost effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial GHGs along with vehicle and engine manufacturers will report at the corporate level. An estimated 85 percent of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act

On December 7, 2009, the EPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). The Endangerment Finding is based on Section 202(a) of the CAA, which states that the Administrator (of EPA) should regulate and develop standards for "emission[s] of air pollution from any class of classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The rule addresses Section 202(a) in two distinct findings. The first addresses whether the

concentrations of the six key GHGs (CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) in the atmosphere threaten the health and welfare of current and future generations. The second addresses whether the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and therefore the threat of climate change.

The Administrator found that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are very likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, and higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The Administrator also found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHGs fit within the CAA definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but rather allow EPA to define the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.

CARB is the agency responsible for coordinating and overseeing state and local air pollution control programs in California and for implementing the California Clean Air Act, which was adopted in 1988. Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is underway, and there is a real potential for severe adverse environmental, social, and economic effects in the long term.

4.0 METHODOLOGY AND THRESHOLDS

This section describes the methodologies used to determine the air quality impacts associated with the proposed project.

AVAQMD recommends that air quality analysis for a proposed project shall include: direct impacts, indirect impacts, cumulative impacts, and conformity impacts.

Direct impacts result from SGF construction and operation activities on air quality. Indirect impacts result from air quality changes that would not occur without the SGF project, e.g. building and operating a retail establishment nearby to support the SGF. Cumulative impacts are the combined effect on air quality from the SGF's operation and other emissions sources in the MDAB. Conformity impacts determine whether the SGF operation complies with all applicable AVAQMD's rules and regulations.

4.1 Threshold of Significance

To meet federal requirements, impact significance is related to conformance with the EPA-approved State Implementation Plan and with NAAQS. Air quality impacts would be significant if they exceed these standards or contribute to non-conformance. AVAQMD has published thresholds of significance for air quality and global climate change.

A project has significant air quality impact, if the following occurs:

1. Generates total emissions exceeding the AVAQMD significant thresholds shown in Table 3; and/or
2. Generates a violation of any ambient air quality standard when added to the local air quality background; and/or
3. Does not conform with the applicable attainment or maintenance plan(s); and/or
4. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (non-cancerous) greater than or equal to 1.

A significant project must incorporate mitigation sufficient to reduce its impact to a level that is not significant. A project that cannot be mitigated to a level that is not significant must incorporate all feasible mitigation.

Table 3. Significant Emission Thresholds

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NOx)	25	137
Reactive Organic Gases (ROG)	25	137
Oxides of Sulfur (SOx)	25	137
Particulate Matter (PM_{10})	15	82
Particulate Matter ($PM_{2.5}$)	15	82
Hydrogen Sulfide (H_2S)	10	54
Lead	0.6	3
Greenhouse Gases (CO_2e)	100,000	548,000

Source: AVAQMD 2013 [Ref. 1]

4.2 Direct Impacts

4.2.1 Criteria Air Emissions

Air quality and global climate change impacts associated with the proposed project are related to emissions that would occur during construction and subsequent operation of the proposed project. Principal sources of pollutants during construction would be earth-moving activities, construction equipment, trucks bringing materials to the site, and construction crew commuting vehicles. The sources of pollutants during project operations would be limited to the vehicles and equipment used by the operations and maintenance staff. There are numerous air quality modeling tools available to assess air quality impacts of the project. Emissions during construction and operation were estimated based on the air emission modeling software

package, CARB's URBEMIS 2007 [Ref. 6]. The model contains data specific for each California air basin.

Construction

Construction process will be conducted in phases. As a conservative analysis, construction of the Project would occur over the course of five months, starting in the third quarter of 2014 and finished in the fourth quarter of 2014. This timeframe is important since construction emissions are directly related to the intensity of construction activities (emissions increase as the overall amount of construction activity increases). Actual construction may proceed at a less intensive pace, which would result in lower daily emissions. For this project, the following construction phases are assumed:

Phase 1: Mow and Roll;
Phase 2: Fencing/Trenching/Infrastructure Construction; and
Phase 3: PV Installation.

The URBEMIS model divides the construction processes into phases, including demolition, mass site grading , fine site grading, fencing/infrastructure construction (trenching, transmission line construction, paving), and PV installation. These model settings can be modified to fit applicable features of a specific project. The applicant has committed to using the mow and roll method to prepare the site for construction. The mow and roll method will utilize mowers and rollers, which is a less intensive soil disturbance method than grading and excavating the site. As the URBEMIS model only allows for mass site and fine site grading, the fine site grading phase was used to model mow and roll activities (using a half emission factor for grading equipment; approved by the AVAQMD). Since mowing and rolling of the site will clear vegetation and roll the surface of the site, emission estimates from the model are higher than emissions from actual activity during the mow and roll phase. Activities during the trenching phase were modeled to include trenching and infrastructure construction (road construction, transmission line and generation-tie line); and activities during the construction phase were modeled to include construction and installation of the PV panels.

Each construction phase has the potential to generate the following: (1) fugitive dust emissions resulting from soil disturbance activity; (2) emissions of air pollutants from fuel combustion in construction equipment; and (3) emissions of air pollutants from fuel combustion in vehicles used for worker commute and material hauling and construction debris disposal. Silverado Power is committed to implementing "Best Practices" during all construction phases of the Project to further reduce emissions. Figure 2 shows the construction schedules and Figure 3 shows the construction equipment.

Figure 2. Site 5 – Silver Sun Greenworks – Construction Schedule

Construction Schedule

Year	2014											
Month*	1	2	3	4	5	6	7	8	9	10	11	12
Overall Duration												
Mow and Roll												
Trenching/Infrastructure												
PV Installation												

*22 days per month (URBEMIS Default)

Mow and Roll	
Start Date	7/1/2014
End Date	10/31/2014
Duration (months)	4.0
Duration (days)	88.00
Total Acreage To Be Disturbed	160.00
Max Daily Acreage Disturbed	3.00
Trenching/Infrastructure	
Start Date	11/1/2014
End Date	11/30/2014
Duration (months)	1.0
Duration (days)	21.27
Amount (CY)	1,500
Truck Capacity (CY)	20
Total Truck Trips	75
Round Trips per Day (hauling)	5
PV Installation	
Start Date	12/1/2014
End Date	12/31/2014
Duration (months)	1
Duration (days)	22

Figure 3. Construction Equipment

Phase: Mow and Roll
2 Mowers (Grader @ 87 hp) operating at a 0.31 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.60 load factor for 8 hours per day
1 Rubber Tired Dozer (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Trenching - Infrastructure Construction
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Trencher (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction - PV Installation
1 Bore/Drill Rig (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Crane (399 hp) operating at a 0.43 load factor for 7 hours per day
1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day

During construction, the proposed Project would be subject to AVAQMD Rules 403 (Fugitive Dust). The purpose of Rule 403 is to reduce man-made fugitive dust. Rule 403 requires implementing control measures to prevent, reduce, or mitigate fugitive dust emissions and includes a performance standard that prohibits visible emissions from crossing any property line [Ref. 7]. Dust control measures, such as water application or chemical stabilizers on dry soil and reducing vehicle travel on unpaved roads, are standard mitigation techniques. The project construction will be required to comply with Rule 403. Implementing the dust suppression techniques specified in Rule 403 can reduce the fugitive dust generation (and thus the PM_{10} component) by 50 percent or more. Therefore, the estimation of fugitive dust emissions during project construction is based on compliance with AVAQMD Rule 403 requirements for fugitive dust suppression. In addition, to further reduce dust emissions during construction, site preparation shall be limited to no more than 3 acres per day.

Operations

During operation, the project does not require the types of equipment that emit a large amount of air pollutants. The sources of pollutants would be limited to the vehicles used by the operations and maintenance staff.

The URBEMIS 2007 software was used to compile the vehicle emissions during long-term project operations. In calculating mobile source emissions, the URBEMIS 2007 assumptions were applied to arrive at the annual vehicle miles traveled.

The proposed Project will be subject to AVAQMD's Regulation II (Permits) and Regulation XIII (New Source Review). These regulations ensure that all equipment with the potential to emit air pollutants (including air toxins and hazardous air pollutants) at the Project site would be subject to the AVAQMD's review and approval before installation [Ref. 8].

4.2.2 Greenhouse Gas Emissions

For this project, the major source of GHG is the combustion of fuel in construction equipment, in vehicles used to haul materials, and in vehicles used by worker commuting to/from the site.

There are three types of GHG from fuel combustion, including CO_2, CH_4 and N_2O. GHG emissions are presented as carbon dioxide equivalents (CO_2e). CO_2e is computed based on global warming equivalence. The CH_4 global warming equivalence is 21 times that of CO_2, and the N_2O global warming equivalence is 310 times that of CO_2.

Mathematically, the CO_{2e} can be represented by the following equation:

$$CO_2e \text{ Emissions} = CO_2 \text{ Emissions} + 21 \times CH_4 \text{ Emissions} + 310 \times N_2O \text{ Emissions}$$

The URBEMIS model was used to estimate the GHG emissions during the construction phase of the proposed project. Based on the construction schedule, types and quantities of construction equipment, and haul trucks, etc., the maximum CO_2 emissions were estimated.

The URBEMIS model provides a CO_2 profile only and does not quantify CO_2e, CH_4 and N_2O emissions. The analysis assumed that the CO_2 emissions are CO_2e. For typical diesel-fueled combustion equipment used in construction activities, the emissions factors adjusted with global warming equivalence are:

(1) CO_2 emission factors are 22.4 pounds of CO_2e per gallon consumed;
(2) CH_4 emission factors are 0.065 pounds of CO_2e per gallon consumed; and
(3) N_2O emission factors are 0.068 pounds of CO_2e per gallon consumed.

As shown in these emission factors, the CO_2 profile is 99 percent of the total GHG emissions generated in combustion equipment. Therefore, the CO_2 emissions were assumed to be equivalent to the CO_2e emissions levels.

4.2.3 Health Risk

During construction, toxic emissions are generated mainly from fuel combustion in the construction equipment. To determine the health impacts of these toxic emissions, a HRA was performed.

A HRA is an estimate of the probability that adverse health effects could occur due to exposure to toxic pollutants. A facility's air emissions, stack information, operation schedule, local weather conditions, chemical dose-response data, etc. are entered into a computer model to produce an estimate of the health risks to nearby sensitive receptors. Sensitive receptors are populations that are more susceptible to the effects of air pollution than are the population at large. While the ambient air quality standards are designed to protect public health and are generally regarded as conservative for healthy adults, there is greater concern to protect adults who are ill or have long-term respiratory problems, and young children whose lungs are not fully developed. According to CARB, sensitive receptors include children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. The SCAQMD identify the following as locations that may contain a high concentration of sensitive receptors: long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, childcare centers,

and athletic facilities. The closest sensitive receptor to the project is located adjacent to the east and west of the project site. HRA is performed in 3 steps: hazard identification, exposure assessment, and risk characterization.

Hazard Identification

Hazard identification refers to identifying substances as carcinogens, reproductive toxins, chronic toxins, or acute toxins, or to identifying a type of exposure as hazardous. The TACs used in the HRA includes diesel particulate matter (DPM) and acrolein. DPM and acrolein are byproducts of diesel fuel combustion. Studies have shown that diesel combustion produces acrolein in the amount equal to 0.013 times that of DPM [Ref. 9]. There are other TACs from diesel combustion besides DPM and acrolein. They are less potent and thus are not included in the HRA.

Exposure Assessment

Exposure assessment identifies and quantifies all routes of human exposure to substances of concern. The SCREEN3 model issued by EPA was used for estimating offsite concentrations of TACs. Based on land use surrounding the proposed project and EPA guidelines, a rural profile was assumed. Construction activities were modeled as area sources placed over the area of project site. Appendix B provides the SCREEN3 model run.

Risk Characterization

Risk characterization is the final step of the HRA. It quantifies the human health risk based on the exposure assessment and dose-response relationships (cancer potency factors and reference exposure levels). In this assessment, three types of human health effects were considered: (1) cancer; (2) chronic effects; and (3) acute effects. Health risks including cancer, chronic, and acute risks are calculated based on the Office of Environmental Health and Hazard Assessment (OEHHA) guidelines.

Following is a summary of the OEHHA method to determine the cancer, chronic and acute health risk:

Cancer Risk

The cancer risks were calculated as the individual excess lifetime cancer risk (i.e., the probability that an individual may develop cancer from a lifetime exposure to the chemicals of concern). There are different pathways that a toxicant can enter a human body. Gaseous toxicants can enter a human body through the inhalation pathway. Gaseous toxicants also can be deposited on soil, surface water, or plants, which then enter a human body through ingestion and dermal pathways. Semi-volatile and metal toxicants can enter the body through inhalation, ingestion and dermal pathways.

For inhalation pathway, the cancer risk is computed using the following equation:

$$CRinh = (GLC \times CP \times BR \times EF \times ED \times 10^{-6}) / AT \quad \text{Eq. 1}$$

Where:

CRinh = Cancer Risk through inhalation
GLC = Annual Average Ground-level concentration (from air dispersion model)
CP = Cancer Potency factor
BR = Daily Breathing Rate
EF = Exposure frequency
ED = Exposure Duration
AT = Average Time Period

For the proposed project, contribution from non-inhalation pathways would not contribute to the overall risk such that the total risk would be above 10 in one million once the multi-pathway risks are added, thus non-inhalation pathway risk estimates are negligible.

Chronic Risk

The potential for long-term chronic health effects is quantified by comparing the predicted level of exposure to a reference exposure level (REL). This ratio of predicted exposure to reference exposure is referred to as a chronic hazard index (HIc). HIc is calculated by summing the ratios of each toxic substance over its REL. The equation for estimating HIc is as follows:

$$HIc = \sum Ci / \text{chronic RELi}$$

Where:

Ci = Ground-level concentration of substance i (annual average concentration)
RELi = Chronic Reference Exposure Level for substance i.

Acute Risk

In the same manner as the quantification of chronic health effects, the potential for short-term acute health effects was quantified using a hazard index. The acute hazard index (HIa) is calculated by dividing the maximum estimated hourly concentration of each toxic air pollutant by its reference short-term exposure levels. The equation for estimating HIa is as follows:

$$HIa = \sum Ci / \text{Acute RELi}$$

Where:

Ci = Maximum hourly ground-level concentration of substance i
RELi = Acute Reference Exposure Level for substance i.

4.3 Indirect Impacts on Air Quality

Indirect impacts are the result of air quality changes that would not occur without the SGF project. The SGF does not have permanent on-site staff. There will not be construction or operation of a retail establishment to support the SGF. Therefore, indirect impact on air quality is expected to be minimal.

4.4 Cumulative Impacts

Cumulative impacts are the combined effect on air quality from the SGF's operation and other emissions sources in the MDAB. In the operation phase, the SGF operation has no major emissions sources. Operation of equipment that emits regulated air pollutants or require AVAQMD permits, is not planned at the SGF. The SGF project will not conflict with or obstruct implementation of the applicable air quality plan, which in this case is the Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area). [Ref. 10] A project is deemed inconsistent with air quality plans if it results in population and/or employment growth that exceeds growth estimates in the applicable air quality plan. The ozone attainment plan relies upon future year emission inventories consistent with CARB, which in turn relies upon adopted General Plan growth projections. As the proposed project is not part of an ongoing regulatory program, the AVAQMD recommends that project-specific air quality impacts be used to determine the potential cumulative impacts to regional air quality. As discussed above, peak daily emissions of operation-related pollutants will not exceed AVAQMD significance thresholds.

In addition, estimates state that while the project would generate air and greenhouse gas emissions during construction and a very minimal amount of GHG emissions during operations, the solar energy provided by the project is a much cleaner source of energy than traditional sources used for the generation of electricity, such as the burning of coal, fuel oil, or natural gas. The amount of CO_2 reductions from proposed solar energy generation depends on the type of electric generation to be displaced by the addition of the solar energy. The energy produced by the proposed 20 MW project is estimated, to displace more than 34,050 tons of CO_2e that would otherwise be emitted by fossil fuel fired power plants. This is more than enough to offset the project's air and GHG emissions.

As a result, the emissions of non-attainment pollutants and precursors generated by project operation exceeding the AVAQMD project-level thresholds will be less than significant. Cumulative impact on air quality is expected to be minimal.

4.5 Conformity Impacts

The SGF is required to comply with all applicable rules and regulations of the AVAQMD. The project does not conflict with or delay implementation of any applicable attainment or maintenance plan; therefore, non-conformity is not expected.

5.0 DIRECT IMPACTS ON AIR QUALITY

This section presents the direct impacts on air quality associated with the proposed project. The following sections present information on potentially significant impacts on air quality environment resulting from the project's implementation. Mitigation measures are proposed that can reduce or eliminate any such impacts.

5.1 Direct Impacts from Project Construction

Short-term air quality impacts would occur during the construction of the project site. Three major sources of emissions during constructions include:

- Fugitive dust emissions – Dust is generally associated with excavation, windblown unpaved areas, vehicle and equipment travel on unpaved roads, and dirt/debris

pushing. Dust generated during construction activities would vary substantially depending on the level of activity, the specific operations, and weather conditions;

- Construction Equipment – Construction requires usage of heavy-duty equipment, such as bulldozers, excavators, loaders, etc. Exhaust emissions from this equipment during construction activities would vary daily as activity levels change; and
- Vehicles – Transport vehicles travelling to and from the site, including delivery trucks hauling materials and automobiles carrying workers, generate exhaust emission.

The URBEMIS model runs, which estimate the construction emissions, are presented in Appendix A. Table 4 summarizes emissions during construction. As shown, the short-term emissions during the construction phase will not exceed AVAQMD significant thresholds. As such, the project will not exceed thresholds or result in violating air quality standards or contribute substantially to an existing or projected air quality violation.

Table 4. Construction Emissions

Silver Sun Solar Greenworks SGF	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2e
	lbs/day						
Mow and Roll	4.03	30.03	19.10	0.01	15.31	3.97	3,976
Trenching/Infrastructure Construction	1.47	10.06	6.31	0.00	0.36	0.33	1,282
PV Installation	2.48	20.26	17.18	0.02	0.70	0.59	5,450
Maximum Regional Emissions	**4**	**30**	**19**	**0**	**15**	**4**	**5,450**
Regional Significance Threshold	137	137	548	137	82	82	548,000
Over (Under)	(133)	(107)	(529)	(137)	(67)	(78)	(542,550)
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: Tetra Tech, 2013

*Values may not exactly add up due to rounding.

[a] Compiled using the URBEMIS emissions inventory model. The equipment mix and use assumption for each phase is provided in Figure 2.

[b] PM_{10} emissions estimates are based on compliance with AVAQMD Rule 403 requirements for fugitive dust suppression, and mitigation measures listed in Section 6.

Table 5 summarizes the health risk assessment for construction activities. Note that the EPA SCREEN3 model uses conservative assumptions for screening purposes; therefore, actual concentration levels are expected to be less than what was analyzed in this report. As shown in Table 5, short-term concentration levels during the construction phase do not expose sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (non-cancerous) greater than or equal to 1.

Table 5. Health Risk Assessment

	Construction Activities
Diesel Particulate Matter Run (Cancer Risk)	
DPM Emission Sources Modeled as Area Source, m^2	320,000
Emission Rate, g/s	0.0147
Emission Rate, g/s-m^2	4.58E-8
Maximum One-Hour Ground-Level Concentration, µg/m^3	1.72
Annual Average Ground-Level Concentration, µg/m^3	0.172
DPM Cancer Potency Factor (mg/kg-day)$^{-1}$	1.1
Breathing Rate, (L/kg-day)	302
Exposure Frequency (days/year)	365
Exposure Duration (years)	1
Average Time Period (days)	25,550
Acrolein (Acute and Chronic Risk)	
Emission Rate, g/s-m^2	5.96E-10
Maximum One-Hour Ground-Level Concentration, µg/m^3	0.0224
Acrolein Acute Inhalation REL (Eyes; Respiratory System), µg/m^3	2.5
Acrolein Chronic Inhalation REL (Respiratory System), µg/m^3	0.35
Cancer Risk from Exposure to DPM (Chance in a million)	**0.82**
Cancer risk greater than or equal to 10 in a million?	No
Acute Risk from Exposure to Acrolein	**0.01**
Hazard Index (non-cancerous) greater than or equal to 1?	No
Chronic Risk from Exposure to Acrolein	**0.01**
Hazard Index (non-cancerous) greater than or equal to 1?	No

Source: Tetra Tech, 2013

5.2 Direct Impacts from Project Operation

The URBEMIS model runs, which estimate the operation emissions, are presented in Appendix A. Table 6 summarizes the operation emission calculation compared with the annual threshold, since operation is long-term. The primary sources of emissions during operation are mainly vehicles used by facility maintenance staff to and from the site. For worst-case analysis, maintenance activities would consist of one water truck for the bi-annual panel washing, and one light duty truck as needed for maintenance. As shown in Table 6, emissions during the long-term operation do not exceed AVAQMD significant thresholds.

Table 6. Operation Emissions

Silver Sun Solar Greenworks SGF	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
	(tons/year)						
Area[a]	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Energy[b]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile[c]	0.08	0.00	0.01	0.00	0.00	0.00	1.56
Water[d]	0.00	0.00	0.00	0.00	0.00	0.00	1.36
Waste[e]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Operation Phase	0.10	0.01	0.29	0.00	0.01	0.00	3.43
Solar Energy Reduction	0.00	0.00	0.00	0.00	0.00	0.00	-34,050
Annual Net Emissions	0.10	0.01	0.29	0.00	0.01	0.00	(34,047)
AVAQMD Significance Threshold	**25**	**25**	**100**	**25**	**15**	**15**	**100,000**
Over / (Under)	(25)	(25)	(100)	(25)	(15)	(15)	(134,047)

Silver Sun Solar Greenworks SGF	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
	(tons/year)						
Exceed Threshold?	No	No	No	No	No	No	No

Source: Tetra Tech, 2013

*All values were calculated using URBEMIS, unless otherwise stated. Values may not exactly add up due to rounding.

[a] Area sources related to the project include minimal consumer products.

[b] Project will generate solar energy only; and will not use electricity or natural gas. Emissions were calculated outside of the model.

[c] Mobile emissions are based on project's trip generation. Client indicated two trips per year to the site for maintenance and security. A maximum of 10 trips per year was assumed. The Project Trip Rate is 0.01.

[d] Panel washing is estimated to use one acre foot of water per year.

[e] No waste will be generated.

5.3 Greenhouse Gas Emission Impacts

Construction of the Project would increase GHG generation, which can contribute to global climate change. This analysis is provided in response to recent heightened interest in the subject of global climate change, and specifically, the California legislature's passage and the Governor's signing of AB 32, which is intended to control and reduce the emission of global warming gases in California; and SB 97, which directs the Office of Planning and Research and the California Resources Agency to develop CEQA Guidelines on how local agencies should analyze and, if necessary, mitigate for GHG emissions.

Short-term construction and long-term operation of the Project will generate emissions of GHGs. Construction emissions would be associated with vehicle engine exhaust from construction equipment and vehicles, vendor trips, and construction worker commuting trips. Construction-related GHG emissions are considered temporary and short term. As shown in Table 4, short-term construction emissions will not exceed the daily GHG threshold.

As mentioned above, the Project's facility operation will be limited to general maintenance, panel washing, and security. It is anticipated that operation and maintenance will use one water truck for bi-annual panel washing and one light duty truck as needed, which results in 3.43 tons of CO_2e annually. According to EPA 2007 GHG Inventory guidance, a 20 MW facility is calculated to reduce 34,050 tons of CO_2e per year. Taking into account the solar generation offsets, facility operation will reduce approximately 34,047 tons of CO_2e annually, as shown in Table 6.

Because construction-related emissions will be temporary and finite in nature, below those levels being considered and/or discussed by other government agencies and associations, and consistent with the AB 32 Scoping Plan, the Project's construction-related GHG emissions are a cumulatively considerable contribution to climate change and, therefore, are less than significant. The Project's operation-related GHG emissions will be negligible and are not cumulatively considerable contribution to climate change and, therefore, are less than significant.

When considering net GHG emissions from converting the Project site from operating as an agricultural farm to operating a 20-MW solar PV power-generating facility, there will be a positive impact of a substantial net reduction in GHG emissions at the Project site. In addition, the generation of power from solar energy is a substantial reduction in GHG emissions over

conventional power generation from the combustion of fossil fuels. The energy produced by the proposed project is estimated at 20 MW, and would reduce more than 34,047 tons of CO_2e per year during operation, that would otherwise be emitted by fossil fuel fired power plants. This is more than enough to offset the project GHG emissions, and the proposed project would have negative cumulative net emissions.

The Project, therefore, will be in accordance with the state's need for the construction of renewable energy power plants to meet the state's GHG reduction objectives including:

- California's Renewable Portfolio Standard (RPS) that requires California's investor-owned electric utilities to obtain, from renewable sources, 20 percent of the electricity that they supply;
- Executive Order S-14-08 that established RPS targets for California that "all retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020."
- Executive Order S-03-05 on climate change to advance renewable energy and other solutions to reduce California's GHG emissions.
- The California Global Warming Solutions Act of 2006 (AB 32) that established a comprehensive program of regulatory and market mechanisms to reduce GHG emissions to 1990 levels by the year 2020.

6.0 MITIGATION MEASURES

The project will be required to comply with regional rules that assist in reducing air pollutant emissions. AVAQMD Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, AVAQMD Rule 402 requires implementing dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Implementing these dust suppression techniques will reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules would reduce impacts on nearby sensitive receptors. Applicable dust suppression techniques include the following:

AQ-1 During construction, apply nontoxic chemical soil stabilizers according to manufacturers' specifications or water active sites at least twice daily (locations where site preparation is to occur will be thoroughly watered before earthmoving);

AQ-2 All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard in accordance with the requirements of California Vehicle Code section 23114 (freeboard means vertical space between the top of the load and top of the trailer);

AQ-3 All off-road diesel-powered construction equipment less than 175 horsepower shall meet or exceed Tier 2 off-road emission standards. Off-road diesel-powered construction equipment greater than 175 horsepower shall meet or exceed Tier 3 off-road emissions standards;

AQ-4 During construction, the off-road equipment, vehicles, and trucks shall not idle more than five minutes in any one hour;

AQ-5 The off-road construction equipment drivers shall have proper training in operating the equipment efficiently, taking into account ways to reduce the hours of operation of the equipment and/or operate the equipment at a lower load factor;

AQ-6 Traffic speeds on all unpaved roads shall be reduced to 15 miles per hour or less; and

AQ-7 During construction, there shall be carpools, vanpools, and/or shuttles provided for construction employees.

Implementing these mitigation measures would reduce emissions as required by AVAQMD.

7.0 REFERENCES

1. Antelope Valley Air Quality Management District, "California Environmental Quality Act and Federal Conformity Guidelines", AVAQMD Stationary Sources Section, AVAQMD Surveillance Section, August 2011.

2. California Air Resources Board iADAM: Air Quality Data Statistics Select 8 Summary. Accessed online at: http://www.arb.ca.gov/ada/select8/sc8start.php August 2012

3. California Air Resources Board Area Designations. Available at www.arb.ca.gov/desig/desig.htm

4. Intergovernmental Panel on Climate Change (IPCC). Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Geneva, Switzerland. February.

5. Seinfeld and Pandis. Atmospheric Chemistry and Physics from Air Pollution to Climate Change, 1998.

6. CARB's Urban Emission Model 2007, Version 9.2.4, http://www.urbemis.com/

7. Antelope Valley Air Quality Management District Rule 403, http://www.avaqmd.ca.gov/index.aspx?page=102

8. Antelope Valley Air Quality Management District Regulation II and XIII, http://www.avaqmd.ca.gov/index.aspx?page=102

9. Southwest Research Institute Study, "Diesel Exhaust Standard Phase I, CRC Project No. AVFL-10A", August 2003

APPENDIX A

URBEMIS MODEL RUNS

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

Project Name: Site 5- Silver Sun Greenworks

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (tons/year unmitigated)	0.22	1.67	1.11	0.00	1.34	0.09	1.43	0.28	0.09	0.37	250.92
2014 TOTALS (tons/year mitigated)	0.22	1.67	1.11	0.00	0.63	0.06	0.69	0.13	0.05	0.19	250.92
Percent Reduction	0.00	0.00	0.00	0.00	52.58	37.57	51.60	52.51	37.59	49.00	0.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51
TOTALS (tons/year, mitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Percent Reduction	0.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.15	0.00	0.02	0.00	0.01	0.00	3.12

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2

TOTALS (tons/year, unmitigated)	0.17	0.00	0.30	0.00	0.01	0.00	3.63

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014	0.22	1.67	1.11	0.00	1.34	0.09	1.43	0.28	0.09	0.37	250.92
Fine Grading 07/01/2014-10/31/2014	0.18	1.34	0.85	0.00	1.34	0.08	1.42	0.28	0.07	0.35	175.87
Fine Grading Dust	0.00	0.00	0.00	0.00	1.34	0.00	1.34	0.28	0.00	0.28	0.00
Fine Grading Off Road Diesel	0.16	1.17	0.71	0.00	0.00	0.07	0.07	0.00	0.07	0.07	130.86
Fine Grading On Road Diesel	0.01	0.16	0.06	0.00	0.00	0.01	0.01	0.00	0.01	0.01	33.95
Fine Grading Worker Trips	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.06
Trenching 11/01/2014-11/30/2014	0.01	0.10	0.06	0.00	0.00	0.01	0.01	0.00	0.01	0.01	12.75
Trenching Off Road Diesel	0.01	0.10	0.06	0.00	0.00	0.01	0.01	0.00	0.01	0.01	11.82
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93
Building 12/01/2014-12/31/2014	0.03	0.23	0.20	0.00	0.00	0.01	0.01	0.00	0.01	0.01	62.30
Building Off Road Diesel	0.02	0.16	0.08	0.00	0.00	0.01	0.01	0.00	0.01	0.01	34.02
Building Vendor Trips	0.01	0.07	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.32
Building Worker Trips	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.96

Phase Assumptions

Phase: Fine Grading 7/1/2014 - 10/31/2014 - Mow and Roll

Total Acres Disturbed: 160

Maximum Daily Acreage Disturbed: 3

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 180

Off-Road Equipment:

2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 11/1/2014 - 11/30/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 12/1/2014 - 12/31/2014 - PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014	0.22	1.67	1.11	0.00	0.63	0.06	0.69	0.13	0.05	0.19	250.92

Fine Grading 07/01/2014-10/31/2014	0.18	1.34	0.85	0.00	0.63	0.05	0.68	0.13	0.04	0.18	175.87
Fine Grading Dust	0.00	0.00	0.00	0.00	0.63	0.00	0.63	0.13	0.00	0.13	0.00
Fine Grading Off Road Diesel	0.16	1.17	0.71	0.00	0.00	0.04	0.04	0.00	0.04	0.04	130.86
Fine Grading On Road Diesel	0.01	0.16	0.06	0.00	0.00	0.01	0.01	0.00	0.01	0.01	33.95
Fine Grading Worker Trips	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.06
Trenching 11/01/2014-11/30/2014	0.01	0.10	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.75
Trenching Off Road Diesel	0.01	0.10	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.82
Trenching Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93
Building 12/01/2014-12/31/2014	0.03	0.23	0.20	0.00	0.00	0.01	0.01	0.00	0.01	0.01	62.30
Building Off Road Diesel	0.02	0.16	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.02
Building Vendor Trips	0.01	0.07	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.32
Building Worker Trips	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.96

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 7/1/2014 - 10/31/2014 - Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 11/1/2014 - 11/30/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Building Construction 12/1/2014 - 12/31/2014 - PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas Hearth							
Landscape	0.02	0.00	0.28	0.00	0.00	0.00	0.51

Consumer Products	0.00						
Architectural Coatings							
TOTALS (tons/year, unmitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Consumer Products	0.00						
Architectural Coatings							
TOTALS (tons/year, mitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.15	0.00	0.02	0.00	0.01	0.00	3.12
TOTALS (tons/year, unmitigated)	0.15	0.00	0.02	0.00	0.01	0.00	3.12

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.01	acres	160.00	1.60	17.16
					1.60	17.16

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0

School Bus	0.1	0.0	0.0	100.0	
Motor Home	0.8	0.0	87.5	12.5	

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

Project Name: Site 5- Silver Sun Greenworks

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	4.03	30.03	19.10	0.02	30.04	1.77	31.81	6.28	1.63	7.91	5,417.32
2014 TOTALS (lbs/day mitigated)	4.03	30.03	19.10	0.02	14.23	1.08	15.31	2.98	0.99	3.97	5,417.32

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81
TOTALS (lbs/day, mitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Percent Reduction	0.00	0.00	0.00	#NUM!	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.02	0.01	0.13	0.00	0.03	0.01	17.67

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1.14	0.03	1.68	0.00	0.04	0.02	20.48

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 7/1/2014-10/31/2014 Active Days: 89	**4.03**	**30.03**	**19.10**	0.01	**30.04**	**1.77**	**31.81**	**6.28**	**1.63**	**7.91**	3,952.18
Fine Grading 07/01/2014-10/31/2014	4.03	30.03	19.10	0.01	30.04	1.77	31.81	6.28	1.63	7.91	3,952.18
Fine Grading Dust	0.00	0.00	0.00	0.00	30.00	0.00	30.00	6.27	0.00	6.27	0.00
Fine Grading Off Road Diesel	3.66	26.35	16.00	0.00	0.00	1.62	1.62	0.00	1.49	1.49	2,940.74
Fine Grading On Road Diesel	0.32	3.59	1.46	0.01	0.03	0.14	0.17	0.01	0.13	0.14	762.91
Fine Grading Worker Trips	0.05	0.09	1.64	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.53
Time Slice 11/3/2014-11/28/2014 Active Days: 20	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching 11/01/2014-11/30/2014	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.64	0.64	0.00	0.59	0.59	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 12/1/2014-12/31/2014 Active Days: 23	2.48	20.26	17.18	**0.02**	0.10	0.74	0.83	0.03	0.68	0.71	**5,417.32**
Building 12/01/2014-12/31/2014	2.48	20.26	17.18	0.02	0.10	0.74	0.83	0.03	0.68	0.71	5,417.32
Building Off Road Diesel	1.74	14.13	6.68	0.00	0.00	0.48	0.48	0.00	0.44	0.44	2,958.38
Building Vendor Trips	0.57	5.80	4.77	0.02	0.06	0.24	0.29	0.02	0.22	0.24	1,592.86
Building Worker Trips	0.17	0.32	5.73	0.01	0.04	0.02	0.07	0.01	0.02	0.04	866.08

Phase Assumptions

Phase: Fine Grading 7/1/2014 - 10/31/2014 - Mow and Roll

Total Acres Disturbed: 160

Maximum Daily Acreage Disturbed: 3

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 180

Off-Road Equipment:

2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 11/1/2014 - 11/30/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 12/1/2014 - 12/31/2014 - PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 7/1/2014-10/31/2014 Active Days: 89	**4.03**	**30.03**	**19.10**	0.01	14.23	1.08	15.31	2.98	0.99	3.97	3,952.18
Fine Grading 07/01/2014-10/31/2014	4.03	30.03	19.10	0.01	14.23	1.08	15.31	2.98	0.99	3.97	3,952.18

Fine Grading Dust	0.00	0.00	0.00	0.00	14.19	0.00	14.19	2.96	0.00	2.96	0.00
Fine Grading Off Road Diesel	3.66	26.35	16.00	0.00	0.00	0.93	0.93	0.00	0.86	0.86	2,940.74
Fine Grading On Road Diesel	0.32	3.59	1.46	0.01	0.03	0.14	0.17	0.01	0.13	0.14	762.91
Fine Grading Worker Trips	0.05	0.09	1.64	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.53
Time Slice 11/3/2014-11/28/2014 Active Days: 20	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching 11/01/2014-11/30/2014	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.35	0.35	0.00	0.32	0.32	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 12/1/2014-12/31/2014 Active Days: 23	2.48	20.26	17.18	**0.02**	0.10	0.61	0.70	0.03	0.56	0.59	**5,417.32**
Building 12/01/2014-12/31/2014	2.48	20.26	17.18	0.02	0.10	0.61	0.70	0.03	0.56	0.59	5,417.32
Building Off Road Diesel	1.74	14.13	6.68	0.00	0.00	0.34	0.34	0.00	0.32	0.32	2,958.38
Building Vendor Trips	0.57	5.80	4.77	0.02	0.06	0.24	0.29	0.02	0.22	0.24	1,592.86
Building Worker Trips	0.17	0.32	5.73	0.01	0.04	0.02	0.07	0.01	0.02	0.04	866.08

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 7/1/2014 - 10/31/2014 - Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 11/1/2014 - 11/30/2014 - Trenching/Infrastructure Construction

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Building Construction 12/1/2014 - 12/31/2014 - PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings							

TOTALS (lbs/day, unmitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, mitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	1.02	0.01	0.13	0.00	0.03	0.01	17.67
TOTALS (lbs/day, unmitigated)	1.02	0.01	0.13	0.00	0.03	0.01	17.67

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.01	acres	160.00	1.60	17.16
					1.60	17.16

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

Project Name: Site 5- Silver Sun Greenworks

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	4.03	30.03	19.10	0.02	30.04	1.77	31.81	6.28	1.63	7.91	5,417.32
2014 TOTALS (lbs/day mitigated)	4.03	30.03	19.10	0.02	14.23	1.08	15.31	2.98	0.99	3.97	5,417.32

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.00						
TOTALS (lbs/day, mitigated)	0.00						
Percent Reduction	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.49	0.02	0.13	0.00	0.03	0.01	15.99

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.49	0.02	0.13	0.00	0.03	0.01	15.99

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 7/1/2014-10/31/2014 Active Days: 89	**4.03**	**30.03**	**19.10**	0.01	**30.04**	**1.77**	**31.81**	**6.28**	**1.63**	**7.91**	3,952.18
Fine Grading 07/01/2014-10/31/2014	4.03	30.03	19.10	0.01	30.04	1.77	31.81	6.28	1.63	7.91	3,952.18
Fine Grading Dust	0.00	0.00	0.00	0.00	30.00	0.00	30.00	6.27	0.00	6.27	0.00
Fine Grading Off Road Diesel	3.66	26.35	16.00	0.00	0.00	1.62	1.62	0.00	1.49	1.49	2,940.74
Fine Grading On Road Diesel	0.32	3.59	1.46	0.01	0.03	0.14	0.17	0.01	0.13	0.14	762.91
Fine Grading Worker Trips	0.05	0.09	1.64	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.53
Time Slice 11/3/2014-11/28/2014 Active Days: 20	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching 11/01/2014-11/30/2014	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.64	0.64	0.00	0.59	0.59	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 12/1/2014-12/31/2014 Active Days: 23	2.48	20.26	17.18	**0.02**	0.10	0.74	0.83	0.03	0.68	0.71	**5,417.32**
Building 12/01/2014-12/31/2014	2.48	20.26	17.18	0.02	0.10	0.74	0.83	0.03	0.68	0.71	5,417.32
Building Off Road Diesel	1.74	14.13	6.68	0.00	0.00	0.48	0.48	0.00	0.44	0.44	2,958.38
Building Vendor Trips	0.57	5.80	4.77	0.02	0.06	0.24	0.29	0.02	0.22	0.24	1,592.86
Building Worker Trips	0.17	0.32	5.73	0.01	0.04	0.02	0.07	0.01	0.02	0.04	866.08

Phase Assumptions

Phase: Fine Grading 7/1/2014 - 10/31/2014 - Mow and Roll

Total Acres Disturbed: 160

Maximum Daily Acreage Disturbed: 3

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 180

Off-Road Equipment:

2 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 11/1/2014 - 11/30/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 12/1/2014 - 12/31/2014 - PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 7/1/2014-10/31/2014 Active Days: 89	**4.03**	**30.03**	**19.10**	0.01	14.23	1.08	15.31	2.98	0.99	3.97	3,952.18
Fine Grading 07/01/2014-10/31/2014	4.03	30.03	19.10	0.01	14.23	1.08	15.31	2.98	0.99	3.97	3,952.18
Fine Grading Dust	0.00	0.00	0.00	0.00	14.19	0.00	14.19	2.96	0.00	2.96	0.00
Fine Grading Off Road Diesel	3.66	26.35	16.00	0.00	0.00	0.93	0.93	0.00	0.86	0.86	2,940.74
Fine Grading On Road Diesel	0.32	3.59	1.46	0.01	0.03	0.14	0.17	0.01	0.13	0.14	762.91
Fine Grading Worker Trips	0.05	0.09	1.64	0.00	0.01	0.01	0.02	0.00	0.01	0.01	248.53
Time Slice 11/3/2014-11/28/2014 Active Days: 20	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching 11/01/2014-11/30/2014	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.35	0.35	0.00	0.32	0.32	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 12/1/2014-12/31/2014 Active Days: 23	2.48	20.26	17.18	**0.02**	0.10	0.61	0.70	0.03	0.56	0.59	**5,417.32**
Building 12/01/2014-12/31/2014	2.48	20.26	17.18	0.02	0.10	0.61	0.70	0.03	0.56	0.59	5,417.32
Building Off Road Diesel	1.74	14.13	6.68	0.00	0.00	0.34	0.34	0.00	0.32	0.32	2,958.38
Building Vendor Trips	0.57	5.80	4.77	0.02	0.06	0.24	0.29	0.02	0.22	0.24	1,592.86
Building Worker Trips	0.17	0.32	5.73	0.01	0.04	0.02	0.07	0.01	0.02	0.04	866.08

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 7/1/2014 - 10/31/2014 - Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 11/1/2014 - 11/30/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Building Construction 12/1/2014 - 12/31/2014 - PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, unmitigated)	0.00						

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, mitigated)	0.00						

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.49	0.02	0.13	0.00	0.03	0.01	15.99
TOTALS (lbs/day, unmitigated)	0.49	0.02	0.13	0.00	0.03	0.01	15.99

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.01	acres	160.00	1.60	17.16
					1.60	17.16

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8

Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

APPENDIX B

SCREEN3 MODEL RUNS

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APPENDIX B

SCREEN3 MODEL RUNS

```
   ******  SCREEN3 MODEL  ******
 **** VERSION DATED 13043 ****

 ENTER TITLE FOR THIS RUN (UP TO 79 CHARACTERS):
Site 5- Silver Sun Greenworks

 ENTER SOURCE TYPE: P    FOR POINT
                    F    FOR FLARE
                    A    FOR AREA
                    V    FOR VOLUME
   ALSO ENTER ANY OF THE FOLLOWING OPTIONS ON THE
SAME LINE:

     N    - TO USE THE NON-REGULATORY BUT
CONSERVATIVE BRODE 2
            MIXING HEIGHT OPTION,
     nn.n - TO USE AN ANEMOMETER HEIGHT OTHER THAN
THE REGULATORY
            (DEFAULT) 10 METER HEIGHT.
     SS   - TO USE A NON-REGULATORY CAVITY
CALCULATION ALTERNATIVE
   Example - PN 7.0 SS (entry for a point source)

  ENTER SOURCE TYPE AND ANY OF THE ABOVE OPTIONS:
a
 ENTER EMISSION RATE (G/(S-M**2)):
4.58e-8
 ENTER SOURCE RELEASE HEIGHT (M):
5
 ENTER LENGTH OF LARGER SIDE FOR AREA (M):
800
 ENTER LENGTH OF SMALLER SIDE FOR AREA (M):
400
 ENTER RECEPTOR HEIGHT ABOVE GROUND (FOR
FLAGPOLE RECEPTOR) (M):
0
 ENTER URBAN/RURAL OPTION (U=URBAN, R=RURAL):
r
 SEARCH THROUGH RANGE OF DIRECTIONS TO FIND THE
MAXIMUM?
 ENTER Y OR N:
y
 ENTER CHOICE OF METEOROLOGY;
 1 - FULL METEOROLOGY (ALL STABILITIES & WIND
SPEEDS)
 2 - INPUT SINGLE STABILITY CLASS
 3 - INPUT SINGLE STABILITY CLASS AND WIND SPEED
1
 USE AUTOMATED DISTANCE ARRAY? ENTER Y OR N:
y
 ENTER MIN AND MAX DISTANCES TO USE (M):
1
500

 **********************************
 *** SCREEN AUTOMATED DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED
FOR FOLLOWING DISTANCES ***

   DIST     CONC          U10M   USTK  MIX HT   PLUME
MAX DIR
    (M)  (UG/M**3)  STAB  (M/S)  (M/S)   (M)   HT (M)   (DEG)
 -------  ---------- ----  -----  -----  ------  ------  -------
     1. 1.377       5    1.0    1.0 10000.0    5.00     23.
   100. 1.722       6    1.0    1.0 10000.0    5.00     24.
   200. 2.053       6    1.0    1.0 10000.0    5.00     24.
   300. 2.354       6    1.0    1.0 10000.0    5.00     23.
   400. 2.632       6    1.0    1.0 10000.0    5.00     23.
   500. 2.899       6    1.0    1.0 10000.0    5.00     23.
 ITERATING TO FIND MAXIMUM CONCENTRATION . . .

 MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
   561. 2.960       6    1.0    1.0 10000.0    5.00     25.

 USE DISCRETE DISTANCES?  ENTER Y OR N:
y
 TO CEASE, ENTER A DISTANCE OF ZERO (0).

 **********************************
 *** SCREEN DISCRETE DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED
FOR FOLLOWING DISTANCES ***

   DIST     CONC          U10M   USTK  MIX HT   PLUME
MAX DIR
    (M)  (UG/M**3)  STAB  (M/S)  (M/S)   (M)   HT (M)   (DEG)
 -------  ---------- ----  -----  -----  ------  ------  -------
 ENTER DISTANCE (M) (0 TO EXIT):
100
   100. 1.722       6    1.0    1.0 10000.0    5.00     24.
 ENTER DISTANCE (M) (0 TO EXIT):
```

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APPENDIX B-2.6

PROJECT 6 LANCASTER WAD
AIR QUALITY AND GHG TECHNICAL REPORT

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SILVERADO POWER CALIFORNIA

LANCASTER WAD
(CUP GROUP 15)
AIR QUALITY AND GREENHOUSE GAS TECHNICAL REPORT

Prepared for:

SILVERADO power

2 Embarcadero Center, Suite 410
San Francisco, CA 94111

Prepared by:

Tetra Tech, Inc.
17885 Von Karman Avenue, Site 500
Irvine, CA 92614-6213

September 2013

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Appendix A URBEMIS MODEL RUNS
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ABBREVIATIONS AND ACRONYMS

AC	Alternating current
AVAQMD	Antelope Valley Air Quality Management District
CAA	Clean Air Act
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DC	Direct current
EPA	Environmental Protection Agency
H_2S	Hydrogen sulfide
HIa	acute hazard index
HIc	chronic hazard index
HRA	Health Risk Assessment
kV	Kilovolt
MDAB	Mojave Desert Air Basin
MW	Megawatts
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO_2	Nitrogen dioxide
O&M	Operations and maintenance
O_3	Ozone
Pb	Lead
PM_{10}	Fine particulate matter equal to or less than 10 microns
$PM_{2.5}$	Fine particulate matter equal to or less than 2.5 microns
PV	Photovoltaic
SCAB	South Coast Air Basin
SCE	Southern California Edison
SGF	Solar Energy Generation Facility
SO_2	Sulfur dioxide
TACs	Toxic air contaminants
TSP	Total suspended particulate

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1.0 EXECUTIVE SUMMARY

Silverado Power, LLC (Silverado Power) proposes to develop, own, and operate a photovoltaic (PV) solar energy project in the County of Los Angeles, California. The Lancaster WAD Generation project (Project) will consist of a solar energy generating facility (SGF) that employs PV panels to convert sunlight directly into electrical energy without using heat transfer fluid or cooling water.

The Project facilities will operate year-round, producing electric power during daytime hours. The proposed schedule for construction begins with the facility's site preparation and construction in the first quarter of 2014and completes construction by the second quarter of 2014.

The air quality analysis presented in this report analyzes the potential air quality impacts associated with the proposed Project. A health risk assessment (HRA) was performed to determine the health effects from construction activities to the nearest sensitive receptors. Since the Project site is located within the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD), the air quality analysis follows the AVAQMD's guidelines.

This report also provides estimates of greenhouse gas (GHG) emissions from the combustion of fossil fuels, primarily from the constructing of the proposed facility, shows operation results in a reducing of GHG emissions, and addresses the effects of GHGs on climate change.

In summary, the air quality and GHG analysis concludes that emissions during short-term construction and during long-term operation of the project do not exceed the significant thresholds established by the AVAQMD. The HRA concludes that the construction activities would result in a less-than-significant impact regarding health risk. The Project does not pose significant adverse impacts on local air quality and global climate change.

This report has been prepared for Silverado Power as part of an environmental review required by the California Environmental Quality Act (CEQA) with Los Angeles County as lead CEQA agency for the Project. The California Air Resources Board (CARB), AVAQMD, and Los Angeles County methods, standards, and significance thresholds used in this analysis are considered appropriate for determining impacts.

2.0 DESCRIPTION OF PROJECT

2.1 Project Location

The proposed Project is located on 38.49 acres of primarily unproductive agricultural land in the unincorporated northern section of Los Angeles County. The site is located approximately 6.38 miles northwest of the city of Lancaster. It is bordered by West Avenue C to the north, 35th Street West to the west, West Avenue D to the south, and 30th Street West to the east. Figure 1 presents the project location.

2.2 Project Description

The proposed solar energy generating facility will produce approximately 5 megawatts (MW) of electricity. The 5 MW facility will consist of the following components:

Date: 9/18/2013 12:17:43 PM
Path: P:\GIS\Projects\4336_Silverado\LA_EIR\AQ\1_Regional_Project6.mxd
Mojave Tropico Rd
Tropico Rd
Rosamond Blvd
90th St W
60th St W
14
Rosamond Lake
Proposed Project Site
SR-138/W AVENUE D
Sierra Hwy
W AVENUE F
GENERAL WILLIAM S. FOX AIRFIELD
W AVENUE G
50th St W
30th St W
Lancaster
W AVENUE I
Lancaster Blvd
W AVENUE J
ANTELOPE SUBSTATION
W AVENUE K
OR
ID
NV
UT
AZ
Pacific Ocean
PROJECT SITE
Legend
Lancaster WAD
Land Jurisdiction
Bureau of Land Management
State
US Forest Service
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 6
LANCASTER WAD
FIGURE 1
REGIONAL LOCATION MAP
0 1 2 4
Miles
TETRA TECH EC, INC.

- PV modules
- PV module mounting system
- Electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical AC collection system, including switchgear
- Data monitoring equipment
- Access roads and chain link perimeter security fencing

The Project will not require the construction of an on-site operations and maintenance (O&M) facility.

3.0 EXISTING AND AFFECTED ENVIRONMENT

3.1 Existing Air Quality Standards

In California, local responsibility for air quality is assigned to air quality management districts and air pollution control districts. The project site is located in the northern portion of Los Angeles County, which is under the jurisdiction of the Antelope Valley Air Quality Management District (AVAQMD). The impact analysis contained in this section was prepared according to the methodologies provided by the AVAQMD [Ref. 1].

The Federal Clean Air Act (42 USC Section 7401-7671q; CAA) requires the adoption of the National Ambient Air Quality Standards (NAAQS) to decrease the potential impact of air pollution on public health and welfare. Current standards include sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), fine particulate matter equal to or less than 10 microns (PM_{10}), fine particulate matter equal to or less than 2.5 microns ($PM_{2.5}$), and lead (Pb). These pollutants are designated criteria pollutants. CARB has established additional state standards for the criteria pollutants that are generally more restrictive than the NAAQS. Federal and state standards are shown in Table 1.

Table 1. State and Federal Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})[8]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter ($PM_{2.5}$)[8]	24 Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12 µg/m^3	15 µg/m^3	
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry

Pollutant	Averaging Time	California Standards 1		Federal Standards 2		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
(CO)	1 Hour	20 ppm (23 mg/m^3)	Photometry (NDIR)	35 ppm (40 mg/m^3)		(NDIR)
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)[9]	Annual Arithmetic Mean	0.03 ppm (56 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m^3)		100 ppb	None	
Sulfur Dioxide (SO2)[10]	24 Hour	0.04 ppm (105 µg/m^3)	Ultraviolet Fluorescence	0.14 ppm (365 µg/m^3)	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1,300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		0.075 ppm (196 µg/m^3)	—	
	Annual Arithmetic Mean	0.075 ppm (196 µg/m^3)		0.03 ppm	—	
Lead (Pb)[11,12]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[13]	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates (SO_4)	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[11]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.
8. On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m^3 to 12.0 µg/m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m^3, as was the annual secondary standard of 15 µg/m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m^3 also were retained. The form of the annual primary and secondary standards is the

Pollutant	Averaging Time	California Standards 1		Federal Standards 2		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]

annual mean, averaged over 3 years.

9. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
10. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
11. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
12. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
13. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: California Air Resources Board (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, updated 06/04/13), and U.S. Environmental Protection Agency (http://www.epa.gov/air/criteria.html and http://www.epa.gov/air/lead/pdfs/20081015_ pb_naaqs_final.pdf [see "FR Notices" at http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html], accessed September 2013]

The project site is located within the jurisdiction of the AVAQMD whose mission is to attain and maintain NAAQS and California Ambient Air Quality Standards and to ensure air pollutants do not pose a nuisance or significant public health threat. Included in AVAQMD's tasks are monitoring air pollution and promulgating Rules and Regulations. Four AVAQMD rules are applicable to the Project: Rule 402 (Nuisance), Rule 403 (Fugitive Dust), Regulation II (Permits) and Regulation XIII (New Sources Review).

3.2 Climate

Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.) but also by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall, etc.

The AVAQMD covers a western portion of the Mojave Desert Air Basin (MDAB). This desert region is characterized by wide day-night temperature fluctuations and seasonal strong winds. Days with temperatures exceeding 100°F typically begin in May and can last into October. During July and August minimum nocturnal temperatures in the low to mid-90s can be expected on several nights. Relative humidity is low, below 40 percent most of the year; above 50 percent on most winter nights, during precipitation and on summer evenings after a rain. On a typical summer afternoon the relative humidity is approximately 10 percent; on a winter afternoon, approximately 30 percent. The rainfall pattern is seasonal with most rain falling between November and April. Since 1980, the mean annual precipitation has been 3.5 inches. Prevailing winds in the MDAB are out of the west and southwest.

The most recent data measured in 2012 at the AVAQMD's monitoring station in Lancaster-43301 Division Street shows that the monthly average ambient temperature is 63 °F, hourly average wind speed is 4.7 miles per hour, and monthly average humidity is 41 percent. [Ref. 2].

3.3 Air Pollutant Constituents and Attainment Status

A state or region is given the status of "attainment" or “unclassified” if either the federal or state ambient air quality standards have not been exceeded. A status of "nonattainment" for particular criteria pollutants is assigned if the ambient air quality standard for that pollutant has been exceeded. Once designated as nonattainment, attainment status may be achieved after three years of data showing non-exceedance of the standard. When an area is reclassified from nonattainment to attainment, it is designated as a maintenance area, which requires establishing and enforcing a plan to maintain attainment with the standard.

Table 2 lists criteria air pollutants and their attainment status in the MDAB.

Table 2. Criteria Pollutants Attainment Status in the Mojave Desert Air Basin

Air Pollutants	State	Federal
Ozone (1-Hour)	Nonattainment, classified Extreme	-
Ozone (8-Hour)	Non-attainment; classified Extreme	Non-attainment; classified Moderate
$PM_{2.5}$	Unclassified	Unclassified/attainment
PM_{10}	Non-attainment	Unclassified
NO_2	Attainment/unclassified	Attainment/unclassified
CO	Attainment	Attainment
SO_2	Attainment/unclassified	Attainment/unclassified
Lead	Attainment	Attainment
Particulate Sulfate	Unclassified	-
Hydrogen Sulfide	Unclassified	-
Visibility Reducing Particles	Unclassified	-

Source: AVAQMD 2013 [Ref. 3]

Ozone

O_3 is a problematic air contaminant in the MDAB because a significant portion of the ozone (and ozone precursors) in the basin is transported from the heavily populated South Coast Air Basin (SCAB). Maximum ozone concentrations in the SCAB and in the MDAB usually are recorded during summer months.

The 2012 measured data at the Lancaster monitoring station shows that the state air quality standard of 1-hour ozone exceeded threshold on 13 days; and the maximum concentration was 0.112. The 8-hour ozone exceeded state air quality standards on 72 days in that year, and the maximum concentration was 0.096 ppm. The federal air quality standard for 8-hour ozone was exceeded on 39 days in that year; and the maximum concentration was 0.095 ppm. Under the state standards, the MDAB is classified as an extreme nonattainment area for ozone.

Nitrogen Dioxide

The monitoring data shows that the annual average NO_2 concentration in the MDAB has been within the federal standards for the last three years. The highest annual average concentration has remained nearly constant at 49 ppb. The 2012 measured data at the Lancaster monitoring station shows that the state standard for nitrogen dioxide standard was not exceeded in that year. The MDAB is in attainment status under California and federal standards.

Carbon Monoxide

CO is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. In many areas of California, CO emissions from sources such as wood-burning stoves and fireplaces also can be measurable contributors during cold-weather months. Industrial sources of pollution generally contribute less than 10 percent of ambient CO levels. Peak CO levels occur typically during winter months because of a combination of seasonal contributions from home heating devices and stagnant weather conditions. CO reduces the oxygen-carrying capacity of the blood and in high concentrations can cause death. At lower concentrations, people exposed experience dizziness and headaches.

The 2012 measured data at the Lancaster monitoring station show that the federal and state standard for CO was not exceeded in that year; and the maximum concentration was 1.0 ppm. The MDAB is an attainment area for CO for purposes of state and federal air quality planning.

Sulfur Dioxide

SO_2 is produced when any sulfur-containing fuel is burned. Chemical plants that treat or refine sulfur or sulfur-containing chemicals also emit SO_2. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of the state, depending on local fuel characteristics, weather, and topography. SO_2 can cause bronchia constriction and may aggravate respiratory diseases. In moist environments, SO_2 may combine with water to form sulfuric acid, a component of acid deposition. SO_2 data is not available as it is not monitored at the Lancaster location; nevertheless, the MDAB is an attainment area of the state and federal SO_2 standards.

Fine Particulates (PM_{10}, $PM_{2.5}$)

Particulate matter in the air is composed of windblown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and oxides of nitrogen. In 1984, CARB adopted standards for fine particulate (PM_{10}), and phased out the total suspended particulate (TSP) standards used up to that time. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of inhalable particulate related to human health. In 1987, the EPA also replaced national TSP standards with PM_{10} standards. In July 1997, the Environmental Protection Agency (EPA) adopted new standards for $PM_{2.5}$.

Particulates are a public health and welfare concern for several reasons. Particulates may be intrinsically toxic because of their inherent chemical and/or physical characteristics. Particulate matter may interfere with one or more of the mechanisms that normally clear the respiratory tract. Finally, fine particulates, which are easily carried deep into the lungs, may act as carriers of absorbed toxic substances. Thus elevated particulate concentrations may exacerbate pre-existing respiratory diseases such as bronchitis. Particulate matter, especially fine particulate, also interferes with visibility. The MDAB is a nonattainment area of the state's PM_{10} standards. The 2012 measured data at the Lancaster monitoring station shows a maximum concentration of 47 micrograms per cubic meter, an annual average of 19.8 micrograms per cubic meter, and shows zero number of days above the 24-hour PM_{10} federal standards. For state air quality standards, the data shows a maximum concentration of 43 micrograms per cubic meter, and an

annual average of 18.5 micrograms per cubic meter, and shows zero number of days about the 24-hour standards for that year. For $PM_{2.5,}$ an annual average was not recorded in 2012, but shows a maximum concentration of 14 micrograms per cubic meter, and no exceedances of one day above the 24-hour $PM_{2.5}$ federal or state standard in that year.

Lead

Lead is found in old paints and coatings, plumbing, and various other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The MDAB is an attainment area for the federal and State Ambient Air Quality Standards for lead.

3.4 Greenhouse Gases

Certain gases in the Earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. A GHG is any gas in the atmosphere that absorbs infrared radiation. As solar radiation enters the earth's atmosphere, a portion of the radiation is absorbed by the earth's surface, and a portion is reflected back through the atmosphere into space. The absorbed radiation is eventually emitted from the earth into the atmosphere, not as solar radiation, but as infrared radiation. Most solar radiation passes through GHGs; infrared radiation is selectively absorbed or "trapped" by GHGs as heat, and then reradiated back toward the earth's surface, resulting in a warming of the lower atmosphere and the earth's surface. This phenomenon, known as the "greenhouse effect," is beneficial for maintaining a habitable climate on the earth. As the atmospheric concentrations of GHGs rise, however, the average temperature of the lower atmosphere gradually increases, thereby increasing the potential for indirect effects such as a decrease in precipitation as snow, a rise in sea level, and changes to plant and animal species and habitat.

GHGs are emitted by natural processes and human activities. Water vapor is the most abundant and variable GHG in the atmosphere and is not considered a pollutant. The main source of water vapor is evaporation from the oceans (approximately 85 percent); other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves. Carbon dioxide (CO_2) also is a naturally emitted GHG.

Natural GHG sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing.

GHGs also are emitted from human activities including industrial/manufacturing, utilities, transportation, residential, and agricultural activities. Prominent GHGs contributing to the greenhouse effect are CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds. Ozone (O_3) is a GHG; O_3 in the lower atmosphere, however, is relatively short-lived and therefore is not global in nature. Emissions of CO_2 are by-products of fossil fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) largely associated with agricultural practices and landfills. CO_2 is sequestered through photosynthesis and absorption from ocean uptake and vegetation. More CO_2 is currently emitted into the atmosphere than is sequestered by ocean uptake and vegetation.

Human-caused emissions of these GHGs which exceed natural ambient concentrations intensify the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. Explaining global climate change during the past 50 years cogently is extremely without the contribution from human activities [Ref. 4]. Therefore, GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants (TACs), which are pollutants of regional and local concern.

Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed globally. Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, scientific evidence reveals that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54 percent is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46 percent of human-caused CO_2 emissions remains stored in the atmosphere [Ref. 5]. The quantity of GHGs that it takes to ultimately result in climate change is not known precisely; suffice to say that the quantity is enormous, and no single project would be expected to contribute measurably to a noticeable incremental change in the global average temperature, or to global, local, or microclimate.

While climate change has been a concern since at least 1988, the efforts devoted to GHG emissions reduction and climate change policy have increased dramatically in recent years. In 2002, California passed Assembly Bill (AB) 1493, which requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions beginning with the 2009 model year. In June 2005, Executive Order S-3-05 was signed to reduce California's GHG emissions to: (1) 2000 levels by 2010; (2) 1990 levels by the 2020; and (3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of AB 32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including recommendations of the state's Climate Action Team. Senate Bill 97 acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA.

CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions can adversely affect the environment because they contribute, cumulatively, to global climate change. In turn, global climate change could raise sea levels, potentially inundating low-lying areas; affect rain and snow fall, leading to changes in water supply; and affect habitats, leading to adverse effects on biological and other resources. Thus, GHG emissions require consideration in CEQA documents.

Federal Legislation

The U.S. Supreme Court ruled on April 2, 2007, that CO_2 is an air pollutant as defined under the CAA, and that the EPA has the authority to regulate emissions of GHGs. Nevertheless, there

are no federal regulations or policies regarding GHG emissions applicable to the Project at the time of this writing. Responding to the mounting issue of climate change, the EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, the EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement will provide the EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year. This publically available data will allow the reporters to track their own emissions, compare them to similar facilities, and help identify cost effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial GHGs along with vehicle and engine manufacturers will report at the corporate level. An estimated 85 percent of the total U.S. GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act

On December 7, 2009, the EPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). The Endangerment Finding is based on Section 202(a) of the CAA, which states that the Administrator (of EPA) should regulate and develop standards for "emission[s] of air pollution from any class of classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The rule addresses Section 202(a) in two distinct findings. The first addresses whether the concentrations of the six key GHGs (CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) in the atmosphere threaten the health and welfare of current and future generations. The second addresses whether the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and therefore the threat of climate change.

The Administrator found that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are very likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, and higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The Administrator also found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHGs fit within the CAA definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but rather allow the EPA to define the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.

CARB is the agency responsible for coordinating and overseeing state and local air pollution control programs in California and for implementing the California Clean Air Act, which was adopted in 1988. Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is underway, and there is a real potential for severe adverse environmental, social, and economic effects in the long term.

4.0 METHODOLOGY AND THRESHOLDS

This section describes the methodologies used to determine the air quality impacts associated with the proposed project.

AVAQMD recommends that air quality analysis for a proposed project shall include: direct impacts, indirect impacts, cumulative impacts, and conformity impacts.

Direct impacts result from SGF construction and operation activities on air quality. Indirect impacts from air quality changes that would not occur without the SGF project, e.g. building and operating a retail establishment nearby to support the SGF. Cumulative impacts are the combined effect on air quality from the SGF's operation and other emissions sources in the MDAB. Conformity impacts determine whether the SGF's operation complies with all applicable AVAQMD's rules and regulations.

4.1 Threshold of Significance

To meet federal requirements, impact significance is related to conformance with the EPA-approved SIP and with NAAQS. Air quality impacts would be significant if they exceed these standards or contribute to non-conformance. AVAQMD has published thresholds of significance for air quality and global climate change.

1. A project has significant air quality impact, if the following occurs:
2. Generates total emissions exceeding the AVAQMD significant thresholds shown in Table 3; and/or
3. Generates a violation of any ambient air quality standard when added to the local air quality background; and/or
4. Does not conform with the applicable attainment or maintenance plan(s); and/or
5. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (non-cancerous) greater than or equal to 1.

A significant project must incorporate mitigation sufficient to reduce its impact to a level that is not significant. A project that cannot be mitigated to a level that is not significant must incorporate all feasible mitigation.

Table 3. Significant Emission Thresholds

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NOx)	25	137
Reactive Organic Gases (ROG)	25	137
Oxides of Sulfur (SOx)	25	137
Particulate Matter (PM_{10})	15	82
Particulate Matter ($PM_{2.5}$)	15	82
Hydrogen Sulfide (H_2S)	10	54
Lead	0.6	3
Greenhouse Gases (CO_2e)	100,000	548,000

Source: AVAQMD 2013 [Ref. 1]

4.2 Direct Impacts

4.2.1 Criteria Air Emissions

Air quality and global climate change impacts associated with the proposed project are related to emissions that would occur during construction and subsequent operation of the proposed project. Principal sources of pollutants during construction would be earth-moving activities, construction equipment, trucks bringing materials to the site, and construction crew commuting vehicles. The sources of pollutants during project operations would be limited to the vehicles and equipment used by the operations and maintenance staff. There are numerous air quality modeling tools available to assess air quality impacts of the project. Emissions during construction and operation were estimated based on the air emission modeling software package, CARB's URBEMIS 2007 [Ref. 6]. The model contains data specific to each California air basin.

Construction

Construction will be conducted in phases. As a conservative analysis, construction of the Project would occur over the course of three months, starting in the first quarter of 2014 and ending in the second quarter of 2014. This timeframe is important since construction emissions are directly related to the intensity of construction activities (emissions increase as the overall amount of construction activity increases). Actual construction may proceed at a less intensive pace, which would result in lower daily emissions. For this project, the following construction phases are assumed:

Phase 1: Mow and Roll;
Phase 2: Fencing/Trenching/Infrastructure Construction; and;
Phase 3: PV Installation.

The URBEMIS model divides the construction processes into phases, including demolition, mass site grading, fine site grading, fencing/infrastructure construction (trenching, transmission line construction, paving), and PV installation. These model settings can be modified to fit applicable features of a specific project. The applicant has committed to using the mow and roll method to prepare the site for construction. The mow and roll method will utilize mowers and

rollers, which is a less intensive soil disturbance method than grading and excavating the site. As the URBEMIS model only allows for mass site and fine site grading, the fine site grading phase was used to model mow and roll activities (using a half emission factor for grading equipment; approved by the AVAQMD). Since mowing and rolling of the site will clear vegetation and roll the surface of the site, emission estimates from the model are higher than emissions from actual activity during the mow and roll phase. Activities during the trenching phase were modeled to include trenching and infrastructure construction (road construction, transmission line and generation-tie line); and activities during the construction phase were modeled to include construction and installation of the PV panels.

Each construction phase has the potential to generate the following: (1) fugitive dust emissions resulting from soil disturbance activity; (2) emissions of air pollutants from fuel combustion in construction equipment; and (3) emissions of air pollutants from fuel combustion in vehicles used for worker commute and material hauling and construction debris disposal. Silverado Power is committed to implementing "Best Practices" during all construction phases of the Project to further reduce emissions. Figure 2 shows the construction schedules and Figure 3 shows the construction equipment.

Figure 2. Construction Schedule

Construction Schedule

Year	2014											
Month*	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Overall Duration												
Mow and Roll												
Trenching/Infrastructure												
PV Installation												

* 22 days per month (URBEMIS Default)

Mow and Roll	
Start Date	2/1/2014
End Date	3/15/2014
Duration (months)	1
Duration (days)	22.00
Total Acreage To Be Disturbed	38.49
Max Daily Acreage Disturbed	2.00
Trenching/Infrastructure	
Start Date	3/16/2014
End Date	3/31/2014
Duration (months)	0.5
Duration (days)	11.00
PV Installation	
Start Date	4/01/2014
End Date	4/30/2014
Duration (months)	1
Duration (days)	21.27

Figure 3. Construction Equipment

Phase: Mow and Roll
1 Mower (Grader @ 87 hp) operating at a 0.31 load factor for 6 hours per day
1 Roller (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Rough Terrain Forklifts (93 hp) operating at a 0.60 load factor for 8 hours per day
1 Rubber Tired Dozer (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Trenching - Infrastructure Construction
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Trencher (63 hp) operating at a 0.75 load factor for 8 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction - PV Installation
1 Bore/Drill Rig (291 hp) operating at a 0.75 load factor for 8 hours per day
1 Crane (399 hp) operating at a 0.43 load factor for 7 hours per day
1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractor/Loader/Backhoe (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Truck (189 hp) operating at a 0.5 load factor for 8 hours per day

During construction, the proposed Project would be subject to AVAQMD Rule 403 (Fugitive Dust). The purpose of Rule 403 is to reduce man-made fugitive dust. Rule 403 requires implementing control measures to prevent, reduce, or mitigate fugitive dust emissions and includes a performance standard that prohibits visible emissions from crossing any property line [Ref. 7]. Dust control measures, such as water application or chemical stabilizers on dry soil, and reducing vehicle travel on unpaved roads, are standard mitigation techniques. The project construction will be required to comply with Rule 403. Implementing the dust suppression techniques specified in Rule 403 can reduce the fugitive dust generation (and thus the PM_{10} component) by 50 percent or more. Therefore, the estimation of fugitive dust emissions during project construction is based on compliance with AVAQMD Rule 403 requirements for fugitive dust suppression. In addition, to further reduce dust emissions during construction, site preparation shall be limited to no more than two acres per day.

Operations

During operation, the project does not require the types of equipment that emit a large amount of air pollutants. The sources of pollutants would be limited to the vehicles used by the operations and maintenance staff.

The URBEMIS 2007 software was used to compile the vehicle emissions during long-term project operations. In calculating mobile source emissions, the URBEMIS 2007 assumptions were applied to arrive at the annual vehicle miles traveled.

The proposed Project will be subject to AVAQMD's Regulation II (Permits) and Regulation XIII (New Source Review). These regulations ensure that all equipment with the potential to emit air pollutants (including air toxins and hazardous air pollutants) at the Project site would be subject to the AVAQMD's review and approval before installation [Ref. 8].

4.2.2 Greenhouse Gas Emissions

For this project, the major source of GHG is the combustion of fuel in construction equipment, in vehicles used to haul materials, and in vehicles used by worker commuting to/from the site.

There are three types of GHG from fuel combustion, including CO_2, methane (CH_4) and N_2O. GHG emissions are presented as carbon dioxide equivalents (CO_2e). CO_2e is computed based on global warming equivalence. The CH_4 global warming equivalence is 21 times that of CO_2, and the N_2O global warming equivalence is 310 times that of CO_2.

Mathematically, the CO_{2e} can be represented by the following equation:

$$CO_2e \text{ Emissions} = CO_2 \text{ Emissions} + 21 \times CH_4 \text{ Emissions} + 310 \times N_2O \text{ Emissions}$$

The URBEMIS model was used to estimate the GHG emissions during the construction phase of the proposed project. Based on the construction schedule, types and quantities of construction equipment, and haul trucks, etc., the maximum CO_2 emissions were estimated.

The URBEMIS model provides a CO_2 profile only and does not quantify CO_2e, CH_4 and N_2O emissions. The analysis assumed that the CO_2 emissions are CO_2e. For typical diesel-fueled combustion equipment used in construction activities, the emissions factors adjusted with global warming equivalence are:

(1) CO_2 emission factors are 22.4 pounds of CO_2e per gallon consumed;
(2) CH_4 emission factors are 0.065 pounds of CO_2e per gallon consumed; and
(3) N_2O emission factors are 0.068 pounds of CO_2e per gallon consumed.

As shown in these emission factors, the CO_2 profile is 99 percent of the total GHG emissions generated in combustion equipment. Therefore, the CO_2 emissions were assumed to be equivalent to the CO_2e emissions levels.

4.2.3 Health Risk

During construction, toxic emissions are generated mainly from fuel combustion in the construction equipment. To determine the health impacts of these toxic emissions, a health risk assessment (HRA) was performed.

A HRA is an estimate of the probability that adverse health effects could occur due to exposure to toxic pollutants. A facility's air emissions, stack information, operation schedule, local weather conditions, chemical dose-response data, etc. are fed into a computer model to produce an estimate of the health risks to nearby sensitive receptors. Sensitive receptors are populations that are more susceptible to the effects of air pollution than are the population at large. While the ambient air quality standards are designed to protect public health and are generally regarded as conservative for healthy adults, there is greater concern to protect adults who are ill or have long-term respiratory problems, and young children whose lungs are not fully developed. According to CARB, sensitive receptors include children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. The SCAQMD identify the following as locations that may contain a high concentration of sensitive receptors: long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, childcare centers,

and athletic facilities. The closest sensitive receptor to the project is a single family residence located on 35th Street West, approximately 40 meters northwest of the project site. HRA is performed in 3 steps: hazard identification, exposure assessment, and risk characterization.

Hazard Identification

Hazard identification refers to identifying substances as carcinogens, reproductive toxins, chronic toxins, or acute toxins, or identifying a type of exposure as hazardous. The TACs used in the HRA includes diesel particulate matter (DPM) and acrolein. DPM and acrolein are byproducts of diesel fuel combustion. Studies have shown that diesel combustion produces acrolein in the amount equal to 0.013 times that of DPM [Ref. 9]. There are other TACs from diesel combustion besides DPM and acrolein. They are less potent and thus are not included in the HRA.

Exposure Assessment

Exposure assessment identifies and quantifies all routes of human exposure to substances of concern. The SCREEN3 model issued by EPA was used for estimating of offsite concentrations of TACs. Based on land use surrounding the proposed project and EPA guidelines, a rural profile was assumed. Construction activities were modeled as area sources placed over the area of project site. Appendix B provides the SCREEN3 model run.

Risk Characterization

Risk characterization is the final step of the HRA. It quantifies the human health risk based on the exposure assessment and dose-response relationships (cancer potency factors and reference exposure levels). In this assessment, three types of human health effects were considered: (1) cancer; (2) chronic effects; and (3) acute effects. Health risks including cancer, chronic, and acute risks are calculated based on the Office of Environmental Health and Hazard Assessment guidelines.

Following is a summary of the Office of Environmental Health and Hazard Assessment method to determine the cancer, chronic and acute health risk:

Cancer Risk

The cancer risks were calculated as the individual excess lifetime cancer risk (i.e., the probability that an individual may develop cancer from a lifetime exposure to the chemicals of concern). There are different pathways that a toxicant can enter a human body. Gaseous toxicants can enter a human body through the inhalation pathway. Gaseous toxicants also can be deposited on soil, surface water, or plants, which then enter a human body through ingestion and dermal pathways. Semi-volatile and metal toxicants can enter the body through inhalation, ingestion and dermal pathways.

For inhalation pathway, the cancer risk is computed using the following equation:

$$CRinh = (GLC \times CP \times BR \times EF \times ED \times 10^{-t6}) / AT \quad \text{Eq. 1}$$

Where:

CRinh	=	Cancer Risk through inhalation
GLC	=	Annual Average Ground-level concentration (from air dispersion model)
CP	=	Cancer Potency factor
BR	=	Daily Breathing Rate
EF	=	Exposure frequency
ED	=	Exposure Duration
AT	=	Average Time Period

For the proposed project, contribution from non-inhalation pathways would not contribute to the overall risk such that the total risk would be above 10 in one million once the multi-pathway risks are added, thus non-inhalation pathway risk estimates are negligible.

Chronic Risk

The potential for long-term chronic health effects is quantified by comparing the predicted level of exposure to a reference exposure level (REL). This ratio of predicted exposure to reference exposure is referred to as a chronic hazard index (HIc). HIc is calculated by summing the ratios of each toxic substance over its REL. The equation for estimating HIc is as follows:

$$HIc = \sum Ci / \text{chronic RELi}$$

Where:

Ci	=	Ground-level concentration of substance i (annual average concentration)
RELi	=	Chronic Reference Exposure Level for substance i.

Acute Risk

In the same manner as the quantification of chronic health effects, the potential for short-term acute health effects was quantified using a hazard index. The acute hazard index (HIa) is calculated by dividing the maximum estimated hourly concentration of each toxic air pollutant by its reference short-term exposure levels. The equation for estimating HIa is as follows:

$$HIa = \sum Ci / \text{Acute RELi}$$

Where:

Ci	=	Maximum hourly ground-level concentration of substance i
RELi	=	Acute Reference Exposure Level for substance i.

4.3 Indirect Impacts on Air Quality

Indirect impacts are the result of air quality changes that would not occur without the SGF project. The SGF does not have permanent on-site staff. There will not be construction or operation of a retail establishment to support the SGF. Therefore, indirect impact on air quality is expected to be minimal.

4.4 Cumulative Impacts

Cumulative impacts are the combined effect on air quality from the SGF's operation and other emissions sources in the MDAB. In the operation phase, the SGF operation has no major emissions sources. Operation of equipment that emits regulated air pollutants, or requires AVAQMD permits, is not planned at the SGF. The SGF project will not conflict with or obstruct implementation of the applicable air quality plan, which in this case is the Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area). [Ref. 10] A project is deemed inconsistent with air quality plans if it results in population and/or employment growth that exceeds growth estimates in the applicable air quality plan. The ozone attainment plan relies upon future year emission inventories consistent with CARB, which in turn relies upon adopted General Plan growth projections. As the proposed project is not part of an ongoing regulatory program, the AVAQMD recommends that project-specific air quality impacts be used to determine the potential cumulative impacts to regional air quality. As discussed above, peak daily emissions of operation-related pollutants will not exceed AVAQMD significance thresholds.

In addition, estimates state that while the project would generate air and greenhouse gas emissions during construction and a very minimal amount of GHG emissions during operations, the solar energy provided by the project is a much cleaner source of energy than traditional sources used for the generation of electricity, such as the burning of coal, fuel oil, or natural gas. The amount of CO_2 reductions from proposed solar energy generation depends on the type of electric generation to be displaced by the addition of the solar energy. The energy produced by the proposed 5 MW project is estimated to displace approximately 8,663 tons of CO_2e that would otherwise be emitted by fossil fuel fired power plants. This is more than enough to offset the project's air and GHG emissions.

As a result, the emissions of non-attainment pollutants and precursors generated by project operation exceeding the AVAQMD project-level thresholds will be less than significant. Cumulative impact on air quality is expected to be minimal.

4.5 Conformity Impacts

The SGF is required to comply with all applicable rules and regulations of the AVAQMD. The project does not conflict with or delay implementation of any applicable attainment or maintenance plan; therefore non-conformity is not expected.

5.0 DIRECT IMPACTS ON AIR QUALITY

This section presents the direct impacts on air quality associated with the proposed project. The following sections present information on potentially significant impacts on air quality environment resulting from the project's implementation. Mitigation measures are proposed that can reduce or eliminate any such impacts.

5.1 Direct Impacts from Project Construction

Short-term air quality impacts would occur during the construction of the project site. Three major sources of emissions during construction include:

- Fugitive dust emissions – Dust is generally associated with excavation, windblown unpaved areas, vehicle and equipment travel on unpaved roads, and dirt/debris

pushing. Dust generated during construction activities would vary substantially depending on the level of activity, the specific operations, and weather conditions;

- Construction Equipment – Construction requires usage of heavy-duty equipment, such as bulldozers, excavators, loaders, etc. Exhaust emissions from this equipment during construction activities would vary daily as activity levels change; and
- Vehicles – Transport vehicles travelling to and from the site, including delivery trucks hauling materials and automobiles carrying workers, generate exhaust emission.

The URBEMIS model runs, which estimate the construction emissions, are presented in Appendix A. Table 4 summarizes emissions during construction. As shown, the short-term emissions during the construction phase will not exceed AVAQMD significant thresholds. As such, the project will not exceed thresholds or result in violating of air quality standards or contribute substantially to an existing or projected air quality violation.

Table 4. Construction Emissions

Lancaster WAD SGF	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	CO_2e
Mow and Roll	3.14	23.37	14.78	0.00	12.13	3.11	2,963
Trenching/Infrastructure Construction	1.47	10.06	6.31	0.00	0.36	0.33	1,282
PV Installation	2.26	17.96	11.15	0.01	0.52	0.47	3,859
Maximum Regional Emissions	3	23	15	0	12	3	3,859
AVAQMD Significance Threshold	**137**	**137**	**548**	**137**	**82**	**82**	**100,000**
Over (Under)	(134)	(114)	(533)	(137)	(70)	(79)	(96141)
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: Tetra Tech, 2013

*Values may not exactly add up due to rounding.

[a] Compiled using the URBEMIS emissions inventory model. The equipment mix and use assumption for each phase is provided in Figure 2.

[b] PM_{10} emissions estimates are based on compliance with AVAQMD Rule 403 requirements for fugitive dust suppression and mitigation measures listed in Section 6.

Table 5 summarizes the health risk assessment for the construction activities. Note that the EPA SCREEN3 model uses conservative assumptions for screening purposes; therefore, actual concentration levels are expected to be less than what was analyzed in this report. As shown in Table 5, short-term concentration levels during the construction phase do not expose sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (non-cancerous) greater than or equal to 1.

Table 5. Health Risk Assessment

	Construction Activities
Diesel Particulate Matter Run (Cancer Risk)	
DPM Emission Sources Modeled as Area Source, m^2	154,000
Emission Rate, g/s	0.0119
Emission Rate, g/s-m^2	7.72E-8
Maximum One-Hour Ground-Level Concentration, µg/m^3	1.62
Annual Average Ground-Level Concentration, µg/m^3	0.162
DPM Cancer Potency Factor (mg/kg-day)$^{-1}$	1.1
Breathing Rate, (L/kg-day)	302
Exposure Frequency (days/year)	365
Exposure Duration (years)	1
Average Time Period (days)	25,550
Acrolein (Acute and Chronic Risk)	
Emission Rate, g/s-m^2	1.00E-9
Maximum One-Hour Ground-Level Concentration, µg/m^3	0.0211
Acrolein Acute Inhalation REL (Eyes; Respiratory System), µg/m^3	2.5
Acrolein Chronic Inhalation REL (Respiratory System), µg/m^3	0.35
Cancer Risk from Exposure to DPM (Chance in a million)	**0.77**
Cancer risk greater than or equal to 10 in a million?	No
Acute Risk from Exposure to Acrolein	**0.01**
Hazard Index (non-cancerous) greater than or equal to 1?	No
Chronic Risk from Exposure to Acrolein	**0.01**
Hazard Index (non-cancerous) greater than or equal to 1?	No

Source: Tetra Tech, 2013

5.2 Direct Impacts from Project Operation

The URBEMIS model runs, which estimate the operation emissions, are presented in Appendix A. Table 6 summarizes the operation emission calculation compared with the annual threshold, since operation is long-term. The primary sources of emissions during operation are vehicles used by facility maintenance staff to and from the site. For worst case analysis, maintenance activities would consist of one water truck for the bi-annual panel washing, and one light duty truck as needed for maintenance. As shown in Table 6, emissions during the long-term operation do not exceed AVAQMD significant thresholds.

Table 6. Operation Emissions

Lancaster WAD SGF	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
	(tons/year)						
Area[a]	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Energy[b]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile[c]	0.04	0.00	0.01	0.00	0.00	0.00	0.75
Water[d]	0.00	0.00	0.00	0.00	0.00	0.00	0.34
Waste[e]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Operation Phase	0.06	0.00	0.29	0.00	0.01	0.00	1.60
Solar Energy Reduction	0	0	0	0	0	0	-8,663
Annual Net Emissions	0.06	0.00	0.31	0.00	0.01	0.00	(8,661)

Lancaster WAD SGF	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
	(tons/year)						
AVAQMD Significance Threshold	**25**	**25**	**100**	**25**	**15**	**15**	**100,000**
Over / (Under)	(25)	(25)	(100)	(25)	(15)	(15)	(108,661)
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: Tetra Tech, 2012

*All values were calculated using URBEMIS, unless otherwise stated. Values may not exactly add up due to rounding.

[a] Area sources related to the project include minimal consumer products.

[b] Project will generate solar energy only; and will not use electricity or natural gas. Emissions were calculated outside of the model.

[c] Mobile emissions are based on project's trip generation. Client indicated two trips per year to the site for maintenance and security. A maximum of 10 trips per year was assumed. The Project Trip Rate is 0.01.

[d] Panel washing is estimated to use .20 acre feet of water per year.

[e] No waste will be generated.

5.3 Greenhouse Gas Emission Impacts

Construction of the Project would increase GHG generation, which can contribute to global climate change. This analysis is provided in response to recent heightened interest in the subject of global climate change, and specifically, the California legislature's passage and the Governor's signing of AB 32, which is intended to control and reduce the emission of global warming gases in California; and SB 97, which directs the Office of Planning and Research and the California Resources Agency to develop CEQA Guidelines on how local agencies should analyze and, if necessary, mitigate for GHG emissions.

Short-term construction and long-term operation of the Project will generate emissions of GHGs. Construction emissions would be associated with vehicle engine exhaust from construction equipment and vehicles, vendor trips, and construction worker commuting trips. Construction-related GHG emissions are considered temporary and short term. As shown in Table 4, short-term construction emissions will not exceed the daily GHG threshold.

As mentioned above, the Project's facility operation will be limited to general maintenance, panel washing, and security. It is anticipated that operation and maintenance will use one water truck for bi-annual panel washing and one light duty truck as needed, which results in 1.60 tons of CO_2e annually. According to EPA 2007 GHG Inventory guidance, a 5 MW facility is calculated to reduce 8,663 tons of CO_2e per year. Taking into account the solar generation offsets, facility operation will reduce approximately 8,661 tons of CO_2e annually, as shown in Table 6.

Because construction-related emissions will be temporary and finite in nature, below those levels being considered and/or discussed by other government agencies and associations, and consistent with the AB 32 Scoping Plan, the Project's construction-related GHG emissions are not a cumulatively considerable contribution to climate change and, therefore, are less than significant. The Project's operation-related GHG emissions would will be negligible and are not be a cumulatively considerable contribution to climate change and, therefore, are less than significant.

When considering net GHG emissions from converting the Project site from operating as an agricultural farm to operating a 5-MW solar PV power-generating facility, there will be a positive impact of a substantial net reduction in GHG emissions at the Project site. In addition, the generation of power from solar energy is a substantial reduction in GHG emissions over conventional power generation from the combustion of fossil fuels. The energy produced by the

proposed project is estimated at 5 MW, and would reduce more than 8,661 tons of CO_2e per year during operation, that would otherwise be emitted by fossil fuel fired power plants. This is more than enough to offset the project GHG emissions, and the proposed project would have negative cumulative net emissions.

The Project, therefore, will be in accordance with the state's need for the construction of renewable energy power plants to meet the state's GHG reduction objectives including:

- California's Renewable Portfolio Standard that requires California's investor-owned electric utilities to obtain, from renewable sources, 20 percent of the electricity that they supply.
- Executive Order S-14-08 that established Renewable Portfolio Standard targets for California that "all retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020."
- Executive Order S-03-05 on climate change to advance renewable energy and other solutions to reduce California's GHG emissions.
- The California Global Warming Solutions Act of 2006 (AB 32) that established a comprehensive program of regulatory and market mechanisms to reduce GHG emissions to 1990 levels by the year 2020.

6.0 MITIGATION MEASURES

The project will be required to comply with regional rules that assist in reducing air pollutant emissions. AVAQMD Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, AVAQMD Rule 402 requires implementing dust suppression techniques to prevent fugitive dust from creating a nuisance off site. Implementing these dust suppression techniques will reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules will reduce impacts on nearby sensitive receptors. Applicable dust suppression techniques include the following:

AQ-1 During construction, apply nontoxic chemical soil stabilizers according to manufacturers' specifications or water active sites at least twice daily (locations where site preparation is to occur will be thoroughly watered before earthmoving);

AQ-2 All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard in accordance with the requirements of California Vehicle Code (CVC) section 23114 (freeboard means vertical space between the top of the load and top of the trailer);

AQ-3 All off-road diesel-powered construction equipment less than 175 horsepower shall meet or exceed Tier 2 off-road emission standards. Off-road diesel-powered construction equipment greater than 175 horsepower shall meet or exceed Tier 3 off-road emissions standards;

AQ-4 During construction, the off-road equipment, vehicles, and trucks shall not be idle more than five minutes in any one hour;

AQ-5 The off-road construction equipment drivers shall have proper training in operating the equipment efficiently, taking into account ways to reduce the hours of operation of the equipment and/or operate the equipment at a lower load factor;

AQ-6 Traffic speeds on all unpaved roads shall be reduced to 15 miles per hour or less; and

AQ-7 During construction, there shall be carpools, vanpools, and/or shuttles provided for construction employees.

Implementing these mitigation measures will reduce emissions below AVAQMD thresholds.

7.0 REFERENCES

1. Antelope Valley Air Quality Management District, “California Environmental Quality Act and Federal Conformity Guidelines”, AVAQMD Stationary Sources Section, AVAQMD Surveillance Section, August 2011.

2. California Air Resources Board iADAM: Air Quality Data Statistics Select 8 Summary. Accessed online at: http://www.arb.ca.gov/ada/select8/sc8start.php August 2013

3. California Air Resources Board Area Designations813203. Available at www.arb.ca.gov/desig/desig.htm

4. Intergovernmental Panel on Climate Change (IPCC). Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Geneva, Switzerland. February.

5. Seinfeld and Pandis. Atmospheric Chemistry and Physics from Air Pollution to Climate Change, 1998.

6. CARB’s Urban Emission Model 2007, Version 9.2.4, http://www.urbemis.com/

7. Antelope Valley Air Quality Management District Rule 403, http://www.avaqmd.ca.gov/index.aspx?page=102

8. Antelope Valley Air Quality Management District Regulation II and XIII, http://www.avaqmd.ca.gov/index.aspx?page=102

9. Southwest Research Institute Study, “Diesel Exhaust Standard Phase I, CRC Project No. AVFL-10A”, August 2003.

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APPENDIX A

URBEMIS MODEL RUNS

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

Project Name: Site 6- Lancaster WAD

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (tons/year unmitigated)	0.08	0.60	0.38	0.00	0.30	0.03	0.33	0.06	0.03	0.09	93.41
2014 TOTALS (tons/year mitigated)	0.08	0.60	0.38	0.00	0.17	0.02	0.19	0.04	0.02	0.05	93.41
Percent Reduction	0.00	0.00	0.00	0.00	43.37	37.65	42.83	43.32	37.67	41.55	0.00

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51
TOTALS (tons/year, mitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Percent Reduction	0.00	#NUM!	0.00	#NUM!	#NUM!	#NUM!	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.04	0.00	0.03	0.00	0.01	0.00	3.76

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2

TOTALS (tons/year, unmitigated)	0.06	0.00	0.31	0.00	0.01	0.00	4.27

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014	0.08	0.60	0.38	0.00	0.30	0.03	0.33	0.06	0.03	0.09	93.41
Fine Grading 02/01/2014-03/15/2014	0.05	0.35	0.22	0.00	0.30	0.02	0.32	0.06	0.02	0.08	44.20
Fine Grading Dust	0.00	0.00	0.00	0.00	0.30	0.00	0.30	0.06	0.00	0.06	0.00
Fine Grading Off Road Diesel	0.04	0.33	0.20	0.00	0.00	0.02	0.02	0.00	0.02	0.02	37.78
Fine Grading On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.62
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80
Trenching 03/16/2014-03/31/2014	0.01	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.01
Trenching Off Road Diesel	0.01	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.50
Trenching Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
Building 04/01/2014-04/30/2014	0.02	0.20	0.12	0.00	0.00	0.01	0.01	0.00	0.01	0.01	42.20
Building Off Road Diesel	0.02	0.18	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	35.69
Building Vendor Trips	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.21
Building Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.29

Phase Assumptions

Phase: Fine Grading 2/1/2014 - 3/15/2014 - Mow and Roll

Total Acres Disturbed: 38.49

Maximum Daily Acreage Disturbed: 2

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 57

Off-Road Equipment:

1 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 3/16/2014 - 3/31/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 4/1/2014 - 4/30/2014 - PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014	0.08	0.60	0.38	0.00	0.17	0.02	0.19	0.04	0.02	0.05	93.41

Fine Grading 02/01/2014-03/15/2014	0.05	0.35	0.22	0.00	0.17	0.01	0.18	0.04	0.01	0.05	44.20
Fine Grading Dust	0.00	0.00	0.00	0.00	0.17	0.00	0.17	0.04	0.00	0.04	0.00
Fine Grading Off Road Diesel	0.04	0.33	0.20	0.00	0.00	0.01	0.01	0.00	0.01	0.01	37.78
Fine Grading On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.62
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.80
Trenching 03/16/2014-03/31/2014	0.01	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.01
Trenching Off Road Diesel	0.01	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.50
Trenching Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
Building 04/01/2014-04/30/2014	0.02	0.20	0.12	0.00	0.00	0.01	0.01	0.00	0.01	0.01	42.20
Building Off Road Diesel	0.02	0.18	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.69
Building Vendor Trips	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.21
Building Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.29

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 2/1/2014 - 3/15/2014 - Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 3/16/2014 - 3/31/2014 - Trenching/Infrastructure Construction

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Building Construction 4/1/2014 - 4/30/2014 - PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas Hearth							
Landscape	0.02	0.00	0.28	0.00	0.00	0.00	0.51

Consumer Products	0.00						
Architectural Coatings							
TOTALS (tons/year, unmitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.02	0.00	0.28	0.00	0.00	0.00	0.51
Consumer Products	0.00						
Architectural Coatings							
TOTALS (tons/year, mitigated)	0.02	0.00	0.28	0.00	0.00	0.00	0.51

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.04	0.00	0.03	0.00	0.01	0.00	3.76
TOTALS (tons/year, unmitigated)	0.04	0.00	0.03	0.00	0.01	0.00	3.76

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.05	acres	38.49	1.92	20.64
					1.92	20.64

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0

School Bus	0.1	0.0	0.0	100.0	
Motor Home	0.8	0.0	87.5	12.5	

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

Project Name: Site 6- Lancaster WAD

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	3.14	23.37	14.78	0.01	20.02	1.32	21.34	4.18	1.21	5.40	3,836.43
2014 TOTALS (lbs/day mitigated)	3.14	23.37	14.78	0.01	11.33	0.80	12.13	2.37	0.74	3.11	3,836.43

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81
TOTALS (lbs/day, mitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Percent Reduction	0.00	0.00	0.00	#NUM!	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.26	0.02	0.16	0.00	0.04	0.01	21.25

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.38	0.04	1.71	0.00	0.05	0.02	24.06

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 2/3/2014-3/14/2014 Active Days: 30	**3.14**	**23.37**	**14.78**	0.00	**20.02**	**1.32**	**21.34**	**4.18**	**1.21**	**5.40**	2,946.45
Fine Grading 02/01/2014-03/15/2014	3.14	23.37	14.78	0.00	20.02	1.32	21.34	4.18	1.21	5.40	2,946.45
Fine Grading Dust	0.00	0.00	0.00	0.00	20.00	0.00	20.00	4.18	0.00	4.18	0.00
Fine Grading Off Road Diesel	3.00	22.16	13.09	0.00	0.00	1.27	1.27	0.00	1.17	1.17	2,518.46
Fine Grading On Road Diesel	0.10	1.14	0.46	0.00	0.01	0.04	0.05	0.00	0.04	0.04	241.59
Fine Grading Worker Trips	0.04	0.07	1.23	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.40
Time Slice 3/17/2014-3/31/2014 Active Days: 11	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching 03/16/2014-03/31/2014	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.64	0.64	0.00	0.59	0.59	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 4/1/2014-4/30/2014 Active Days: 22	2.26	17.96	11.15	**0.01**	0.02	0.72	0.74	0.01	0.66	0.67	**3,836.43**
Building 04/01/2014-04/30/2014	2.26	17.96	11.15	0.01	0.02	0.72	0.74	0.01	0.66	0.67	3,836.43
Building Off Road Diesel	2.09	16.49	8.63	0.00	0.00	0.66	0.66	0.00	0.61	0.61	3,244.91
Building Vendor Trips	0.14	1.40	1.15	0.00	0.01	0.06	0.07	0.00	0.05	0.06	383.18
Building Worker Trips	0.04	0.08	1.38	0.00	0.01	0.01	0.02	0.00	0.01	0.01	208.35

Phase Assumptions

Phase: Fine Grading 2/1/2014 - 3/15/2014 - Mow and Roll

Total Acres Disturbed: 38.49

Maximum Daily Acreage Disturbed: 2

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 57

Off-Road Equipment:

1 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 3/16/2014 - 3/31/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 4/1/2014 - 4/30/2014 - PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 2/3/2014-3/14/2014 Active Days: 30	**3.14**	**23.37**	**14.78**	0.00	11.33	0.80	12.13	2.37	0.74	3.11	2,946.45
Fine Grading 02/01/2014-03/15/2014	3.14	23.37	14.78	0.00	11.33	0.80	12.13	2.37	0.74	3.11	2,946.45
Fine Grading Dust	0.00	0.00	0.00	0.00	11.31	0.00	11.31	2.36	0.00	2.36	0.00
Fine Grading Off Road Diesel	3.00	22.16	13.09	0.00	0.00	0.75	0.75	0.00	0.69	0.69	2,518.46
Fine Grading On Road Diesel	0.10	1.14	0.46	0.00	0.01	0.04	0.05	0.00	0.04	0.04	241.59
Fine Grading Worker Trips	0.04	0.07	1.23	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.40
Time Slice 3/17/2014-3/31/2014 Active Days: 11	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching 03/16/2014-03/31/2014	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.35	0.35	0.00	0.32	0.32	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 4/1/2014-4/30/2014 Active Days: 22	2.26	17.96	11.15	**0.01**	0.02	0.50	0.52	0.01	0.46	0.47	**3,836.43**
Building 04/01/2014-04/30/2014	2.26	17.96	11.15	0.01	0.02	0.50	0.52	0.01	0.46	0.47	3,836.43
Building Off Road Diesel	2.09	16.49	8.63	0.00	0.00	0.44	0.44	0.00	0.40	0.40	3,244.91
Building Vendor Trips	0.14	1.40	1.15	0.00	0.01	0.06	0.07	0.00	0.05	0.06	383.18
Building Worker Trips	0.04	0.08	1.38	0.00	0.01	0.01	0.02	0.00	0.01	0.01	208.35

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 2/1/2014 - 3/15/2014 - Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 3/16/2014 - 3/31/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Building Construction 4/1/2014 - 4/30/2014 - PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, unmitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscape	0.12	0.02	1.55	0.00	0.01	0.01	2.81
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, mitigated)	0.12	0.02	1.55	0.00	0.01	0.01	2.81

Area Source Mitigation Measures Selected

Mitigation Description | Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.26	0.02	0.16	0.00	0.04	0.01	21.25
TOTALS (lbs/day, unmitigated)	0.26	0.02	0.16	0.00	0.04	0.01	21.25

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.05	acres	38.49	1.92	20.64
					1.92	20.64

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0

Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

Project Name: Site 6- Lancaster WAD

Project Location: Los Angeles County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2014 TOTALS (lbs/day unmitigated)	3.14	23.37	14.78	0.01	20.02	1.32	21.34	4.18	1.21	5.40	3,836.43
2014 TOTALS (lbs/day mitigated)	3.14	23.37	14.78	0.01	11.33	0.80	12.13	2.37	0.74	3.11	3,836.43

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.00						
TOTALS (lbs/day, mitigated)	0.00						
Percent Reduction	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.13	0.02	0.15	0.00	0.04	0.01	19.23

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	0.13	0.02	0.15	0.00	0.04	0.01	19.23

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 2/3/2014-3/14/2014 Active Days: 30	**3.14**	**23.37**	**14.78**	0.00	**20.02**	**1.32**	**21.34**	**4.18**	**1.21**	**5.40**	2,946.45
Fine Grading 02/01/2014-03/15/2014	3.14	23.37	14.78	0.00	20.02	1.32	21.34	4.18	1.21	5.40	2,946.45
Fine Grading Dust	0.00	0.00	0.00	0.00	20.00	0.00	20.00	4.18	0.00	4.18	0.00
Fine Grading Off Road Diesel	3.00	22.16	13.09	0.00	0.00	1.27	1.27	0.00	1.17	1.17	2,518.46
Fine Grading On Road Diesel	0.10	1.14	0.46	0.00	0.01	0.04	0.05	0.00	0.04	0.04	241.59
Fine Grading Worker Trips	0.04	0.07	1.23	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.40
Time Slice 3/17/2014-3/31/2014 Active Days: 11	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching 03/16/2014-03/31/2014	1.47	10.06	6.31	0.00	0.00	0.64	0.65	0.00	0.59	0.59	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.64	0.64	0.00	0.59	0.59	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 4/1/2014-4/30/2014 Active Days: 22	2.26	17.96	11.15	**0.01**	0.02	0.72	0.74	0.01	0.66	0.67	**3,836.43**
Building 04/01/2014-04/30/2014	2.26	17.96	11.15	0.01	0.02	0.72	0.74	0.01	0.66	0.67	3,836.43
Building Off Road Diesel	2.09	16.49	8.63	0.00	0.00	0.66	0.66	0.00	0.61	0.61	3,244.91
Building Vendor Trips	0.14	1.40	1.15	0.00	0.01	0.06	0.07	0.00	0.05	0.06	383.18
Building Worker Trips	0.04	0.08	1.38	0.00	0.01	0.01	0.02	0.00	0.01	0.01	208.35

Phase Assumptions

Phase: Fine Grading 2/1/2014 - 3/15/2014 - Mow and Roll

Total Acres Disturbed: 38.49

Maximum Daily Acreage Disturbed: 2

Fugitive Dust Level of Detail: Low

Onsite Cut/Fill: 0 cubic yards/day; Offsite Cut/Fill: 0 cubic yards/day

On Road Truck Travel (VMT): 57

Off-Road Equipment:

1 Graders (87 hp) operating at a 0.31 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day

1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 3/16/2014 - 3/31/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

Off-Road Equipment:

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 8 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 4/1/2014 - 4/30/2014 - PV Installation

Off-Road Equipment:

1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 8 hours per day

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

1 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
Time Slice 2/3/2014-3/14/2014 Active Days: 30	**3.14**	**23.37**	**14.78**	0.00	11.33	0.80	12.13	2.37	0.74	3.11	2,946.45
Fine Grading 02/01/2014-03/15/2014	3.14	23.37	14.78	0.00	11.33	0.80	12.13	2.37	0.74	3.11	2,946.45
Fine Grading Dust	0.00	0.00	0.00	0.00	11.31	0.00	11.31	2.36	0.00	2.36	0.00
Fine Grading Off Road Diesel	3.00	22.16	13.09	0.00	0.00	0.75	0.75	0.00	0.69	0.69	2,518.46
Fine Grading On Road Diesel	0.10	1.14	0.46	0.00	0.01	0.04	0.05	0.00	0.04	0.04	241.59
Fine Grading Worker Trips	0.04	0.07	1.23	0.00	0.01	0.01	0.01	0.00	0.00	0.01	186.40
Time Slice 3/17/2014-3/31/2014 Active Days: 11	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching 03/16/2014-03/31/2014	1.47	10.06	6.31	0.00	0.00	0.35	0.36	0.00	0.32	0.33	1,274.81
Trenching Off Road Diesel	1.45	10.03	5.70	0.00	0.00	0.35	0.35	0.00	0.32	0.32	1,181.61
Trenching Worker Trips	0.02	0.03	0.62	0.00	0.00	0.00	0.01	0.00	0.00	0.00	93.20
Time Slice 4/1/2014-4/30/2014 Active Days: 22	2.26	17.96	11.15	**0.01**	0.02	0.50	0.52	0.01	0.46	0.47	**3,836.43**
Building 04/01/2014-04/30/2014	2.26	17.96	11.15	0.01	0.02	0.50	0.52	0.01	0.46	0.47	3,836.43
Building Off Road Diesel	2.09	16.49	8.63	0.00	0.00	0.44	0.44	0.00	0.40	0.40	3,244.91
Building Vendor Trips	0.14	1.40	1.15	0.00	0.01	0.06	0.07	0.00	0.05	0.06	383.18
Building Worker Trips	0.04	0.08	1.38	0.00	0.01	0.01	0.02	0.00	0.01	0.01	208.35

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 2/1/2014 - 3/15/2014 - Mow and Roll

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Rough Terrain Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Graders, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rollers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Rubber Tired Dozers, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Trenching 3/16/2014 - 3/31/2014 - Trenching/Infrastructure Construction

Trenching/Infrastructure Construction

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Trenchers, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

The following mitigation measures apply to Phase: Building Construction 4/1/2014 - 4/30/2014 - PV Installation

For Cranes, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Water Trucks, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Forklifts, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

For Bore/Drill Rigs, the Diesel Particulate Filter (DPF) 3rd Tier mitigation reduces emissions by:

PM10: 25% PM25: 25%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 2nd Tier mitigation reduces emissions by:

PM10: 50% PM25: 50%

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, unmitigated)	0.00						

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas							
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	0.00						
Architectural Coatings							
TOTALS (lbs/day, mitigated)	0.00						

Area Source Mitigation Measures Selected

Mitigation Description	Percent Reduction

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
General light industry	0.13	0.02	0.15	0.00	0.04	0.01	19.23
TOTALS (lbs/day, unmitigated)	0.13	0.02	0.15	0.00	0.04	0.01	19.23

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2014 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General light industry		0.05	acres	38.49	1.92	20.64
					1.92	20.64

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.4	0.4	99.4	0.2
Light Truck < 3750 lbs	6.7	1.5	97.0	1.5
Light Truck 3751-5750 lbs	23.0	0.4	99.6	0.0
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.5	0.0	86.7	13.3
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0

Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.3	52.2	47.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General light industry				50.0	25.0	25.0

Operational Changes to Defaults

APPENDIX B

SCREEN3 MODEL RUNS

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APPENDIX B

SCREEN3 MODEL RUNS

```
**** VERSION DATED 13043 ****

 ENTER TITLE FOR THIS RUN (UP TO 79 CHARACTERS):
Site 6- Lancaster WAD

 ENTER SOURCE TYPE: P    FOR POINT
                    F    FOR FLARE
                    A    FOR AREA
                    V    FOR VOLUME
   ALSO ENTER ANY OF THE FOLLOWING OPTIONS ON THE SAME LINE:

     N    - TO USE THE NON-REGULATORY BUT CONSERVATIVE BRODE 2
            MIXING HEIGHT OPTION,
     nn.n - TO USE AN ANEMOMETER HEIGHT OTHER THAN THE REGULATORY
            (DEFAULT) 10 METER HEIGHT.
     SS   - TO USE A NON-REGULATORY CAVITY CALCULATION ALTERNATIVE
   Example - PN 7.0 SS (entry for a point source)

  ENTER SOURCE TYPE AND ANY OF THE ABOVE OPTIONS:
a
 ENTER EMISSION RATE (G/(S-M**2)):
7.72e-8
 ENTER SOURCE RELEASE HEIGHT (M):
5
 ENTER LENGTH OF LARGER SIDE FOR AREA (M):
400
 ENTER LENGTH OF SMALLER SIDE FOR AREA (M):
385
 ENTER RECEPTOR HEIGHT ABOVE GROUND (FOR FLAGPOLE RECEPTOR) (M):
0
 ENTER URBAN/RURAL OPTION (U=URBAN, R=RURAL):
r
 SEARCH THROUGH RANGE OF DIRECTIONS TO FIND THE MAXIMUM?
 ENTER Y OR N:
y
 ENTER CHOICE OF METEOROLOGY;
 1 - FULL METEOROLOGY (ALL STABILITIES & WIND SPEEDS)
 2 - INPUT SINGLE STABILITY CLASS
 3 - INPUT SINGLE STABILITY CLASS AND WIND SPEED
1
 USE AUTOMATED DISTANCE ARRAY? ENTER Y OR N:
y
 ENTER MIN AND MAX DISTANCES TO USE (M):
1
500

 **********************************
 *** SCREEN AUTOMATED DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

   DIST    CONC          U10M   USTK  MIX HT   PLUME  MAX DIR
    (M)  (UG/M**3)  STAB  (M/S)  (M/S)   (M)   HT (M)   (DEG)
 ------- ---------- ---- ----- ----- ------ ------ -------
     1. 1.396       5    1.0   1.0 10000.0   5.00    44.
   100. 1.958       5    1.0   1.0 10000.0   5.00    44.
   200. 2.463       6    1.0   1.0 10000.0   5.00    44.
   300. 3.062       6    1.0   1.0 10000.0   5.00    44.
   400. 3.453       6    1.0   1.0 10000.0   5.00    44.
   500. 3.280       6    1.0   1.0 10000.0   5.00    44.
 ITERATING TO FIND MAXIMUM CONCENTRATION . . .

 MAXIMUM 1-HR CONCENTRATION AT OR BEYOND     1. M:
   406. 3.454       6    1.0   1.0 10000.0   5.00    44.

 USE DISCRETE DISTANCES?  ENTER Y OR N:
y
 TO CEASE, ENTER A DISTANCE OF ZERO (0).

 **********************************
 *** SCREEN DISCRETE DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

   DIST    CONC          U10M   USTK  MIX HT   PLUME  MAX DIR
    (M)  (UG/M**3)  STAB  (M/S)  (M/S)   (M)   HT (M)   (DEG)
 ------- ---------- ---- ----- ----- ------ ------ -------
 ENTER DISTANCE (M) (0 TO EXIT):
40
    40. 1.621       5    1.0   1.0 10000.0   5.00    44.
 ENTER DISTANCE (M) (0 TO EXIT):
```

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APPENDIX B-3

BIOLOGICALTECHNICAL REPORTS

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APPENDIX B-3.1 PROJECT 1 NORTH LANCASTER RANCH

2013 BURROWING OWL SURVEY BIOLOGICAL TECHNICAL REPORT

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2013 BURROWING OWL SURVEY

For

NORTH LANCASTER RANCH PROJECT
LOS ANGELES COUNTY, CALIFORNIA

Prepared by

August 2013

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APPENDICES

Appendix A Avian Compendium

Appendix B Photographic Log

1.0 INTRODUCTION

This report provides the methods, assumptions, and results of focused surveys for Burrowing Owl (*Athene cunicularia*) conducted within the limits of the proposed North Lancaster Ranch Project (here after referred to as the Project). The surveys were performed by NOREAS Inc., (NOREAS), on behalf of Silverado Power, LLC (Silverado). The Project is located within Los Angeles County, California (Figure 1). The Project can be found on the Little Buttes United States Geological Survey (USGS 1975) 7.5-minute quadrangle map; San Bernardino Base and Meridian, Township 8 North, Range 14 West, Sections 1, 2, 11 and 12. For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint (Project Site), plus a 500-foot (ft.) buffer where practical. The Project Site is south of West Avenue A, and north of West Avenue B at an approximate elevation of 2,640 ft. above mean sea level. The study area is heavily disturbed, and supports mostly ruderal vegetation with substantial inclusions of bare ground.

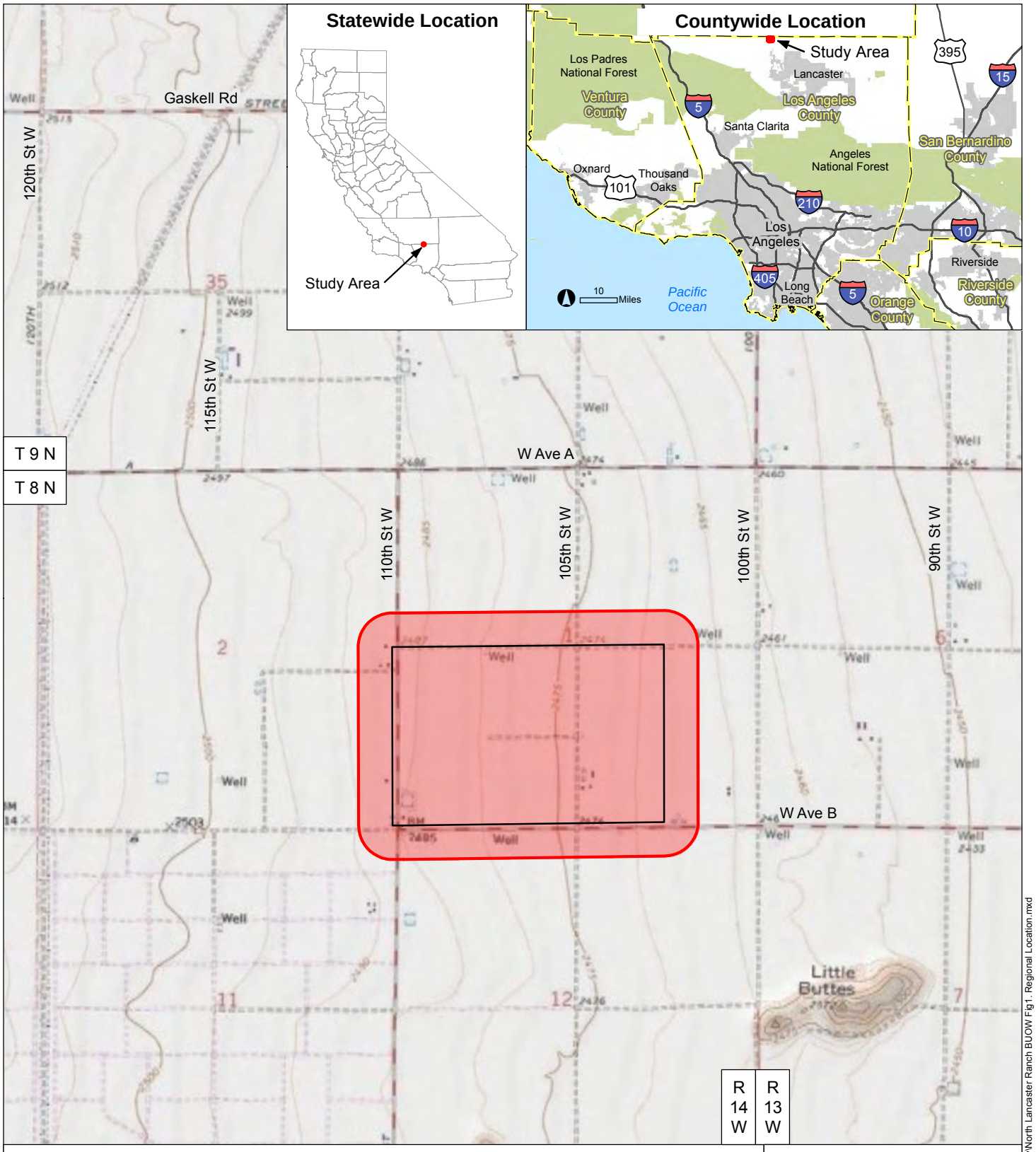


Figure 1. Regional Location

2.0 BURROWING OWL BACKGROUND

The Burrowing Owl has been designated by the California Department of Fish and Wildlife (CDFW) as a species of special concern. "State Species of Special Concern" status applies to animals not listed for protection under the federal Endangered Species Act or the California Endangered Species Act. The designation denotes that a species is declining at a rate that could result in State listing or that a species has historically occurred in low numbers and known threats to their persistence currently exist. In essence, the designation is intended to result in "special consideration" for these animals during the environmental review and discretionary permitting processes. In addition, the designation is also intended to focus research and management attention on poorly-known, potentially at-risk species by stimulating the collection of additional information on their biology, distribution, and status.

Burrowing Owls prefer open, dry annual or perennial grasslands, agricultural and rangelands, deserts, and scrublands characterized by low-growing vegetation. Burrowing Owls also prefer areas inhabited by small mammals as they predominately depend on mammal burrows (particularly ground squirrels) for subterranean nesting. Owls can be found at elevations ranging from 200 ft. below sea level to 9,000 ft. above (CDFG 1995). Burrowing Owls commonly perch on fence posts or on mounds outside their burrows. Northern populations of Burrowing Owls are usually migratory, while more southern populations may move short distances or not at all (Haug et al. 1993, Botelho 1996). Little is known about the winter ranges of migratory populations, although migratory Burrowing Owls are believed to mix with resident populations in California during the winter months (Coulombe 1971, Haug et al. 1993).

Burrowing Owls tend to be resident where food sources are stable and available year-round (Rosenberg et al. 1998). Typically, they disperse or migrate south in areas when food becomes seasonally scarce. Burrowing Owls tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a substantial portion of their diet (Rosenberg et al. 1998). Small mammals, especially mice, rats, gophers, and ground squirrels, are also important food items. Other prey animals include reptiles and amphibians, scorpions, young cottontail rabbits, bats, and birds such as sparrows and Horned Larks. Consumption of insects increases during the breeding season. Burrowing Owls hover while hunting; after catching their prey they return to perches on fence posts or the ground. Burrowing Owls are primarily active at dusk and dawn, but if necessary will hunt at any time of day (CBOC 1993, CDFG 1995; Rosenberg et al. 1998).

The breeding season for Burrowing Owls is March to late August; the season tends to last later in the northern part of the range (CBOC 1993, CDFG 1995, Klute et al. 2003). Clutch size (number of birds hatched at the same time) ranges from 1 to 12 and averages about 7 (Ehrlich 1988). The incubation period is 28–30 days (Ehrlich 1988). The female performs all the incubation and brooding (sitting on eggs to hatch them by the warmth of the body) and is believed to remain continually in the burrow while the male does all the hunting (Rosenberg et al. 1998). The young fledge (take their first flight out of the nest) at 44 days but remain near the burrow and join the adults in foraging flights at dusk (Ehrlich 1988). The maximum life span recorded for a banded bird in the wild is approximately 8.5 years (Rosenberg et al. 1998).

In resident populations, nest site fidelity is common, with many adults nesting each year in their previous year's burrow; young from the previous year often establish nest sites near (<900 ft) their natal sites (Trulio 1997,Rosenberg et al. 1998). Burrowing Owls in migratory populations

also often nest in the same burrow, particularly if the previous year's breeding was successful (Belthoff and King 1997). Other birds in the same population may move to burrows near their previous year's burrow. The species is threatened primarily by loss, degradation, and fragmentation of habitat, although they do readily inhabit anthropogenic landscapes such as agricultural fields, golf courses, and airport grasslands (Korfanta et al. 2005).

3.0 METHODS

Prior to field surveys, natural resource databases, local resource management plans, aerial photos, and other readily available commercial data associated with the Project were reviewed to determine the locations and types of avian species that have the potential to exist within the study area. Primary data sources included, but were not limited to, the following:

- U.S. Fish and Wildlife Service Critical Habitat Mapper and File Data (USFWS 2013);
- California Burrowing Owl Consortium. 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines;
- California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation; and
- 2013 California Natural Diversity Database maintained by the CDFW (CDFW 2013).

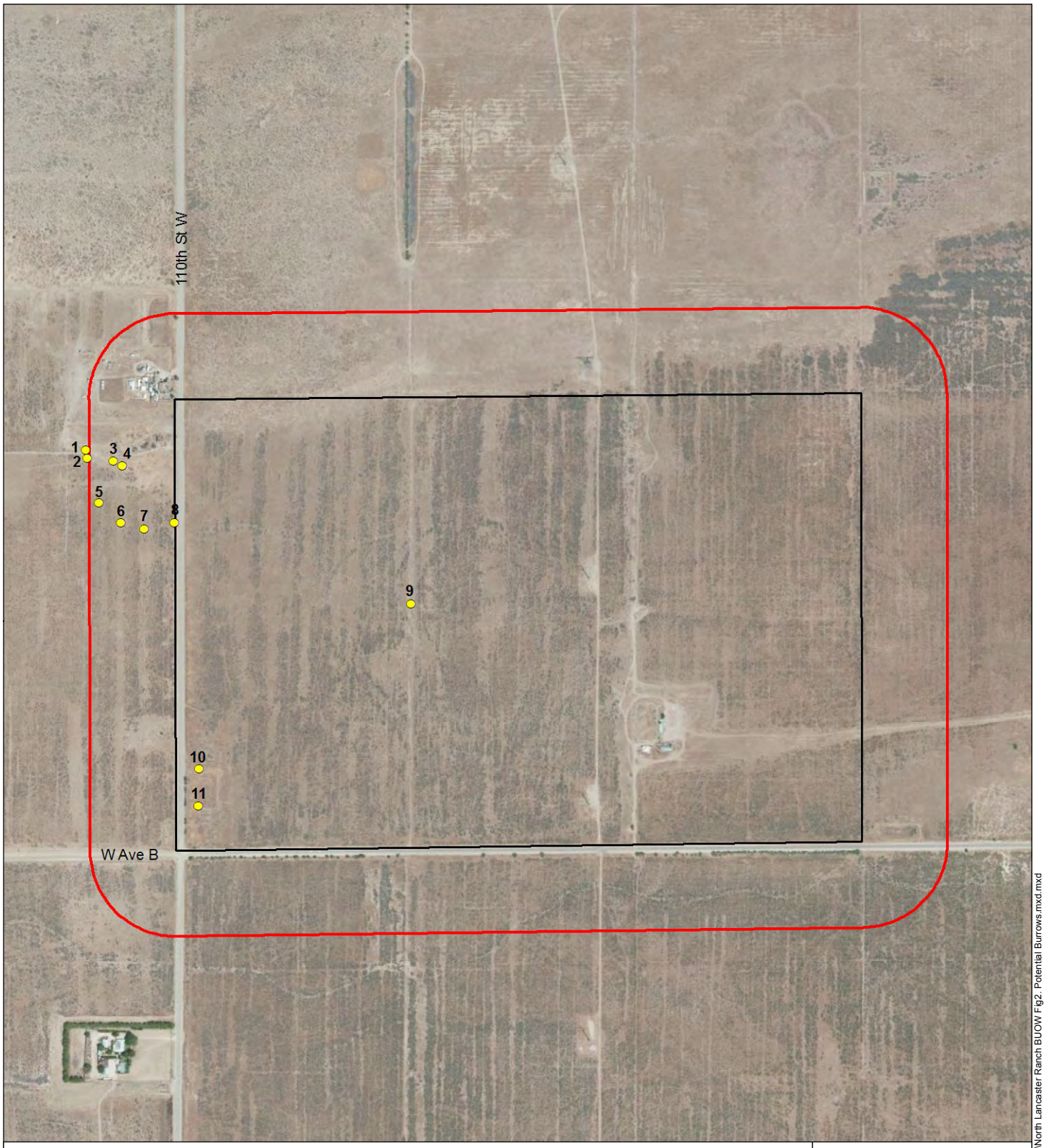
Survey methods were derived from generally accepted professional standards including the 1993 California Burrowing Owl Consortium Survey Protocol and Mitigation Guidelines (CBOC 1993), the 1995 and 2012 California Department of Fish and Game Staff Reports on Burrowing Owl Mitigation (CDFG 1995 and 2012). Accordingly, a methodical pedestrian-survey for owl burrows and sign was conducted by walking through areas of suitable habitat within study area limits (including evaluations of man-made structures, debris piles, etc.). Survey transects were spaced at approximately 100-ft intervals to allow for complete visual coverage of the study area. Where necessary, transect spacing was reduced or expanded to account for differences in terrain, vegetation density, and visibility. The presence of each observed species was based on direct observations of individual(s), sign, and/or vocalization. Avian scientific nomenclature and common names follows Sibley (2000).

Field surveys were conducted when weather conditions were conducive to observing birds. Surveys were not performed during rain, extreme temperatures, high winds (> 25 miles per hour), or dense fog. Where access was limited, observations were made from the nearest appropriate vantage points with the use of binoculars and spotting scopes. Surveys were conducted from approximately 1 hour before sunrise to 2 hours after sunset, when weather conditions were conducive to observing owls outside of burrows.

4.0 RESULTS

Field surveys were performed on 13 April, 08 May, 07 June, and 02 July 2013. Weather conditions during the surveys were sunny and clear, ambient temperature ranged from 50 to 85 degrees Fahrenheit, with wind speeds between 0-20 miles per hour. The study area is heavily disturbed with evidence of high levels of on- and off -highway vehicle and pedestrian related traffic, and historical agricultural practices. The study area supports non-native vegetation dominated by annual grass species including filaree (*Erodium cicutarium*), foxtail chess (*Bromus madtritensis* ssp. *rubens*), Russian thistle (*Salsola tragus*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*). Atriplex (*Atriplex polycarpa*), which is a native shrub was also detected throughout the study area during the surveys.

Several extremely low quality potential burrows were detected within the western portion of the study area, and one was observed near the center of the Project Site (Figure 2). Nonetheless, no Burrowing Owls were observed nesting, foraging, dispersing, or utilizing refuge habitats during pedestrian-based field surveys. Appendix A includes a list of avian species observed. Appendix B includes representative photographs of the study area.



Study Area (411 acres which includes a 500-ft buffer and the Project Site)

Project Site (241 acres)

Potential Burrow Locations

- Inactive

0 400 800 Feet

1 inch = 800 feet

Data Sources:
- BingMaps accessed Jul 2013
- Silverado Power 2013

Map Prepared: 7-5-13

Prepared by:
NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\LA County\North Lancaster Ranch BUOW Fig2. Potential Burrows.mxd

Figure 2. Potential Burrow Locations

5.0 CONCLUSIONS

No Burrowing Owls were observed within the study area. Given the low quality habitat and extent of anthropogenic disturbance; the Project Site seems unlikely to support Burrowing Owls. The data collected suggests that no Burrow Owls would be adversely affected by the Project.

6.0 REFERENCES

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APPENDIX A

AVIAN COMPENDIUM

APPENDIX A

AVIAN COMPENDIUM

Scientific name	Common name
Amphispiza belli	Sage Sparrow
Callipepla californica	California Quail
Carpodacus mexicanus	House Finch
Columba livia	Rock Pigeon
Corvus corax	Raven
Eremophila alpestris	Horned Lark
Passer domesticus	House Sparrow
Sturnella neglecta	Meadowlark
Tyrannus verticalis	Western Kingbird
Zenaida macroura	Mourning Dove
Zonotrichia leucophrys	White-crowned Sparrow

APPENDIX B

PHOTOGRAPHIC LOG

APPENDIX B

PHOTOGRAPHIC LOG

	Photograph: 1 **Facing South**
	Photograph: 2 **Facing North West**

Photograph: 3

Potential Burrow

BIOLOGICAL TECHNICAL REPORT
FOR THE NORTH LANCASTER RANCH PROJECT SITE (CUP 6)
CITY OF LANCASTER
LOS ANGELES COUNTY, CALIFORNIA

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SECTION 1.0 – INTRODUCTION

Silverado Power, LLC (Silverado Power) is an independent solar power producer and developer of distributed solar power assets for utilities that are both municipally and investor owned. Silverado Power strives to be a leader in wholesale solar power generation and the process of developing, building, and operating solar generation facilities (SGFs).

Chambers Group, Inc. (Chambers Group) was retained by Tetratech (for Silverado Power) to conduct a literature review and biological technical report (BTR) on the proposed North Lancaster Ranch Solar project site located in Los Angeles County, California. The purpose of this document is to report the results of the reconnaissance-level biological survey.

1.1 PROJECT DESCRIPTION

Silverado Power plans to develop the North Lancaster Ranch SGF (the Project). Project facilities would operate year-round, producing electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the fourth quarter of 2014.

The proposed Project would have a generating capacity of 20 megawatts alternating current (MW-AC) and be located on approximately 240 acres of primarily disturbed, ruderal, disturbed saltbush scrub and developed land in Los Angeles County. The Project will employ photovoltaic (PV) modules to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system.

The Project would meet the increasing demand for electricity generated from clean, renewable technology. Recent legislation enacted in California recognizes the multiple benefits associated with the development of renewable energy resources. These benefits include a reduced reliance on foreign sources of fuel, promotion of national security, diversification of energy portfolios, reductions in greenhouse gas emissions, and the creation of “green” jobs within the state of California.

1.2 PROJECT LOCATION

The proposed Project site is an approximately 240-acre site. The North Lancaster Ranch Solar Project site (APN: 3262-001-005, 3262-001-006) is located within the City of Lancaster, California, on the northeast corner of the intersection of West Avenue B and 105th Street West, approximately 10 miles east of Lancaster and adjacent to the Antelope Valley electrical substation. The Project site comprises approximately 240 acres of previously disturbed land. The project would include the development of approximately 240 acres (100 percent) of the designated location. The site is located within the *Little Buttes* California U. S. Geological Service (USGS) 7.5-minute quadrangle. The Project site is surrounded by old agricultural fields and a few small areas of development. The Project Regional Map is provided as Figure 1, and the Project Vicinity Map is provided as Figure 2.

Figure 1: Project Regional Map

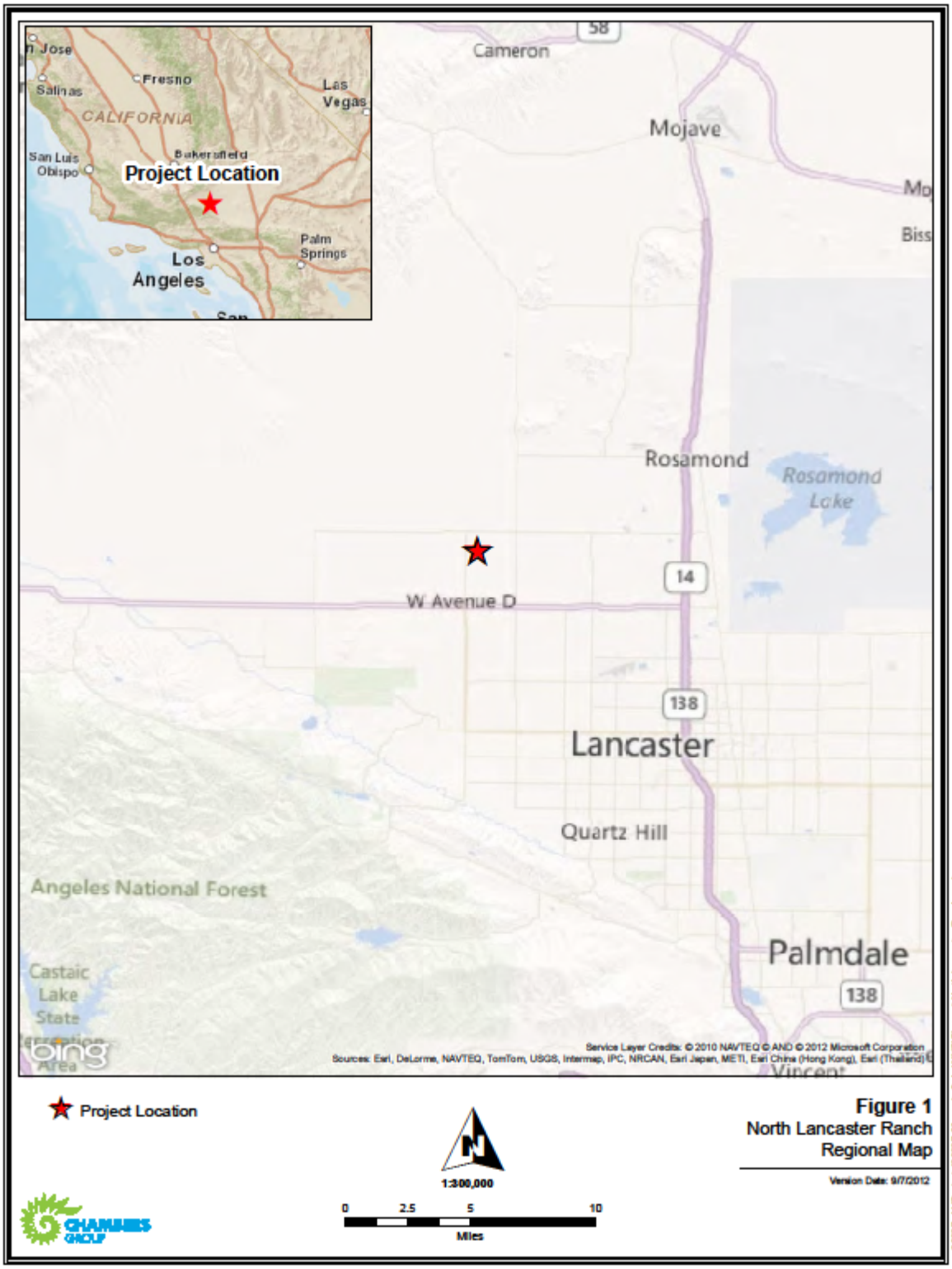
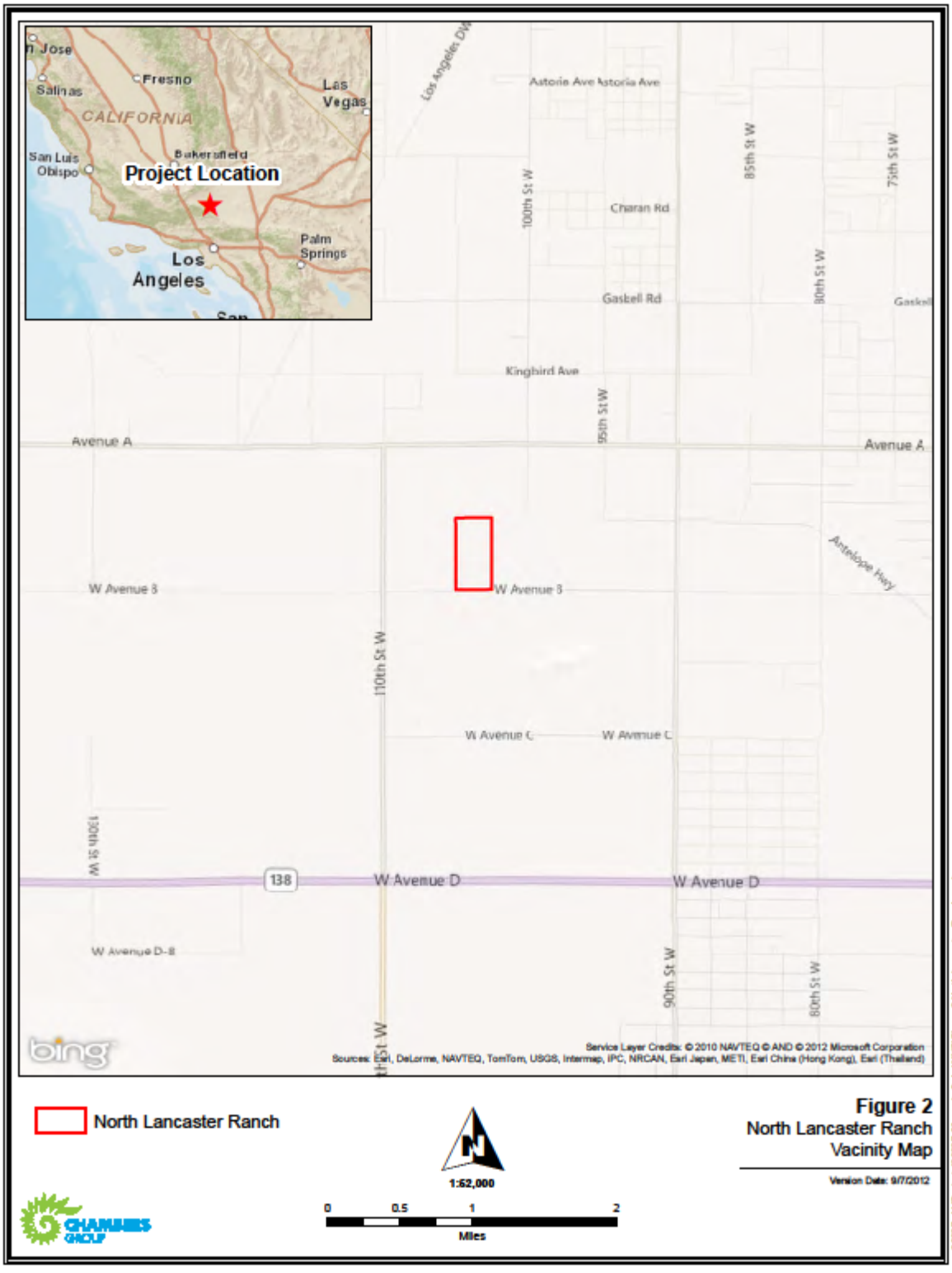


Figure 2: Project Vicinity Map



SECTION 2.0 – METHODS

2.1 LITERATURE REVIEW

Prior to conducting the field surveys, existing documentation relevant to the Project site was reviewed. The most recent records of the California Department of Fish and Game California Natural Diversity Database (CNDDB 2011) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2011) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Fairmont Butte, Little Butte, Rosamond, Rosamond Lake, Redman, Alpine Butte, Lancaster East, Lancaster West, Del Sur, Lake Hughes, Burnt Peak, Little Rock, Lovejoy Buttes,* and *El Mirage*, California USGS 7.5-minute quadrangles). The database contains records of reported occurrences of federally or state listed as endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Special Concern (CSC), or otherwise sensitive species or habitats that may occur within or in the vicinity of the Project site.

2.2 BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

The field survey was conducted on the Project site in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support special status wildlife species and to identify any potential jurisdictional waters of the United States. Chambers Group biologists Nichole Cervin and Kun Liu conducted the general reconnaissance survey and focused plant survey on May 18, 2011. Weather conditions during the survey included temperatures averaging approximately 65 degrees Fahrenheit with 15 percent cloud cover and no precipitation. On September 6, 2012, Chambers Group biologists Rebecca Alvidrez and Leslie Levy conducted a general reconnaissance survey within an expansion area of the Project site adjacent to the original proposed Project site. Weather conditions during the September 6 survey included temperatures averaging 88 degrees Fahrenheit with 15 percent cloud cover and no precipitation. During the survey the biologists walked the Project site documenting the native vegetation communities and took notes regarding the potential for special status species and jurisdictional waters to occur onsite. Photographs of the Project site were also taken to document existing conditions.

2.3 VEGETATION

All plant species and soil types observed onsite were noted. Plant communities on the Project site were identified, qualitatively described, and mapped onto an aerial photograph. Plant communities were determined in accordance with the categories set forth in Holland (1986) or Gray and Bramlet (1992). Plant nomenclature follows that of *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012).

2.4 WILDLIFE

All wildlife and wildlife sign observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support state and/or federally listed or proposed listed species. Photographs of the site are provided in Appendix B.

SECTION 3.0 – RESULTS

3.1 LITERATURE REVIEW

According to the literature review, 19 special status plant and 31 special status wildlife species were documented to occur within the vicinity of the Project site. This list included 10 wildlife species that are federally and/or state listed as endangered or threatened. Of the 19 special status plant species listed in the literature review, none are federally and/or state listed as endangered or threatened.

3.2 VEGETATION COMMUNITIES

The Project site is classified as Disturbed, Disturbed Saltbush Scrub, and Developed. North Lancaster Ranch is surrounded by fallow agriculture fields and areas of small development. A map showing the location of the vegetation communities observed onsite is provided as Appendix A.

3.2.1 Disturbed

Disturbed areas are those areas that are either devoid of vegetation (cleared or graded), such as dirt roads, or those areas that have a high percentage of non-native weedy species (i.e., greater than 25 percent of the species cover)

Disturbed Areas are present within the Project in a small section along the southern half of the Project site. Plant species found on the project site include: red-stemmed filaree (*Erodium cicutarium*), common fiddleneck (*Amsinckia* sp.) and wreathplant (*Stephanomeria* sp.).

3.2.2 Disturbed Saltbush Scrub

Disturbed Desert Saltbush Scrub is similar to intact Desert Saltbush Scrub, in which saltbush species (*Atriplex* sp.) remain an important component; but this community is of low-quality with a higher percentage of non-native weedy species (i.e., greater than 20 percent of the species composition) and shows evidence of prior disturbance from grading, over-grazing, or other ground-disturbance activities. Cover of native vegetation in this community is low with much bare ground between the widely spaced shrubs. Microhabitat consists of fine-textured, poorly drained soils with high alkalinity and/or salinity surrounding playas on slightly higher ground at elevations below 4,000 feet above mean sea level (amsl) (Holland 1986).

The Project site is comprised primarily of Disturbed Saltbush Scrub. Plant species found within this site typical of this vegetation community include: four-wing salt bush (*Atriplex canescens*), allscale (*Atriplex polycarpa*), foxtail chess (*Bromus madritensis* ssp. *rubens*), tall tumblemustard (*Sisymbrium altissimum*), and western tansy-mustard (*Descurainia pinnata*).

3.2.3 Ruderal

Areas classified as Ruderal are dominated by pioneering herbaceous species that readily colonize disturbed ground and are typically found in temporary, often frequently disturbed habitats (Barbour et al. 1999). The soils in ruderal areas are characterized as heavily compacted or frequently disturbed. The vegetation in these areas is adapted to living in compact soils where water does not readily penetrate the soil.

Areas considered Ruderal make up the western portion of the Project site. Plant species found within the Project site include: common fiddleneck (*Amsinckia* sp.), tumbling pigweed (*Amaranthus albus*), brome (*Bromus* sp.), dove weed (*Croton segiterus*), annual sunflower (*Helianthus anuus*), barley (*Hordeum* sp.), and Russian thistle (*Salsola tragus*).

3.2.4 Developed

Developed areas are areas that have been altered by humans and now display man-made structures such as houses, paved roads, buildings, parks, and other maintained areas.

Developed areas are present within the Project in a small area along the western border in the southern half of the Project site.

3.3 JURISDICTIONAL FEATURES

Chambers Group conducted a preliminary assessment for jurisdictional features found on the Project site. A formal delineation was not conducted.

3.4 SPECIAL STATUS SPECIES

The following information is a list of abbreviations used to help determine the significance of biologically sensitive resources potentially occurring on the Project site.

CNPS

List 1A	=	Plants presumed extinct in California.
List 1B	=	Plants rare and endangered in California and throughout their range.
List 2	=	Plants rare, threatened, or endangered in California but more common elsewhere in their range.
List 3	=	Plants about which we need more information; a review list.
List 4	=	Plants of limited distribution; a watch list.

CNPS Extensions

0.1	=	Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2	=	Fairly endangered in California (20 to 80 percent occurrences threatened).
0.3	=	Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE	=	Federally listed; Endangered
FT	=	Federally listed; Threatened
FC	=	Federal Candidate for listing
FPT	=	Federal Proposed listing as Threatened

State

ST	=	State listed; Threatened
SE	=	State listed; Endangered

RARE = State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC = State Species of Special Concern
WL = California Department of Fish and Game (CDFG) Watch List

3.5 SENSITIVE SPECIES DESCRIPTIONS

The following is a description of sensitive plant and wildlife species with the potential to occur in the Project vicinity.

3.5.1 Sensitive Plant Species in the Los Angeles County Area

Alkali Mariposa Lily (*Calochortus striatus*)

Alkali mariposa lily is a CNPS List 1B.2 species. This perennial, bulbiferous herb flowers between April and June. This species occurs on alkaline and mesic soils within chaparral, Chenopod Scrub, Mojavean Desert Scrub, and Meadows and Seeps habitats at elevations between 230 and 5,233 feet amsl. Known range for this species includes: Kern, Los Angeles, San Bernardino, and Tulare counties. Threats to alkali mariposa lily include groundwater pumping, urbanization, grazing, trampling, road construction, water diversion resulting in lowering the water table, and possibly horticultural collecting.

Barstow Woolly Sunflower (*Eriophyllum mohavense*)

Barstow woolly sunflower is a CNPS List 1B.2 species. This annual herb flowers between March and May. Barstow woolly sunflower occurs within Chenopod Scrub, Mojavean Desert Scrub, and Playas habitats at elevations between 1,640 and 3,150 feet amsl. Known range for this species includes: Fresno, Kern, Los Angeles, and San Bernardino counties. Threats to this species include vehicles, grazing, energy development, and road improvements.

Clokey's Cryptantha (*Cryptantha clokeyi*)

Clokey's cryptantha is a CNPS List 1B.2 species. This annual herb flowers in April. Clokey's cryptantha occurs within Mojavean Desert Scrub habitat at elevations between 2,379 and 4,478 feet amsl. Known range for this species includes: Inyo, Los Angeles, and San Bernardino counties. Major threats to this species include military activities and alteration of fire regimes.

Darwin Rock Cress (*Arabis pulchra* var. *munciensis*)

Darwin rock cress is a CNPS List 2.3 species. This perennial herb flowers in April. Darwin rock cress occurs in carbonate soils of Chenopod Scrub and Mojavean Desert Scrub habitats at elevations between 3,608 and 6,807 feet amsl. Known range includes Inyo, Los Angeles, and San Bernardino counties.

Davidson's Bush Mallow (*Malacothamnus davidsonii*)

Davidson's bush mallow is a CNPS List 1B.2 species. This perennial deciduous shrub flowers between June and January. Davidson's bush mallow occurs within chaparral, Coastal Scrub, Cismontane Woodland, and riparian woodland habitats at elevations between 607 and 2,805 feet amsl. Known ranges include: Los Angeles, Monterey, Santa Clara, San Mateo, and San Luis Obispo counties. Urbanization, maintenance activities, and erosion are the main threats to this species.

Desert Cymopterus (*Cymopterus deserticola*)

Desert cymopterus is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs on sandy soils within Mojavean Desert Scrub and Joshua Tree Woodland habitats at elevations between 2,066 and 4,921 feet amsl. Known range for this species includes: Kern, Los Angeles, and San Bernardino counties. Threats to desert cymopterus include military activities, sheep grazing, vehicles, utility construction, and urbanization.

Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*)

Horn's milk-vetch is a CNPS List 1B.1 species. This annual herb flowers between May and October. This species occurs along lake margins in poorly drained, alkaline soils of Meadows and Seeps and Playas habitats at elevations between 195 to 2,790 feet amsl. Known ranges include Inyo, Kern, and San Bernardino counties and Nevada. Poisonous to sheep, it was subject to eradication by farmers in the early 1900s; current threats to Horn's milk-vetch are habitat alterations.

Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*)

Lancaster milk-vetch is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs within Chenopod Scrub habitat. Known ranges include Kern, Los Angeles, and San Bernardino counties and Nevada. Limited range, including areas only near Lancaster and Edwards Air Force Base, is the major threat to Lancaster milk-vetch.

Pale-Yellow Layia (*Layia heterotricha*),

Pale-yellow layia is a CNPS List 1B.1 species. This annual herb flowers between March and June. This species occurs in alkaline or clay soils within Cismontane Woodland, Coastal Scrub, Pinyon-Juniper Woodland, and Valley and Foothill Grassland habitats at elevations between 984 and 5,594 feet amsl. Known ranges include Fresno, Kern, Kings, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, San Benito, and Ventura counties. Threats to pale-yellow layia include vehicle use, competition from non-native plants, agricultural conversion, and grazing.

Parish's Popcorn-Flower (*Plagiobothrys parishii*)

Parish's popcorn-flower is a CNPS List 1B.1 species. This annual herb flowers between March and November. This species occurs on alkaline and mesic soils within Great Basin Scrub and Joshua Tree Woodland habitats at elevations between 2,460 and 4,595 feet amsl. Known range for this species includes: Inyo, Los Angeles, Mono, and San Bernardino counties. Threats to Parish's popcorn-flower include groundwater pumping.

Parry's Spineflower (*Chorizanthe parryi* var. *parryi*)

Parry's spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and June. This species occurs in sandy or rocky soils and openings within Cismontane Woodland, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 902 and 4,002 feet amsl. Known ranges include Los Angeles, Riverside and San Bernardino counties. Threats to this species include development, altered flood regime, mining, vehicles, and competition from non-native plants.

Peirson's Morning-Glory (*Calystegia peirsonii*)

Peirson's morning-glory is a CNPS List 4.2 species. This perennial, rhizomatous herb flowers between April and June. This species occurs within chaparral, Chenopod Scrub, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, and Valley and Foothill Grassland habitats at elevations between 98 and 5,085 feet amsl. Its known range includes Los Angeles County. Major threats to Peirson's morning-glory include grazing and development; possible threats include power line construction.

Recurved Larkspur (*Delphinium recurvatum*)

Recurved larkspur is a CNPS List 1B.2 species. This perennial herb flowers between March and June. This species occurs on alkaline soils within Chenopod Scrub, Cismontane Woodland, and Valley and Foothill Grassland habitats at elevations between 10 and 2,460 feet amsl. Known ranges of the recurved larkspur include: Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solana, Sutter, and Tulare counties. Conversion of habitat, grazing, and trampling are threats to the recurved larkspur.

Round-Leaved Filaree (*California macrophylla*)

Round-leaved filaree is a CNPS List 1B.1 species. This annual herb flowers between March and May. Round-leaved filaree occurs in clay soils within Cismontane Woodland and Valley and Foothill Grassland habitats at elevations between 50 and 3,937 feet amsl. Known ranges include Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, Santa Barbara, San Benito, Santa Clara, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Ventura, and Yolo counties and Santa Cruz Island. Threats to this species include urbanization, feral pigs, habitat alteration, pipeline construction, urbanization and competition from non-native plants.

Sagebrush Loeflingia (*Loeflingia squarrosa*)

Sagebrush loeflingia is a CNPS List 2.2 species. This annual herb flowers between April and May. This species occurs in sandy soils of Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub habitats at elevations between 2,295 and 5,300 feet amsl. Known range includes Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino counties and Nevada, Oregon, and Wyoming. Possible threats to sagebrush loeflingia include off-highway vehicles and grazing.

San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*)

San Fernando Valley spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and July. This species occurs in sandy soils of Coastal Scrub and Valley and Foothill Grassland habitats at elevations between 492 and 4,002 feet amsl. Known range includes Los Angeles, Orange, and Ventura counties. Possible threats to this species include competition from non-native plants and development.

Short-Joint Beavertail (*Opuntia basilaris brachyclada*)

Short-joint beavertail is a CNPS List 1B.2 species. This perennial stem succulent flowers between April and June. This species occurs within chaparral, Mojavean Desert Scrub, Joshua Tree Woodland, and Pinyon-Juniper Woodland habitats at elevations between 394 and 5,905 feet amsl. Known range for this

species includes Los Angeles and San Bernardino counties. Major threats to short-joint beavertail include vehicles, grazing, urbanization, mining, and horticultural collecting; possible threats include power line construction.

Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*)

Slender mariposa lily is a CNPS List 1B.1 species. This perennial, bulbiferous herb flowers between March and June. This species occurs within chaparral, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 1,050 and 3,280 feet amsl. Known ranges include Los Angeles and Ventura counties. Threats to slender mariposa lily include vehicles, development, mining, and competition from non-native plants.

White Pygmy-Poppy (*Canbya candida*)

White pygmy-poppy is a CNPS List 4.2 species. This annual herb flowers between March and June. This species occurs on gravelly, sandy, or granitic soils within Joshua Tree Woodland, Mojave Desert Scrub, and Pinyon-Juniper Woodland habitats at elevations between 600 and 4,800 feet amsl. Known ranges include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino counties. This species is threatened by development, off-highway vehicles, grazing, mining, and competition from non-native plants.

3.5.2 Sensitive Wildlife Species in the Los Angeles County Area

American Badger (*Taxidea taxus*)

The American badger is a California Species of Concern (CSC). This carnivorous species ranges over most of the western and upper midwestern United States south into central Mexico. In California, the badger may occupy a variety of habitats, especially grasslands, savannas, montane meadows, sparse scrublands, and deserts. It prefers friable soils for burrowing and relatively open, uncultivated ground. Prey items include gophers, ground squirrels, marmots, kangaroo rats, other rodents, and the occasional reptile or amphibian. The American badger may weigh up to 25 pounds and is easily recognized by its overall yellowish gray coloration, the white stripe on top of its head, white cheeks, and black feet with noticeably long front claws. It is a heavy-bodied animal with short legs and a characteristic pigeon-toed gait. It is chiefly nocturnal, but it is often seen by day as well. It gives birth to two to five young anywhere from February to May, depending on its altitude and latitude. Threats to this species include habitat loss to agriculture, housing, and other land conversions and illegal hunting.

Arroyo Toad (*Anaxyrus californicus*)

The arroyo toad is federally listed as an endangered (FE) species and a CSC. The range of this species is within coastal California from Monterey County into northwestern Baja California, Mexico. It is found in washes, streams, and arroyos; and preferred habitats include sandy banks within riparian woodlands such as willow, cottonwood, sycamore, mule fat, and/or coast live oak. It breeds in shallow, sandy/gravelly riverine pools with low silt content and normally disperses onto adjacent uplands after breeding. Individuals have been observed up to 2 kilometers (km) from the streams in which they breed, but most often they are within 0.5 km of those streams (USFWS 1992a). During the breeding season, males call nocturnally from open areas on banks at the edges of streams. Males typically precede females at breeding sites. Females lay their eggs among gravel, leaves, or sticks on mud or clean sand within low to moderately flowing sections of streams in areas with little or no emergent vegetation and little woody marginal growth. Newly metamorphosed individuals remain near pools for up to several

weeks until the areas dry. Juveniles begin feeding primarily on ants and shift to small beetles as they grow (Sweet 1991) before moving into adjacent wintering grounds. Many spend the next 6 to 8 months overwintering in burrows up to 20 centimeters deep in sandy substrates of these habitats. Adults obtain shelter primarily by burrowing into fine, sandy soils in both adjacent and upland habitats (Sweet 1991). This small to moderately-sized species is distinguished from other toads by its chevron-shaped marking between the eyes and by the lack of a mid-dorsal stripe. Coloration may vary from light olive-gray to tannish brown above, and the unmarked undersurfaces are creamy to dirty white. The iris is dark brown with scattered gold iridophores on the upper and lower portions of the iris. The primary threat to this species is habitat loss.

Bell's Sage Sparrow (*Amphispiza belli belli*)

The Bell's sage sparrow is a subspecies of sage sparrow and a CDFG Watch List (WL) species. It breeds primarily in chamise chaparral along the coastal side of California from the western foothills of the Sierra Nevada to San Diego County and northwest Mexico. It also breeds less commonly in coastal sage, mixed chaparral, and big sagebrush communities. Wintering birds of this subspecies may migrate to desert floors or remain in their breeding habitats. This species is distinguished from other sparrows by its gray head and back, thin white eye-ring, single dark breast spot, and heavy whisker-like pattern about the face. Populations are in decline due to habitat loss and fragmentation, frequent wildfires, grazing, invasive plants, and brood parasitism caused by the brown-headed cowbird (*Molothrus ater*).

Burrowing Owl (*Athene cunicularia*)

The burrowing owl, a CSC, is broadly distributed across the western United States, with populations in Florida and Central and South America. Burrowing owls use a variety of natural and modified habitats for nesting and foraging, typically characterized by low-growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrublands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. Burrowing owls typically use burrows made by mammals such as California ground squirrels (*Spermophilus beecheyi*), foxes, or badgers. They sometimes dig their own burrows and will often utilize man-made structures such as earthen berms; cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls often are found within, under, or in close proximity to man-made structures. Prey sources for this species include small rodents; arthropods such as spiders, crickets, centipedes, and grasshoppers; smaller birds; amphibians; reptiles; and carrion. Threats to the burrowing owl include loss of nesting burrows, habitat loss, and mortality from motor vehicles.

California Red-Legged Frog (*Rana aurora draytonii*)

The California red-legged frog is federally listed as a threatened (FT) species and a CSC. It is found from Mendocino County in California south to northwestern Baja, Mexico. It may occur in a variety of habitats from near sea level to 8,000 feet in elevation and is strongly associated with permanent sources of water, including cattail and tule marshes, reservoirs, ponds, and stream sides. It prefers deep, still, or slow-moving water with low salinity levels and shallow margins or riffle zones. This species may disperse far from water (up to one mile) during and after significant rain events, and other habitats may include moist woodlands and grasslands from the lowlands through the foothills. It may make seasonal movements into riparian thickets and upland habitats for foraging, where it may seek small mammal burrows, leaf litter, or other moist areas of refuge for shelter or hibernation. The metamorphosis of this

species is slower than most large frog species, requiring 11 to 20 weeks of permanent water for larval development. Most individuals have a dark mask bordered by a whitish jaw stripe; a reddish-orange venter; and coarse red, yellow, black, and/or gray mottling in the groin. This subspecies of the red-legged frog has experienced dramatic population declines since the late nineteenth century; some estimates claim a 75 percent rate of disappearance from its former range. Threats to this species include habitat loss and predation by non-native species such as bullfrogs and non-native fishes. In addition, this species was historically exploited as a source of frog legs for human consumption.

Coast Horned Lizard (*Phrynosoma blainvillii*)

The coast horned lizard is a CSC found along the Pacific coast of California on the western side of the Sierra Mountains to the Baja peninsular area in Mexico. This species is found in many habitats, including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet amsl. It inhabits sandy washes or areas with loose, fine, sandy soils for burying and having low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native species of ants. Populations of this species have been reduced due to development, agriculture, and the introduction of Argentine ants that heavily compete with native ant species (Stebbins 2003). This species is approximately 2 to 4 inches in snout to vent length (adult) with numerous elongated and pointed scales (spines) on the dorsal side and two rows of enlarged scales along the flank. This species is brown, yellowish, reddish, or gray with several dark bands that cross the back with highlighted white areas along the rear of the bands (Sherbrooke 2003).

Cooper's Hawk (*Accipiter cooperii*)

The Cooper's hawk (nesting) is a CDFG WL species. This species occurs as a migrant and/or resident over most of the United States from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known to breed in suburban and urban areas with tree structure similar to native habitats. This medium-sized (14 to 20 inches) hawk is well-adapted for hunting birds as prey with its long tail and short, rounded wings; these features allow maneuverability in pursuit and on the ambush. It is similar in appearance to the sharp-shinned hawk (*Accipiter striatus*) but is distinguished by its larger size, more rounded tail, and darker crown. In addition to birds, it may also take amphibians, reptiles, and small mammals as supplemental prey items. Historic population losses resulted from the widespread use of DDT. Other threats include habitat loss and illegal hunting (Remsen 1978).

Desert Tortoise (*Gopherus agassizzi*)

The desert tortoise is federally and state listed as a threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo counties as well as most of San Bernardino, Riverside, and Imperial counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. It is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer

gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark gray-brown. Besides range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

Ferruginous Hawk (*Buteo regalis*)

The ferruginous hawk (wintering) is a CDFG WL species. This species nests from the Canadian prairie provinces south to Oregon, Nevada, Arizona, and Oklahoma and winters in the southern half of its breeding range as well as the southwestern states from California to west Texas, then south into Mexico. It requires large, open areas of grassland, sparse shrub, or desert habitats interspersed with trees. It roosts in open areas, usually on lone trees, cliff ledges, or hill scarps. It winters in open terrain from grasslands to deserts where pocket gophers, ground squirrels, or rabbits are abundant; and it nests in either natural or human-made structures or on cliffs, buttes, cut banks, shrubs, or trees. In addition to pocket gophers, ground squirrels, and rabbits, it also eats prairie dogs, snakes, lizards, birds, large insects, and other rodents. The ferruginous hawk has distinct light and dark morphs. Light morphs are reddish or light brown above and whitish below, with rusty leg feathers and a pale tail. Dark morphs are uncommon in about less than 10 percent of the population and are a deep rufous to brown above and below with very bright white on the underside of the flight feathers and a narrow, white crescent on the underside of the wrist (Sibley 2003). This species is the largest of the buteos. The biggest threat to the ferruginous hawk is habitat loss, fragmentation, or degradation resulting from land use practices including conversion of native habitat to agriculture, urbanization, improper grazing practices, and conversion of shrubland to grassland (Collins and Reynolds 2005). Other threats include illegal shooting and collisions with cars.

Least Bell's Vireo (*Vireo bellii pusillus*)

The least Bell's vireo was state listed as an endangered (SE) subspecies of Bell's vireo by CDFG in 1980 and federally listed as endangered by the U.S. Fish and Wildlife Service (USFWS) in 1986. Critical habitat for the least Bell's vireo was designated in 1994 (USFWS 1986). The least Bell's vireo subspecies is restricted to coastal and inland southern California and Baja California, Mexico. Its winter range extends along the Pacific coast from northern Mexico south to northern Nicaragua. The two major factors in the decline of least Bell's vireo populations are loss of habitat and nest parasitism by the brown headed-cowbird. Habitat loss, fragmentation, and degradation, especially along streams and rivers, due to development, agriculture, flood control projects, logging operations, and intensive cattle grazing practices, are the greatest threats to the continued existence of the least Bell's vireo. The least Bell's vireo is a small, gray songbird with pale yellow wash on its sides, two faint wing bars, and a faint eye ring. Preferred nesting habitat is low, dense, scrubby vegetation in early successional areas that are particularly dependent on riparian areas. Habitats may include willow woodlands and dense mule fat, scrub oak, coastal chaparral, and mesquite patches with dense early successional understories.

Le Conte's Thrasher (*Toxostoma lecontei*)

The Le Conte's thrasher is a CSC in the San Joaquin Valley area. It occurs in deserts of the southwest United States, southwestern Utah, southern Arizona, and northwestern Mexico (Weigand and Fitton 2008). Habitat includes open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; and in Joshua tree habitat with scattered shrubs. Le Conte's thrasher is a medium-sized songbird

with a long dark tail, black decurved bill, and a plain grayish or sandy-colored body. It is distinguished from other thrashers by its unspotted breast, deep buff crissum, dark eye, and dark tail that contrasts sharply with its body. Le Conte's thrashers forage as generalists on bare ground and in vegetation litter under shrubs by scratching the soil and overturning objects (Weigand and Fitton 2008). In some parts of its range, this thrasher has lost extensive habitat to development and where irrigated lawns, groves, and fields have been created over valuable xeric habitat. Development, wild burros, off-road vehicle recreation, and invasive plant species threaten this species (Weigand and Fitton 2008).

Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike (nesting) is a CSC. Its range includes most of the United States from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua tree woodlands, and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other structures that serve as lookout posts for potential prey. Loggerhead shrikes prefer dense, thorny shrubs and trees, brush piles, and tumbleweeds for nesting (Seattle Audubon Society 2008). Both adults gather nesting materials, including twigs, grass, hair, feathers, and green vegetation; but only females build the cup-shaped nests. They lay between 5 and 6 eggs, which are incubated for 15 to 17 days; and nestlings will leave the nest after 17 to 20 days but will not fly for another week (Seattle Audubon Society 2008). The loggerhead shrike is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. This bird has a habit of caching its food for later consumption by impaling its prey on thorns, sharp twigs, or barbed wire; hence the term "butcher bird." It is recognized by its black facial mask; overall gray, black, and white color pattern; relatively big head; and hook-tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988; Scott and Morrison 1990).

Merlin (*Falco columbarius*)

The merlin (wintering) is a CDFG WL species. This species breeds in the northern parts of the Northern Hemisphere and winters in northern South America and northern Africa. In California, it occurs as a winter resident. Breeding habitats include open woodlands, savannas, cliffs near grasslands, and tundra. Migratory habitats include foothills, marshes, and open coastlines. Wintering habitats include open grasslands, semi-open forests, and coastal areas (i.e., beach dunes, marshes, and tidal flats). The merlin is a small falcon, slightly larger than the American kestrel (*Falco sparverius*), and appears heavier and bulkier in flight than the kestrel. The adult male merlin has a gray-blue back and crown and rufous washes on the sides of the breast. The adult female may be up to 30 percent larger than the male and has a brown back. The merlin mainly feeds on other birds, especially migrating and over-wintering waterfowl and shorebirds. Threats to its populations include habitat loss, pesticide use, and heavy metal poisoning.

Mohave Ground Squirrel (*Spermophilus mohavensis*)

The Mohave ground squirrel is state listed as a threatened (ST) species. The Mohave ground squirrel is specific to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Johnson 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 1998a). Mohave ground squirrels inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils and will

also feed in annual grasslands (Johnson 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study showed that most of their diet includes seeds from winter fat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and saltbush (Laabs 1998a). Mohave ground squirrels are active in spring and early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (Johnson 1990).

Mountain Plover (*Charadrius montanus*)

The mountain plover (wintering) is a CSC and a federally Proposed Threatened Species. This species breeds from the prairie and sagebrush country of north-central Montana, eastern Wyoming, and the area around southeastern Colorado. It winters from central California along the southern border states southward to northern Mexico (Udvardy 1977). Breeding habitats include semi-arid plains, grasslands, and plateaus. Common wintering habitats consist of dry, barren ground;smooth dirt fields; agricultural fields; and shortgrass prairies. This species tends to form small flocks in the winter. It is one of the few shorebird species that prefers habitats away from water. It is an insectivore that eats flies, beetles, grasshoppers, crickets, and other insects. The mountain plover is a relatively nondescript shorebird with a short tail, long legs, plain brown plumage above, and whiter plumage below. Males develop a black patch on the forehead during the breeding season. This species is sometimes confused with the American golden plover; but, unlike in that species, the belly and under-wing is a clean, white color and the legs are pale. Populations are in decline due to overgrazing practices and are also linked to declining prairie dog populations; mountain plovers often use prairie dog mounds as nest sites. The continued loss and alteration of habitats on breeding and wintering grounds are the primary threats to the mountain plover.

Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*)

The Nelson's antelope squirrel is state listed as a threatened species. Nelson's antelope squirrels are restricted to the central and western areas of the San Joaquin Valley and inner coast ranges from 165 to 3,608 feet amsl. This species is found in alkali desert scrub and annual grasslands habitats on a variety of soil types including alluvial, loamy, sandy, gravely, or fine-textured sands. This species rarely digs its own burrows, preferring instead to use burrows made by other small mammals. Nelson's antelope squirrels are diurnally active, with most activity occurring in the early morning or late afternoon. This species is buff and yellow-brown above with a white stripe on each side and white under its tail. It can reach up to 10 inches in length. Nelson's ground squirrels feed primarily on grass and forb seeds, insects, and other green vegetation. The primary threats to this species include loss of habitat due to agriculture, urbanization, petroleum extraction, and rodent control poisons (Whitaker et al. 2008).

Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*)

The pallid San Diego pocket mouse is a CSC. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican border. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus; and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or coarse gravel (Grinnell 1933; Miller and Stebbins

1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and pinyon-juniper woodlands. Pallid San Diego pocket mouse densities have been recorded as high as 39 per hectare (Lackey 1996). This species is similar in appearance to *C.f. fallax* but is lighter in overall coloration. Population declines may be due to urban and agricultural development.

San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*)

The San Bernardino kangaroo rat is federally listed as an endangered (FE) species and a CSC. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about seven distinct populations. It prefers gravelly and sandy soils in alluvial habitats where it constructs underground burrows, and it rarely occurs in dense vegetation. This species is a small, nocturnally active rodent with pale yellow and dusky brown fur and dark brown tail stripes, footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in its burrows for later consumption. It also consumes some green vegetation and insects when available. The primary threats to the continued existence of this species include habitat loss, degradation, and fragmentation due to developments related to housing, mining, and flood control (CDPR 1998).

Sierra Madre Yellow-Legged Frog (*Rana muscosa*)

The Sierra Madre yellow-legged frog is federally listed as endangered (FE), a state candidate for listing as endangered (SCE), and a CSC. This species is found in the Sierra Nevadas from Fresno County to Kern County; and isolated populations are found in the San Gabriel, San Bernardino, and San Jacinto mountains of southern California, ranging in elevation from 4,500 to 11,980 feet amsl. This species was previously known as the mountain yellow-legged frog but is now considered a separate species from those found north of the Kings River north and middle forks, known as the Sierra Nevada yellow-legged frog (*Rana sierrae*). Sierra Madre yellow-legged frogs range in size from 1.5 to 3.5 inches snout to vent length; and coloration is highly variable with olive, yellow, or brown with black or brown speckling above and pale yellow to orange below and on the hind legs (Calherps 2011b). They can be distinguished from *Rana sierra* by having slightly longer hind legs and a different mating call; both smell like garlic when handled (Calherps 2011b). Sierra Nevada populations occur in montane riparian, lodgepole pine, subalpine conifer, and wet meadows in association with lakes, ponds, and streams; southern California populations are found in lakes, ponds, and streams of montane conifer-hardwood, montane riparian, and ponderosa pine habitats. Adults feed on aquatic and terrestrial invertebrates; tadpoles feed on algae and diatoms. Sierra Madre yellow-legged frogs are closely associated with aquatic environments and can be found in vegetation or on perching rocks within a few feet of water, diving into the water when threatened. They lay their eggs in shallow water and attach them to gravel or rocks; tadpoles can take up to two over-wintering periods to complete their aquatic development. They are diurnally active and will hibernate over the winter under the ice, and southern populations may estivate. Threats to this species include bullfrogs, non-native trout, cattle grazing, mining, off-road vehicles, public dumping, chytrid fungus, fires, and excessive flooding (Calherps 2011b).

Short-Eared Owl (*Asio flammeus*)

The short-eared owl (nesting) is a CSC. The range of this species is nearly worldwide; and in North America, it breeds in northern Canada and Alaska as well as in large portions of the western United

States and the Great Lakes area. In California, this species is an uncommon winter migrant in the Central Valley, Sierra Nevada, and southern California; and it is known to breed from the San Francisco area north. Migrants arrive in California in September to October and leave in April. Habitats include grasslands, prairies, dunes, tundra, meadows, irrigated fields, wetlands, and fresh and saltwater marshes. Within these open habitat types, it prefers denser areas where it can seek cover along the ground. Short-eared owls nest in depressions on dry ground where vegetation provides cover; nests are built with grasses, sticks, feathers, and forbs. Clutch size ranges from 3 to 14 eggs. Eggs are laid in April and incubated for 24 to 37 days, and the young fledge after 21 to 36 days. This owl is mostly active at night, but it may forage by day in late afternoons or on cloudy days. Although it feeds mostly on voles and other small mammals, it will also eat birds, amphibians, reptiles, and arthropods. It characteristically flies in an erratic and buoyant manner, low over open areas, before plunging feet first to catch prey. The short-eared owl is a relatively medium-sized owl with an overall tawny brown color and buffy wing patches. It has bold, yellow eyes that contrast sharply with its dark facial discs. Predators include golden eagles, great horned owls, snowy owls, and peregrine falcons. Small predatory mammals and large reptiles prey on eggs. Competitors include gulls, northern harriers, barn owls, and other owls. Overgrazing, destruction, and fragmentation of grasslands and wetland habitats, increased nest predation, and illegal shooting are all factors in the decline of this species.

Silvery Legless Lizard (*Anniella pulchra pulchra*)

The silvery legless lizard is a CSC. Its range extends from San Francisco Bay in California to northwestern Baja California, Mexico; and it can also be found on a few offshore islands of California. This species is found in chaparral, pine-oak woodlands, riparian woodlands, and also on beaches from sea level to around 5,100 feet amsl. It occurs less commonly in desert scrub. Within these habitats, it prefers loose soils or sand for burrowing, moisture, warmth, and plant cover (Stebbins 2003). It forages in leaf litter during the day for insects such as termites, spiders, beetles, and larvae. On warm evenings, it may emerge to forage during the night. This legless lizard has a silver, gray, or beige dorsal coloration with a dark mid-dorsal line and is yellow below. The primary threats to the continued existence of this species include habitat loss due to agriculture and urban sprawl, overabundant non-native vegetation (i.e., iceplant on sand dunes), sand mining operations, off-road vehicle use, and other anthropogenic disturbances, including trampling and over-collecting for the pet trade.

Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*)

The southern California rufous-crowned sparrow is a CDFG WL species. It is one of 17 recognized subspecies of the rufous-crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico. This sub-species is a resident of southwest California on the slopes of the Transverse and Coast ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martín Island. Habitats include broken sage scrub and chaparral; native grasslands with sparse shrubs; and rocky, brush-laden hillsides and canyons with open patches. It is a small nondescript sparrow with a rusty crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

Southern Grasshopper Mouse (*Onychomys torridus ramona*)

The southern grasshopper mouse is a CSC. It occurs throughout desert and semi-arid habitats in the southwestern United States and much of Mexico, including western Nevada; the southern portions of California, Arizona, and New Mexico; northern Baja California; western Texas; and south to central Mexico (Hall 1981). The subspecies *ramona* is restricted to coastal southern California, with marginal records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley (Hall 1981). The grasshopper mouse rangewide is often found in low, arid scrub and semi-scrub vegetation; but this subspecies is found in grasslands and sparse sage scrub habitats. It nests in burrows often dug by kangaroo rats and pocket gophers, but it may dig its own burrows in sandy or other friable substrates (Baily and Sperry 1929; Stapp 1997). Specific habitat requirements of the southern grasshopper mouse generally are unknown, but Stapp (1997) found that grasshopper mice use open areas and microhabitats dominated by gopher mounds and burrows. Stapp suggests that grasshopper mice selected these microhabitats because of greater prey availability (i.e., arthropods using burrows for refuge), greater mobility in open areas, and dust bathing sites. It prefers low to moderate shrub cover and is active year-round. Unlike most other mice, this species is primarily carnivorous. It feeds nocturnally on a variety of arthropods, including grasshoppers, beetles, and scorpions. It will also feed on frogs, salamanders, lizards, small mammals, and, occasionally, seeds. It has been known to kill species larger than itself, such as kangaroo rats. Prey items are stalked, rushed, seized, and typically killed with a bite in the head. Curiously, it emits a howl on occasion, perhaps in defense of its territory. Home ranges can be as large as 4 hectares; and, consistent with its carnivorous nature, population densities are normally low. It breeds from May to June; and after about 30 days, it gives birth to an average of 4 young. Predators include snakes, raptors, and a variety of mammals, including coyotes, owls, and foxes. Habitat loss and degradation are the primary threats to this species.

Swainson's Hawk (*Buteo swainsoni*)

The Swainson’s hawk (nesting) is state-listed as a threatened species. This species breeds from southwest Canada through the western United States into northern Mexico, with isolated breeding populations also observed in northern Illinois and the Sacramento and San Joaquin valleys of California. This species winters to South America. The Swainson’s hawk forages in open stands of grass-dominated vegetation; sparse shrublands; and small, open woodlands. It typically nests in scattered trees within these grassland, shrubland, or agricultural landscapes. The Swainson’s hawk feeds largely on insects, and thus is affected by pesticide use, particularly DDT and organophosphate pesticides currently used in South America (England et al. 1997).

Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*)

The Tehachapi pocket mouse is a CSC. This species occurs in the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos, and east to the lower San Gabriel Mountains to Lake Elizabeth (Laabs 1998b). The Tehachapi pocket mouse is one of two subspecies of *Perognathus alticola*; the second subspecies, *P. a. alticola,* occurs in the San Bernardino Mountains and has not been observed in over 50 years. Male Tehachapi pocket mice can reach up to 6.5 inches in length; while females are significantly smaller, reaching only 5.9 inches. Both sexes are yellowish-brown with a heavy overlay of black dorsally and white ventrally; facial markings are fainter, and the inside of the ears is white; its tail is bicolored and is slightly longer than head to body length (Laabs 1998b). This species occurs in native and non-native grasslands, Joshua tree Woodland, Pinyon-

Juniper Woodland, Yellow Pine Woodland, Oak Savanna, chaparral, coastal sage scrub, fallow grain fields, and rangeland at elevations ranging from 3,500 to 6,000 feet amsl, preferring loose, sandy soils for burrowing (Laabs 1998b). Tehachapi pocket mice are nocturnal, feeding on seeds of grasses and forbs but will eat green vegetation and insects. Threats to this species include surface disturbance like mineral extraction and conversion of habitat to urban development.

Tricolored Blackbird (*Agelaius tricolor*)

The tricolored blackbird (nesting colony) is a CSC that occurs primarily in California, with smaller populations in northern Mexico. This species is locally common in parts of the Central Valley and along the coast in Sonoma County but is not found commonly over most parts of its range. This species breeds near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds. Breeding season usually takes place from mid-April into late July, but Orians (1960) also reported active breeding in October and November in Sacramento Valley. Over the past few decades, numbers have been declining in California (DeHaven 1975). Reasons for the decline include the conversion of marshland habitats and agricultural poisoning.

Two-Striped Garter Snake (*Thamnophis hammondii*)

The two-striped garter snake is a CSC. It is found in disjunct populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. An estimated 40 percent of the historic range of this species has been lost to housing, urban development, and other human impacts (Stebbins 2003).

Western Pond Turtle (*Actinemys marmorata pallida*)

The western pond turtle is a CSC. This species occurs along the west coast of North America from Baja California up to San Francisco Bay and occurs from sea level to 5,900 feet in elevation (Calherps 2011a). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (Calherps 2011a). The western pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks for thermoregulation. Basking is absorption of the sun's radiation and/or through the substratum. Reptile body temperature is affected by the surrounding environment, air, substratum, and solar radiation. This species occurs in a variety of habitat types including woodland, grassland, and open forest (Calherps 2011a). Although this species is considered aquatic, it usually leaves the aquatic site to reproduce, to estivate, and to overwinter. Pond turtles hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (Calherps 2011a). The species is highly sensitive to disturbance and will quickly slide into

water when it feels threatened. Pond turtles are diurnal and are most active from February to November; however, if water temperatures remain warm, this species may be active year-long (Bury 2008). Mating takes place in April or May, and females will deposit eggs in a vegetated upland location that may be a considerable distance (400 m or more) from the aquatic habitat to the nest. Eggs are generally deposited during May and June in grassy, upland areas adjacent to streams, although some individuals may deposit eggs as early as April and as late as August. Hatchlings will stay at the nest location and will emerge in the early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and occasionally frogs and fish (Calherps 2011a). Habitat destruction is the primary threat to this species. Dams cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury 2008).

Western Mastiff Bat (*Eumops perotis*)

The western mastiff bat is listed as a CSC. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching 2 feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown (TPWD 2008).

Western Snowy Plover (*Charadruis alexandrinus nivosus*)

The western snowy plover (nesting, coastal populations) is federally listed as threatened and is also a CSC. The Pacific coastal population breeds primarily on beaches from southern Washington to southern Baja California, Mexico. Interior populations can be found in the Central Valley of California, Oregon, Nevada, and other western states. The western snowy plover nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitats, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds and infrequently on bluff-backed beaches (USFWS 2001). This small plover has a pale tan back, rump, and tail; white underparts; and dark patches on the sides of its neck that reach around onto the top of its chest. Habitat alteration and recreational beach use have led to a serious decline in nesting habitat and populations over the last 40 years (USFWS 2001; Page et al. 1995).

White-Faced Ibis (*Plegadis chihi*)

The white-faced ibis (nesting colony) is a CDFG WL species. It breeds across the western United States northward to Montana, eastward to western Louisiana, and southward to South America. It winters from southern California and Louisiana southward. The white-faced ibis usually nests in low trees and shrubs over shallow water. It inhabits primarily freshwater wetlands, especially cattail and bulrush marshes. It feeds in flooded hay meadows, agricultural fields, and estuarine wetlands. The white-faced ibis is a dark bronze-colored wader with a long, decurved bill. During the breeding season, adults have distinctive white feathers along the edges of their bare facial skin. Erosion and flood-control measures and irrigation projects have eliminated or degraded traditional nesting colony sites, leading to nest

abandonment. Other losses of wetland habitat can also negatively affect populations (Ryder and Manry 1994).

3.6 SPECIES OBSERVED

A complete list of the following plant species observed on the Project site during habitat assessments conducted in May 2011 and September 2012 include: allscale, four-wing saltbush, flat-spined bur ragweed (*Ambrosia acanthicarpa*), tumbling pigweed, common fiddleneck, rattlesnake weed (*Chamaesyce albomarginata*), jimson weed (*Datura wrightii*), snakeweed (*Gutierrezia* sp.), annual mountain dandelion (*Agoseris heterophylla*), annual sunflower, dove weed, wreathplant, tall tumbling mustard (*Sisymbrium altissimum*), salt cedar (*Tamarix ramosissima*), western tansy-mustard, Russian thistle, red-stemmed filaree (*Erodium cicutarium*), cheatgrass (*Bromus tectorum*), barley, Mediterranean schismus (*Schismus barbatus*), and foxtail chess.

A complete list of the following wildlife species observed on the Project site during habitat assessments conducted in May 2011 and September 2012 include: fox (*Vulpes* sp.), western kingbird (*Tyrannus verticalis*), rock pigeon (*Columba livia*), domestic sheep (*Ovis aries*), horned lark (*Eremophila alepestris*), western meadowlark (*Sturnella neglecta*), chipping sparrow (*Spizella passerine*), American crow (*Corvus brachyrhynchos*), red-tailed hawk (*Buteo jamaicensis*), domestic dog (*Canis familiaris*; scat), domestic sheep (scat), rabbit (Leporidae family; scat), and coyote (*Canis latrans*; scat).

3.7 SENSITIVE SPECIES

The following 19 special status plant species are considered **absent** from the Project site due to a lack of suitable habitat or the species was not observed during protocol- level focused plant surveys conducted during the appropriate blooming period:

- Alkali mariposa lily
- Barstow woolly sunflower
- Clokey's cryptantha
- Darwin rock cress
- Davidson’s bush mallow
- desert cymopterus
- Horn’s milk-vetch
- Lancaster milk-vetch
- pale-yellow layia
- Parish’s popcorn-flower
- Parry’s spineflower
- Peirson’s morning-glory
- recurved larkspur
- round-leaved filaree
- sagebrush loeflingia
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa lily
- white pygmy-poppy

The following 23 special status wildlife species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- arroyo toad
- Bell's sage sparrow
- California red-legged frog
- coast horned lizard
- Cooper's hawk
- desert tortoise
- least Bell's vireo
- Mohave ground squirrel
- Nelson's antelope squirrel
- pallid San Diego pocket mouse
- San Bernardino kangaroo rat
- Sierra Madre yellow-legged frog
- short-eared owl
- silvery legless lizard
- southern California rufous-crowned sparrow
- southern grasshopper mouse
- Tehachapi pocket mouse
- tricolored blackbird
- two-striped garter snake
- western pond turtle
- western mastiff bat
- western snowy plover
- white-faced ibis

The following four special status wildlife species have a **low** potential to occur on the Project site due to the presence of low quality suitable habitat on the Project site, the quality of adjacent habitat, and historical records of these species occurring within 5 miles of the Project site:

- American badger
- ferruginous hawk
- merlin
- Le Conte's thrasher

The following two special status wildlife species have a **moderate** potential to occur on the Project site due to the presence of low quality suitable habitat and historical records of these species occurring within 3 miles of the Project site:

- Mountain plover. The site consists of open, disturbed saltbush scrub and disturbed areas of barren ground that may provide suitable nesting and foraging habitat. Mountain plovers have been recorded to occur within 3 miles of the Project site; therefore, the mountain plover has a moderate potential to occur on the Project site.

- Burrowing owl. The site consists primarily of disturbed saltbush scrub. Burrowing owls have been recorded to occur within 1 mile of the Project site. The burrowing owls may potentially use the Project site and surrounding lands for foraging and nesting; therefore, the burrowing owl has a moderate potential to occur on the Project site.

The following two special status wildlife species have a **high** potential to occur on the Project site due to the presence of high quality habitat and historical records of these species occurring within 1 mile of the Project site:

- Loggerhead shrike. The Project site lacks tall trees and suitable nesting habitat to support the loggerhead shrike onsite; however, loggerhead shrikes have been recorded to occur within 1 mile of the Project site. Therefore, the loggerhead shrike has high potential for occurrence (foraging) on the Project site.

- Swainson's hawk. The Project site lacks tall trees and suitable nesting habitat to support the Swainson’s hawk onsite; however, Swainson’s hawks have been recorded to occur within 1 mile of the Project site. Therefore, the Swainson’s hawk has high potential for occurrence (foraging) on the Project site.

SECTION 4.0 – CONCLUSIONS

4.1 SPECIAL STATUS SPECIES

The Project site is highly disturbed from past agricultural practices and is now primarily comprised of disturbed saltbush scrub vegetation. Due to the highly disturbed nature of the site and past land use, all of the special status plant species known to occur within the vicinity of the Project site are considered absent due to lack of suitable habitat; therefore, no further surveys for special status plant species are recommended at this time.

Of the 31 special status wildlife species known to occur within the vicinity of the Project site, 27 are considered absent or have a low potential to occur on the Project site. No further surveys for 27 of these special status wildlife species are recommended at this time. The remaining special status wildlife species have a moderate to high potential to occur on the Project site.

4.1.1 Mountain Plover

The mountain plover has a moderate potential to nest and forage on the Project site. This species is a CSC and is not federally or state listed as threatened or endangered.

4.1.2 Burrowing Owl

The burrowing owl has a moderate potential to occur on the Project site. Although burrowing owls are not federally or state listed as endangered or threatened, this species is listed as a CSC. While the majority of CSC listed species do not typically require focused surveys, specific focused survey protocol for the burrowing owl has been developed by the California Burrowing Owl Consortium and adopted by CDFG (California Burrowing Owl Consortium 1993).

4.1.3 Loggerhead Shrike

The loggerhead shrike has a high potential to occur (foraging) on the Project site. This species is not federally or state listed as endangered or threatened; therefore, no further surveys for this species are recommended at this time.

4.1.4 Swainson's Hawk

The Swainson's hawk has a high potential to occur (foraging) onsite. Swainson's hawk is state listed as a threatened species. This species, as well as other raptors, are protected during nesting season. The Project site, however, lacks suitable nesting habitat.

4.2 JURISDICTIONAL FEATURES

No jurisdictional features were identified within the Project site at the time of the survey; therefore, no additional surveys for jurisdictional waters are recommended at this time.

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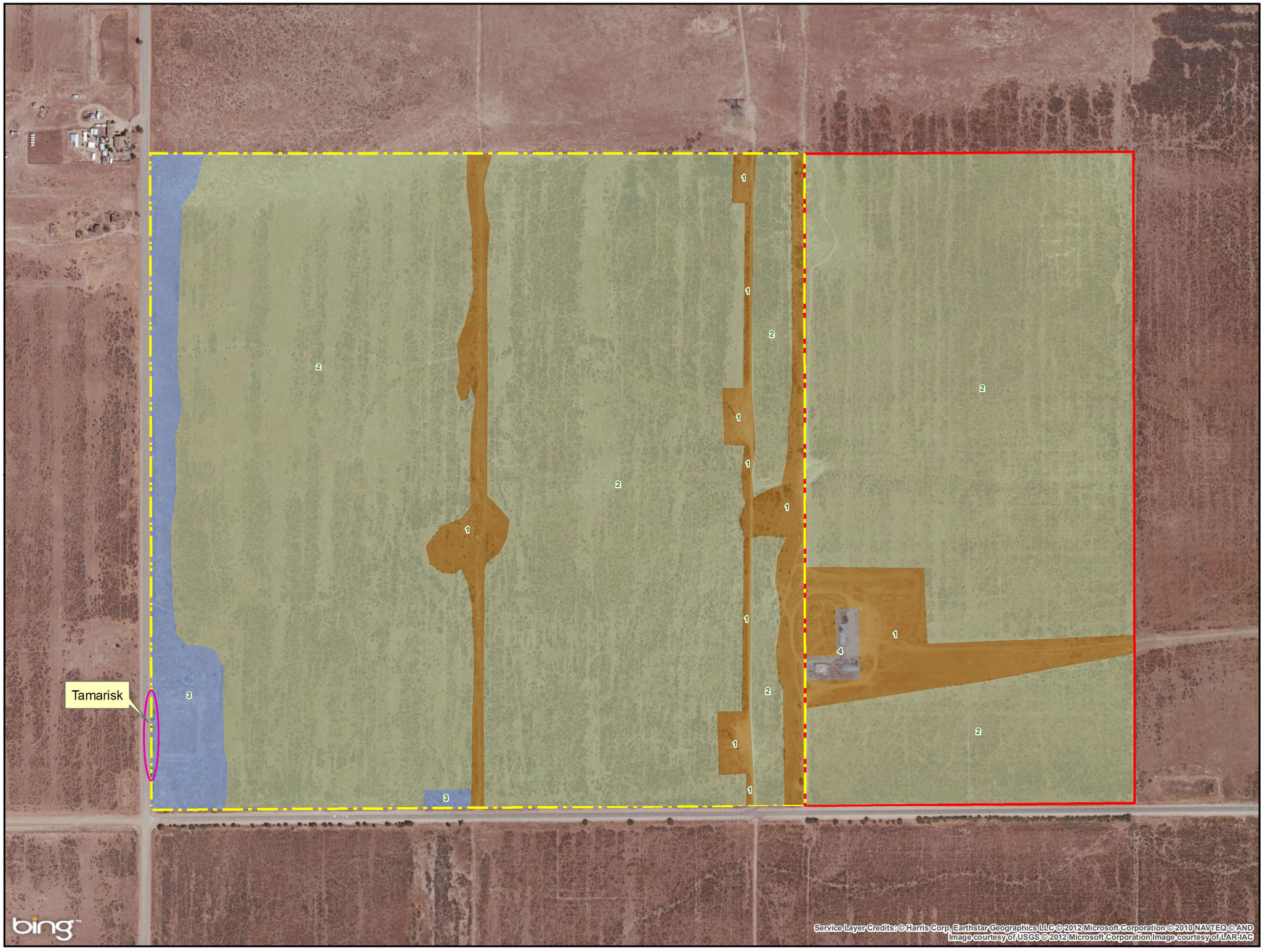
APPENDIX A – VEGETATION COMMUNITIES MAP

North Lancaster Ranch Expansion

Vegetation Communities Map

Version Date: 9/7/2012



North Lancaster Ranch

North Lancaster Ranch Expansion

Vegetation Community

1. Disturbed or Barren
2. Disturbed Mixed Saltbrush
3. Ruderal
4. Developed

N

SCALE=1:4,500

0 135 270 540

Feet

CHAMBERS GROUP

20327 - Y:\Projects\20327 Silverado Solar\MXD\North Lancaster Ranch Expansion Vegetation Map.mxd

APPENDIX B – SITE PHOTOGRAPHS

APPENDIX B – SITE PHOTOGRAPHS

	Photo 1: North Lancaster Ranch. Photo is taken looking northeast across the Project site from the northwest corner.
	Photo 2: North Lancaster Ranch. Photo is taken looking southeast across the Project site from the northwest corner.
	Photo 3: North Lancaster Ranch. Photo is taken looking southwest from the northwest corner.

	Photo 4: North Lancaster Ranch. Photo is taken looking south across the extension site adjacent to the original Project site. The berm shows the approximate location of the east side border of the extension (right) and the west side border of the original Project site (left).
	Photo 5: North Lancaster Ranch. Photo is taken looking north across the east side border of the extension site from the southwest corner.

	Photo 6: North Lancaster Ranch. Photo is taken looking southeast across the extension site from the northwest corner.

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APPENDIX B-3.2 PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH AND PROJECT 5 SILVER SUN GREENWORKS

2013 BURROWING OWL SURVEY BIOLOGICAL TECHNICAL REPORT

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2013 BURROWING OWL SURVEY

For

PLAINVIEW SOLAR PROJECT
LANCASTER, CALIFORNIA

Prepared by

August 2013

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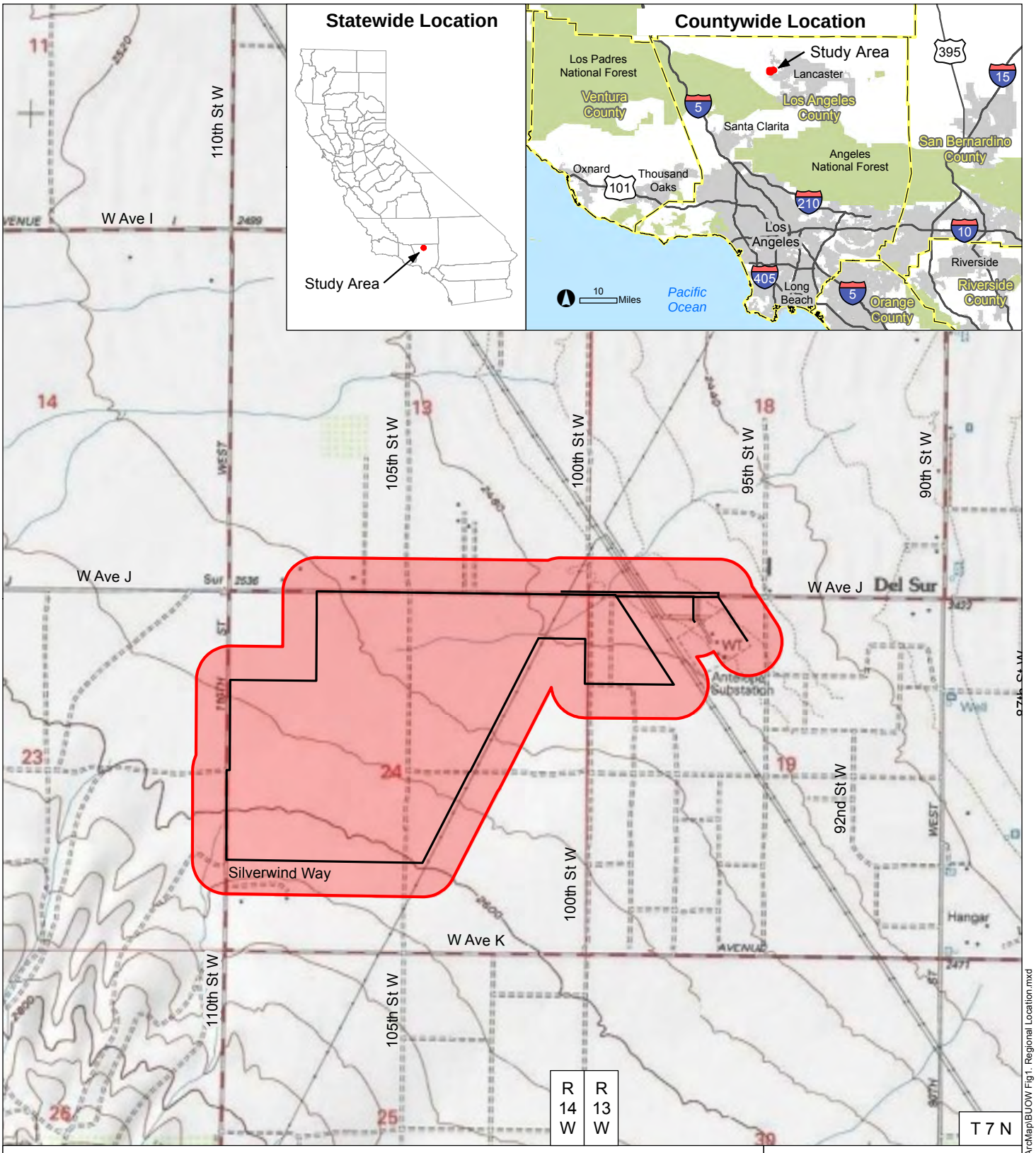
APPENDICES

Appendix A Avian Compendium

Appendix B Photographic Log

1.0 INTRODUCTION

This report provides the methods, assumptions, and results of focused surveys for Burrowing Owl (*Athene cunicularia*) conducted within the limits of the proposed Plainview Solar Project (here after referred to as the Project). The surveys were performed by NOREAS Inc., (NOREAS), on behalf of Silverado Power, LLC (Silverado). The Project is located within Lancaster, California (Figure 1). The Project can be found on the Del Sur United States Geological Survey (USGS 1978) 7.5-minute quadrangle map; San Bernardino Base and Meridian, Township 7 North, Range 13 West, Sections 18 and 19; and Township 7 North, Range 14 West, Sections 13, 23 and 24. For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint (Project Site), plus a 500-foot (ft.) buffer where practical. The Project Site is bound by Avenue J to the north, 110 Street West to the west, Avenue K to the south, and Southern California Edison's (SCE) Antelope Substation to the east at an approximate elevation of 2,450– 2,640 feet above mean sea level. Over 98% of the study area consists of non-native vegetation, and developed or disturbed lands (NOREAS 2013).



Study Area
Project Site
County Boundary (inset)
Urban Area (inset)
Interstate or State Highway (inset)
Water Body (inset)
Park or National Forest (inset)

Data Sources:
- BingMaps accessed Jul 2013
- ESRI StreetMap North America 2010
- ESRI US Topo Maps accessed Jul 2013

Map Prepared: 7-5-13

The Study Area is located on the Del Sur USGS 7.5-minute quadrangle map; San Bernardino Base and Meridian, Township 7 North, Range 13 West, Sections 18 and 19, and Township 7 North, Range 14 West, Sections 13, 23 and 24.

0 1,000 2,000 Feet

1 inch = 2,000 feet

Prepared by:
NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\AntelopeVArcMap\BUOW Fig1. Regional Location.mxd

Figure 1. Regional Location

2.0 BURROWING OWL BACKGROUND

The Burrowing Owl has been designated by the California Department of Fish and Wildlife (CDFW) as a species of special concern. "State Species of Special Concern" status applies to animals not listed for protection under the federal Endangered Species Act or the California Endangered Species Act. The designation denotes that a species is declining at a rate that could result in State listing or that a species has historically occurred in low numbers and known threats to their persistence currently exist. In essence, the designation is intended to result in "special consideration" for these animals during the environmental review and discretionary permitting processes. In addition, the designation is also intended to focus research and management attention on poorly-known, potentially at-risk species by stimulating the collection of additional information on their biology, distribution, and status.

Burrowing Owls prefer open, dry annual or perennial grasslands, agricultural and rangelands, deserts, and scrublands characterized by low-growing vegetation. Burrowing Owls also prefer areas inhabited by small mammals as they predominately depend on mammal burrows (particularly ground squirrels) for subterranean nesting. Owls can be found at elevations ranging from 200 ft. below sea level to 9,000 ft. above (CDFG 1995). Burrowing Owls commonly perch on fence posts or on mounds outside their burrows. Northern populations of Burrowing Owls are usually migratory, while more southern populations may move short distances or not at all (Haug et al. 1993, Botelho 1996). Little is known about the winter ranges of migratory populations, although migratory Burrowing Owls are believed to mix with resident populations in California during the winter months (Coulombe 1971, Haug et al. 1993).

Burrowing Owls tend to be resident where food sources are stable and available year-round (Rosenberg et al. 1998). Typically, they disperse or migrate south in areas when food becomes seasonally scarce. Burrowing Owls tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a substantial portion of their diet (Rosenberg et al. 1998). Small mammals, especially mice, rats, gophers, and ground squirrels, are also important food items. Other prey animals include reptiles and amphibians, scorpions, young cottontail rabbits, bats, and birds such as sparrows and Horned Larks. Consumption of insects increases during the breeding season. Burrowing Owls hover while hunting; after catching their prey they return to perches on fence posts or the ground. Burrowing Owls are primarily active at dusk and dawn, but if necessary will hunt at any time of day (CBOC 1993, CDFG 1995; Rosenberg et al. 1998).

The breeding season for Burrowing Owls is March to late August; the season tends to last later in the northern part of the range (CBOC 1993, CDFG 1995, Klute et al. 2003). Clutch size (number of birds hatched at the same time) ranges from 1 to 12 and averages about 7 (Ehrlich 1988). The incubation period is 28–30 days (Ehrlich 1988). The female performs all the incubation and brooding (sitting on eggs to hatch them by the warmth of the body) and is believed to remain continually in the burrow while the male does all the hunting (Rosenberg et al. 1998). The young fledge (take their first flight out of the nest) at 44 days but remain near the burrow and join the adults in foraging flights at dusk (Ehrlich 1988). The maximum life span recorded for a banded bird in the wild is approximately 8.5 years (Rosenberg et al. 1998).

In resident populations, nest site fidelity is common, with many adults nesting each year in their previous year's burrow; young from the previous year often establish nest sites near (<900 ft) their natal sites (Trulio 1997,Rosenberg et al. 1998). Burrowing Owls in migratory populations

also often nest in the same burrow, particularly if the previous year's breeding was successful (Belthoff and King 1997). Other birds in the same population may move to burrows near their previous year's burrow. The species is threatened primarily by loss, degradation, and fragmentation of habitat, although they do readily inhabit anthropogenic landscapes such as agricultural fields, golf courses, and airport grasslands (Korfanta et al. 2005).

3.0 METHODS

Prior to field surveys, natural resource databases, local resource management plans, aerial photos, and other readily available commercial data associated with the Project were reviewed to determine the locations and types of avian species that have the potential to exist within the study area. Primary data sources included, but were not limited to, the following:

- U.S. Fish and Wildlife Service Critical Habitat Mapper and File Data (USFWS 2013);
- California Burrowing Owl Consortium (CBOC). 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines;
- California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation;
- 2013 California Natural Diversity Database maintained by the CDFW (CDFW 2013); and
- Biological Technical Report for the Plainview Solar Project (NOREAS 2013).

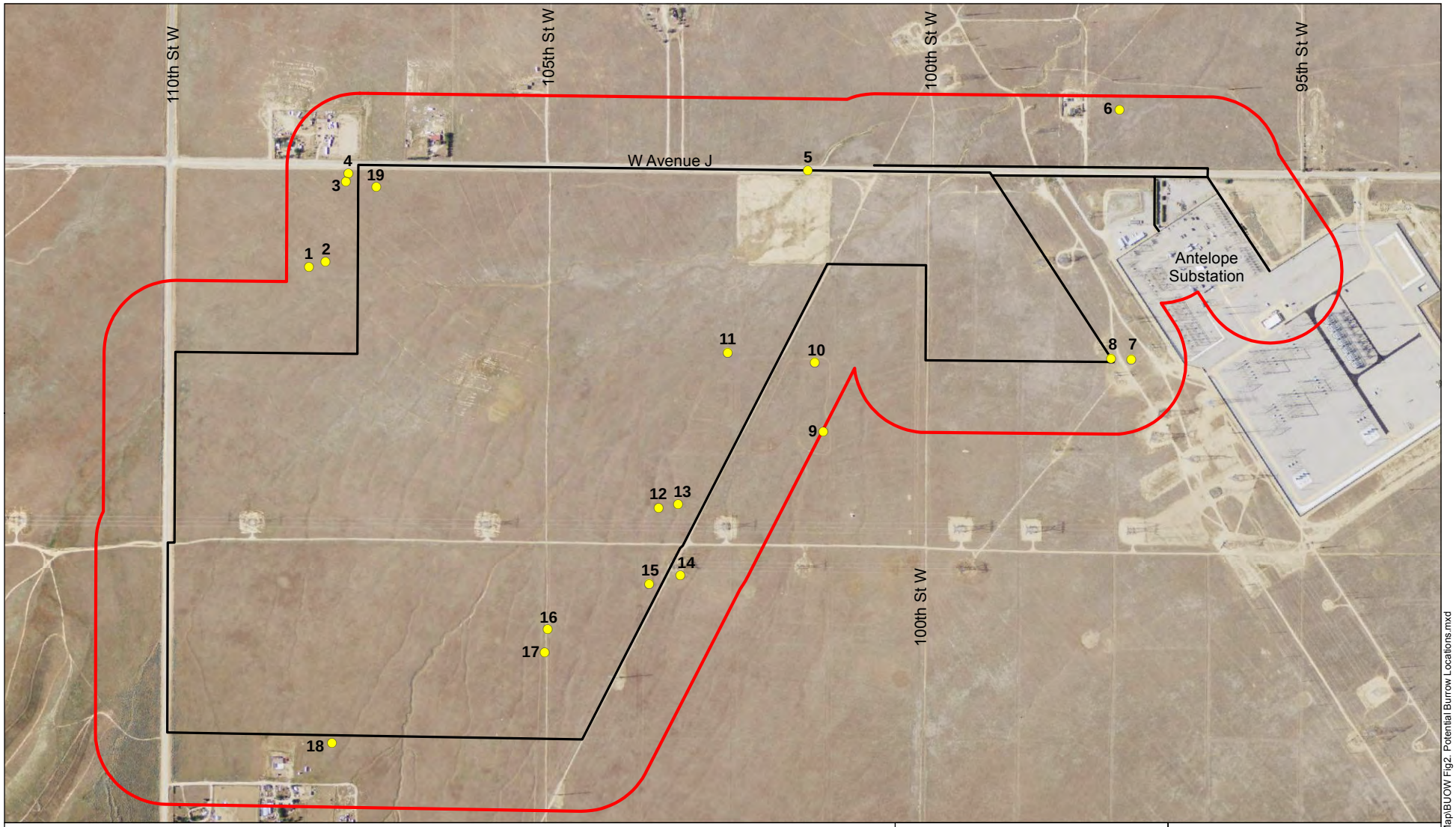
Survey methods were derived from generally accepted professional standards including the 1993 California Burrowing Owl Consortium Survey Protocol and Mitigation Guidelines (CBOC 1993), the 1995 and 2012 California Department of Fish and Game Staff Reports on Burrowing Owl Mitigation (CDFG 1995 and 2012). Accordingly, a methodical pedestrian-survey for owl burrows and sign was conducted by walking through areas of suitable habitat within study area limits (including evaluations of man-made structures, debris piles, etc.). Survey transects were spaced at approximately 100-ft intervals to allow for complete visual coverage of the study area. Where necessary, transect spacing was reduced or expanded to account for differences in terrain, vegetation density, and visibility. The presence of each observed species was based on direct observations of individual(s), sign, and/or vocalization. Avian scientific nomenclature and common names follows Sibley (2000).

Field surveys were conducted when weather conditions were conducive to observing birds. Surveys were not performed during rain, extreme temperatures, high winds (> 25 miles per hour), or dense fog. Where access was limited, observations were made from the nearest appropriate vantage points with the use of binoculars and spotting scopes. Surveys were conducted from approximately 1 hour before sunrise to 2 hours after sunset, when weather conditions were conducive to observing owls outside of burrows.

4.0 RESULTS

Field surveys were performed on 11 April, 07 May, 06 June, and 02 July 2013. Weather conditions during the surveys were sunny and clear, ambient temperature ranged from 51 to 87 degrees Fahrenheit, with wind speeds between 0-25 miles per hour. The study area is heavily disturbed with evidence of historical grazing and SCE maintenance activities. Furthermore, observations of known Burrowing Owl predators were noted during the surveys (e.g., coyote sign, and other raptors).

Several potential burrows - characterized as extremely low quality, were observed throughout the study area (Figure 2). Two artificial burrows were also documented near the middle of the Project Site, however they were unoccupied and owl sign (e.g., whitewash, feathers, pellets etc.) was not observed. No Burrowing Owls were detected nesting, foraging, dispersing, or utilizing refuge habitats during any of the pedestrian-based field surveys of the study area. Appendix A includes a list of all avian species observed. Appendix B includes representative photographs of the study area as well.



Study Area (652-acres which includes a 500-ft buffer and the Project Site)

Project Site (349 acres)

Potential Burrow Locations

Inactive

0 500 1,000 Feet

1 inch = 1,000 feet

Data Source:
- USDA Farm Service Agency, National Agriculture Imagery Program (NAIP) aerial photograph accessed Jul 2013, image date: 4-28-12

Map Prepared: 7-11-13

Prepared by:

NOREAS Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\Antelope\ArcMap\BUOW Fig2. Potential Burrow Locations.mxd

Figure 2. Potential Burrow Locations

5.0 CONCLUSIONS

No Burrowing Owls were observed within the study area and given the low quality habitat and extent of anthropogenic disturbance; the Project Site seems unlikely to support Burrowing Owls. Additionally, the observation of a robust predator population indicates that the Project Site is unlikely to support Burrowing Owl individuals, or populations. As a consequence, no Burrow Owls are expected to be impacted by the Project.

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APPENDIX A

AVIAN COMPENDIUM

APPENDIX A

AVIAN COMPENDIUM

Scientific name	Common name
Accipiter cooperii	Cooper's Hawk
Callipepla gambelii	Gambel's Quail
Carpodacus mexicanus	House Finch
Columba livia	Rock Pigeon
Corvus corax	Raven
Eremophila alpestris	Horned Lark
Euphagus cyanocephalus	Brewer's Blackbird
Falco sparverius	American Kestrel
Lanius ludovicianus	Loggerhead Shrike
Melospiza melodia	Song Sparrow
Passer domesticus	House Sparrow
Passerculus sandwichensis	Savannah Sparrow
Sayornis nigricans	Black Phoebe
Sayornis saya	Say's Phoebe
Stelgidopteryx serripennis	Northern Rough-winged Swallow
Sturnella neglecta	Western Meadowlark
Sturnus vulgaris	European Starling
Thryomanes bewickii	Bewick's Wren
Wilsonia pusilla	Wilson's Warbler
Zenaida macroura	Mourning Dove
Zonotrichia leucophrys	White-crowned Sparrow

APPENDIX B

PHOTOGRAPHIC LOG

APPENDIX B

PHOTOGRAPHIC LOG

	Photograph: 1 **Facing South**
	Photograph: 2 **Facing East**

Photograph: 3

Artificial Burrow

BIOLOGICAL TECHNICAL REPORT

For

PLAINVIEW SOLARWORKS PROJECT
LANCASTER, CALIFORNIA

Prepared by

May 2013

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1.0 INTRODUCTION AND BACKGROUND

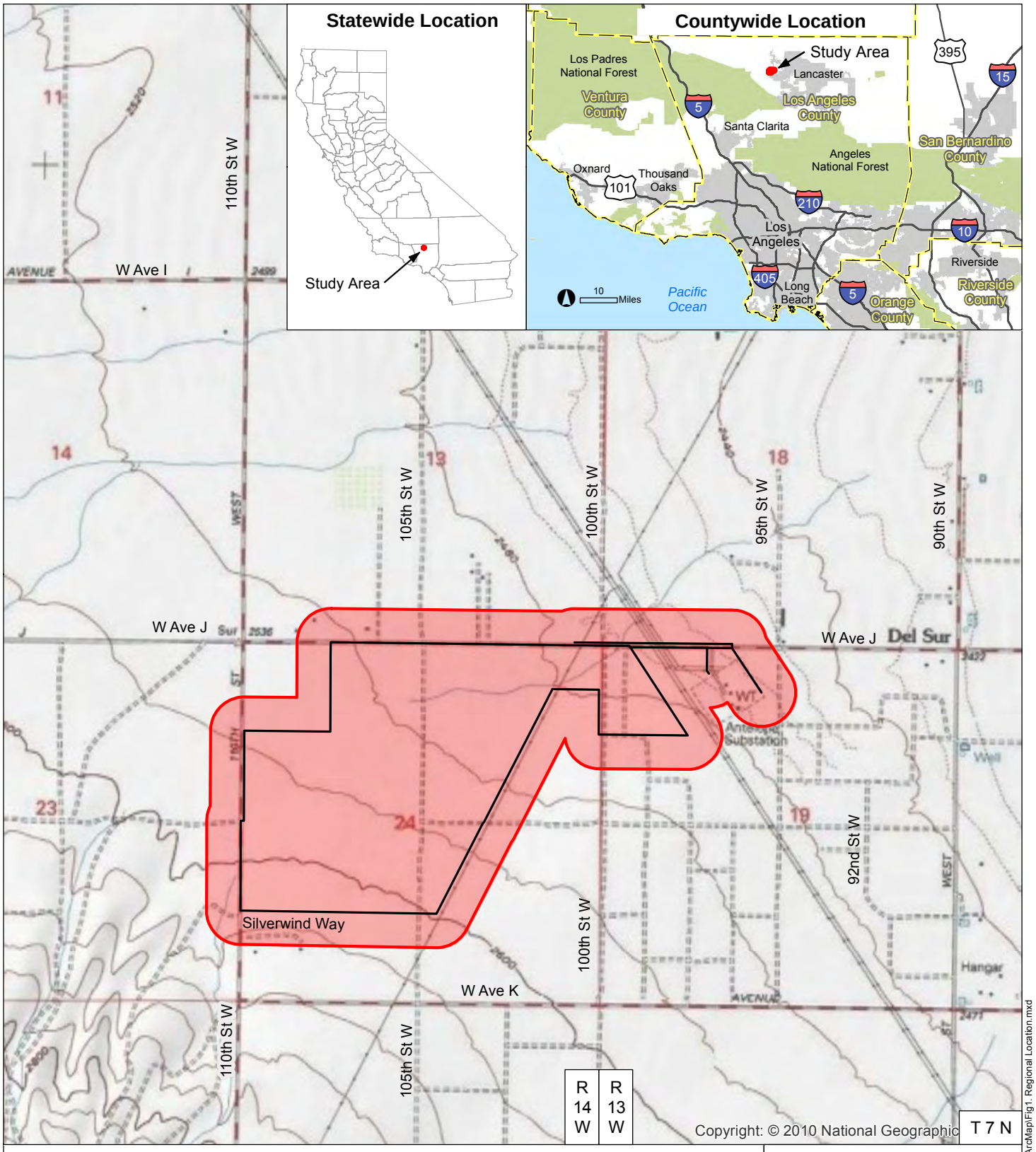
This report documents the findings of a baseline biological resources[1] survey for the Silverado Power, LLC (Silverado) Plainview Solarworks Project in Lancaster, California (hereafter be referred to as the Project, Figure 1). The intended use of this document is to disclose and evaluate habitat conditions and determine the potential for occurrence of common and special-status species[2], and their habitats[3] within study area limits. For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint (Project Site) and a buffer (Figure 2).

The Project can be found on the Del Sur United States Geological Survey 7.5-Minute Topographic Quadrangle Map within the San Bernardino Meridian – Township 7 North, Range 13 West, Sections 18 and 19; and Township 7 North, Range 14 West, Sections 13, 23 and 24 (USGS 1978). More specifically, the Project is bound by Avenue J to the north, 110 Street West to the west, Avenue K to the south, and Southern California Edison's (SCE) Antelope Substation to the east at an approximate elevation of 2,450 feet – 2,640 feet above mean sea level. The majority of the study area is non-native vegetation, disturbed and developed lands. Given the extent of disturbance present (e.g., high levels of non-native species, historical grazing, on and off highway vehicle related traffic, active electrical substation, noise, light, and vibration), any animals/plants currently using these lands are assumed to be acclimated to this depauperate ecosystem.

[1] For the purposes of this analysis, "biological resources" refers to the plants, wildlife, and habitats that occur, or have the potential to occur, within the study area.

[2] For the purposes of this analysis, "special-status species" refers to any species that has been afforded special protection by federal, state, or local resource agencies (e.g., U.S. Fish and Wildlife Service, California Department of Fish and Wildlife) or resource conservation organizations (e.g., California Native Plant Society). The term "special-status species" excludes those avian species solely identified under Section 10 of the Migratory Bird Treaty Act (MBTA) for federal protection. Nonetheless, MBTA Section 10 protected species are afforded avoidance and minimization measures per state and federal requirements.

[3] A "habitat" is defined as the place or type of locale where a plant or animal naturally or normally lives and grows.



Study Area
Project Site
County Boundary (inset)
Urban Area (inset)
Interstate or State Highway (inset)
Water Body (inset)
Park or National Forest (inset)

Data Sources:
- BingMaps accessed Apr 2013
- ESRI StreetMap North America 2010
- ESRI US Topo Maps accessed Apr 2013

Map Prepared: 4-25-13

The Study Area is located on the Del Sur USGS 7.5-minute quadrangle map; San Bernardino Base and Meridian, Township 7 North, Range 13 West, Sections 18 and 19, and Township 7 North, Range 14 West, Sections 13, 23 and 24.

0 1,000 2,000 Feet

1 inch = 2,000 feet

Prepared by:
NOREAS
Environmental Engineering and Science

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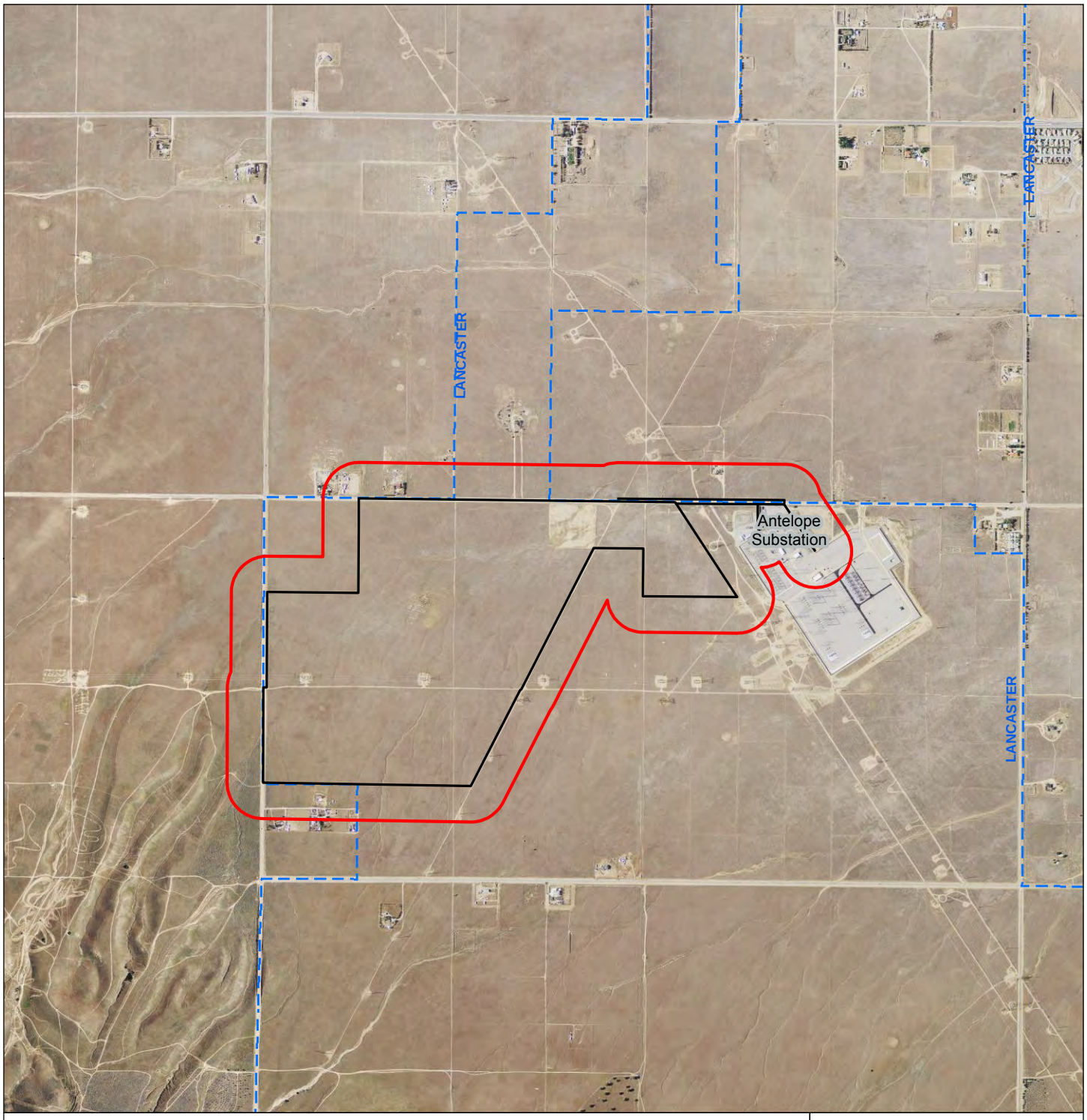
Figure 1. Regional Location



Study Area (500-ft Radius Around the Project Site) [652 acres]

Project Site (349 acres)

Lancaster City Limit

0 1,000 2,000 Feet

1 inch = 2,000 feet

Data Source:
- USDA Farm Service Agency, National Agriculture Imagery Program (NAIP) aerial photograph accessed Apr 2013, image date: 4-28-12

Map Prepared: 4-25-13

Prepared by:

NOREAS
Environmental Engineering and Science

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Figure 2. Site Vicinity

2.0 METHODS

Prior to beginning field surveys, resource specialists were consulted and available information from resource management plans and relevant documents were reviewed to determine the locations and types of biological resources that have the potential to exist within and adjacent to the study area; resources were evaluated within several miles of the Project Site.

The materials reviewed included, but were not limited to, the following:

- U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper and File Data (USFWS 2013a);
- USFWS Ventura Field Office Species List for Los Angeles County (2013b);
- California Natural Diversity Database maintained by the California Department of Fish and Wildlife (CDFW 2013);
- California Native Plant Society (CNPS) Electronic Inventory (CNPS 2013);
- Biological Technical Review for the Plainview Solarworks and Western Antelope Dry Ranch Project Sites (Tetra Tech 2011); and
- Aerial Photographs (Microsoft Corporation 2013).

Pedestrian-based field surveys were performed to assess general and dominant vegetation community types, community sizes, habitat types, and species present within communities[4]. Community type descriptions were based on observed dominant vegetation composition and derived from the criteria and definitions of widely accepted vegetation classification systems (Holland 1986; Sawyer et al. 2009). Plants were identified to the lowest taxonomic level sufficient to determine whether the plant species observed were non-native, native, or special-status. Plants of uncertain identity were subsequently identified from taxonomic keys (Baldwin et al. 2012). Scientific and common species names were recorded according to Baldwin et al. (2012). The presence of a wildlife species was based on direct observation, and wildlife sign (e.g., tracks, burrows, nests, scat, or vocalization). Field data compiled for wildlife species included scientific name, common name, and evidence of sign when no direct observations were made. Wildlife of uncertain identity was documented and subsequently identified from specialized field guides and related literature (Burt and Grossenheider 1980; Halfpenny 2000; Sibley 2000; Elbroch 2003, and Stebbins 2003).

The Project Site was also assessed for its potential to support special-status species based on habitat suitability comparisons with reported occupied habitats as well.

The following definitions were utilized:

- **Absent [A]** – Species distribution is restricted by substantive habitat requirements which do not occur within the Project Site, and no further survey or study is obligatory to determine likely presence or absence of this species.

[4] Where 100% pedestrian coverage of the study area was not possible due to limited access (e.g., physical barriers [vegetative cover, health and safety concerns, etc.]), field observations were made from the nearest appropriate vantage points via public right-of-ways with binoculars.

- **Low [L]** – Species distribution is restricted by substantive habitat requirements which are negligible within the Project Site, and no further survey or study is obligatory to determine likely presence or absence of this species.

- **Habitat Present [HP]** – Species distribution is restricted by substantive habitat requirements which occur within the Project Site, and further survey or study may be necessary to determine likely presence or absence of species.

- **Present [P]** – Species or species sign were observed within the Project Site.

- **Critical Habitat [CH]** – The Project Site is located within a USFWS-designated critical habitat unit.

3.0 RESULTS

Weather conditions during the 2, 3, 4, 26, and 25 April 2013 surveys included clear skies, temperatures ranging from 55–68 °F, and winds ranging from 0 to 15 miles per hour.

3.1 Vegetation Communities and Land Cover Types

Four vegetation communities/land cover types were observed within the study area: Non-Native Annual Grassland, Native Grassland, Rabbitbrush Scrub, and Developed/disturbed Lands (Figure 3). Vegetation communities/land cover types are described below. Over 98% of the study area consists of non-native vegetation and developed or disturbed lands. Representative photos of the study area are provided in Appendix A.

Non-Native Annual Grassland

Non-native Grasslands within the study area are dominated by non-native annual grass species including filaree (*Erodium cicutarium*), foxtail chess (*Bromus madtritensis* ssp*. rubens*), tumble mustard (*Sisymbrium altissimum*), Russian thistle (*Salsola tragus*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*). Subdominant species include grasses and forbes as follows: Italian annual rye grass (*Lolium multiflorum*), schismus (*Schismus barbatus*), and dove weed (*Eremocarpus setigerus*). Non-native grasslands can be found on fine-textured, usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall (Holland 1986). This cover type also included numerous small, non-vegetated, swale-like features. The subject features were situated at a lower elevation than surrounding lands, and were distinguishable by physical characteristics - such as a change in the character of surface soil.

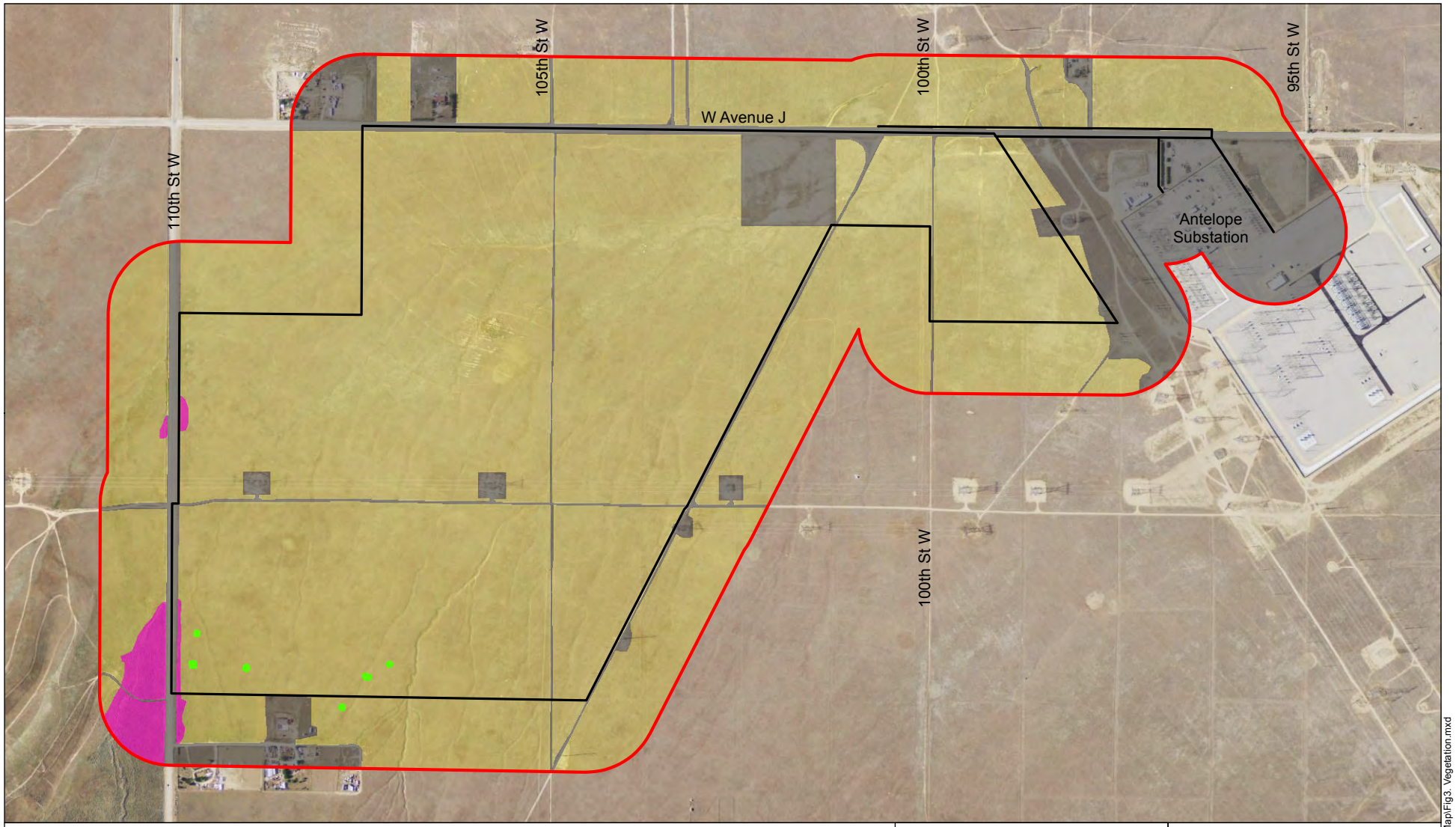
Native Grassland

Native grasslands are found sporadically throughout the southern portions of the study area and this community is dominated by needlegrass[5] (*Nassella* sp.). Native and introduced annual herbaceous plants also occur between the perennial grasses including doveweed (*Eremocarpus setigerus*), and vinegar weed (*Trichostema lanceolatum*). These grasslands are typically found on fine-textured, often clay soils, which can be moist or even waterlogged during the winter but are very dry in the summer (Holland 1986).

Rabbitbrush Scrub

Rabbitbrush Scrub within the study area is dominated by rabbitbrush (*Chrysothamnus nauseosus*), usually 3 feet in height, with regularly-spaced gray-green shrubs that typically bloom in late summer or early fall (Holland 1986). Subdominant species within this community included rattlesnake weed (*Chamaesyce albomarginata*), and fescue (*Vulpia myuros*). Rabbitbrush Scrub is a disturbance-maintained community in which fire, grazing, or soil tilling perpetuate the same species within the herb and shrub layers and the disturbance occurs with regular frequency (i.e., less than 10 years). Rabbitbrush Scrub was observed in the south and southwest portions of the study area along 110 Street West.

[5] Identification to specific epitaph was not possible as a consequence of survey timing. Neither florets nor awns were apparent on the species of *Nassella* documented within the study area. Valley needlegrass (*Nassella pulchra*) grasslands are protected by the City of Lancaster and Los Angeles County.



Study Area

Project Site

Vegetation Communities and Land Cover Types

- Developed/Disturbed (107.2 acres)
- Native Grassland (0.3 acre)
- Non-Native Annual Grassland (536.7 acres)
- Rabbitbrush Scrub (8.1 acres)

0 500 1,000 Feet

1 inch = 1,000 feet

Data Source:
- USDA Farm Service Agency, National Agriculture Imagery Program (NAIP) aerial photograph accessed Apr 2013, image date: 4-28-12

Map Prepared: 4-25-13

Prepared by:

NOREAS Environmental Engineering and Science

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Figure 3. Vegetation Communities and Land Cover Types

Disturbed and Developed Lands

Developed or disturbed lands include locales that have been disked, cleared, or otherwise altered by human activities. This cover type within the study area includes roadways (paved and unpaved), existing buildings, houses, ranches, and the existing SCE Antelope Substation (including its transmission lines and other appurtenances).

3.2 Wildlife

Wildlife species observed within the study area consisted of commonly-occurring species, including but not limited to Mourning Dove (*Zenaida macroura*) California Quail (*Callipepla californica*), Horned Lark (*Eremophila alpestris*), California ground squirrel (*Otospermophilus beecheyi*) and side-blotched lizard (*Uta stansburiana*).

3.3 Special-Status Plants

No special-status plants were documented within the Study Area and none has been documented within 1 mile (Figure 4). Special-status plant species known to occur within 10 miles of the Project and their potential for occurrence within the Project Site are detailed within Appendix B. The Study Area includes no USFWS-critical habitat for plants (Figure 5), and all plant species observed during the surveys are identified within Appendix C.

3.4 Special-Status Wildlife

No special-status wildlife species have been documented within the Project Site (Figure 4). Several artificial burrowing owl nesting substrates were observed along the eastern boundary of the Project Site. Special-status wildlife species known to occur within 10 miles of the Project and their potential for occurrence within the Project Site are detailed within Appendix B. The Study Area includes no USFWS critical habitat for wildlife species (Figure 5), and all wildlife observed during the surveys are identified within Appendix D.

Study Area

Project Site

10-Mile Radius Around the Study Area

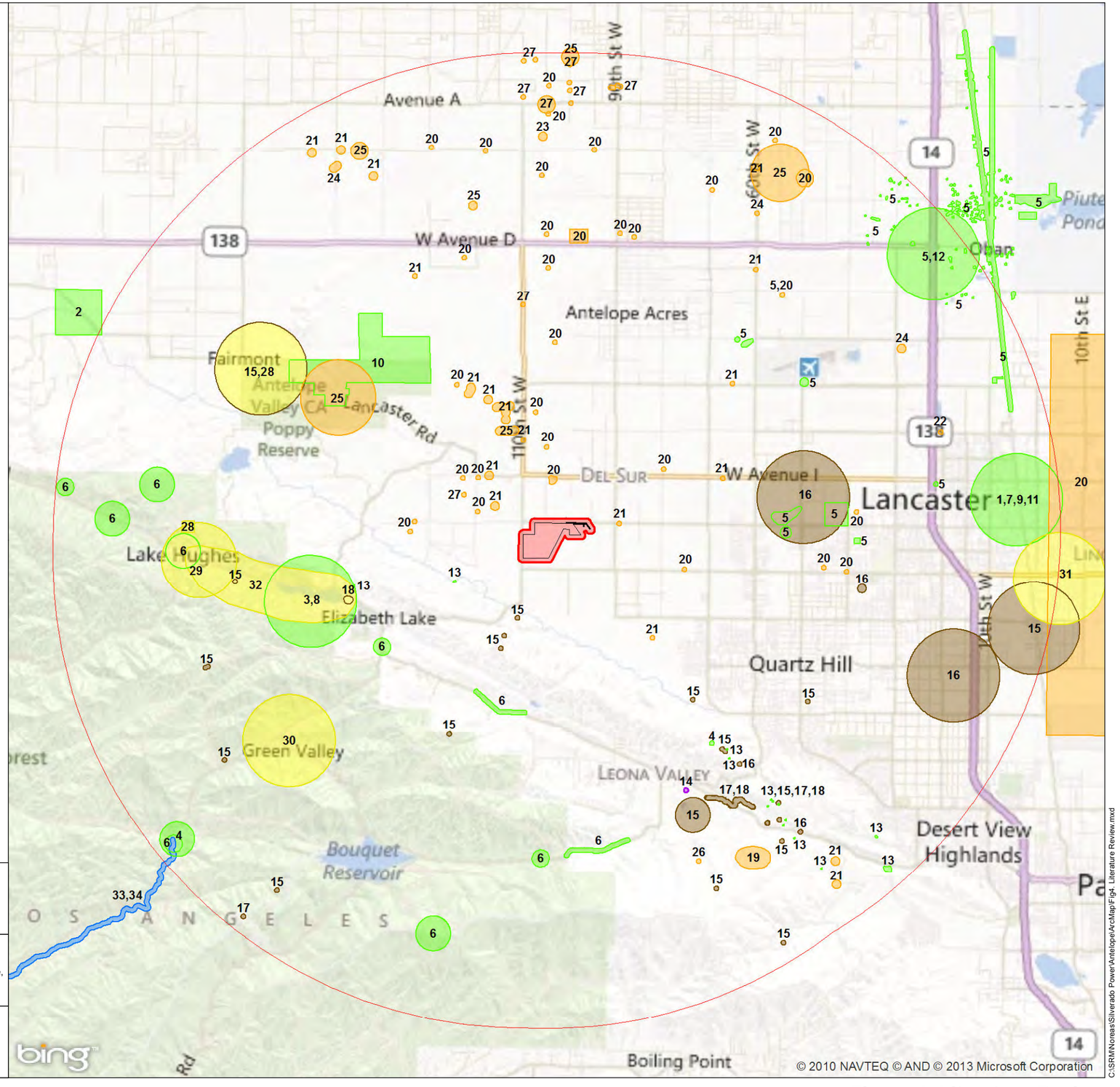
Major Road

Forest, Golf Course or Park

Water Body

Special-Status Species Occurrences

Map Code	Common Name (Scientific Name)
	Plants
1	Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*)
2	Lincoln Rockcress (*Boechera lincolnensis*)
3	Round-Leaved Filaree (*California macrophylla*)
4	Slender Mariposa-Lily (*Calochortus clavatus* var. *gracilis*)
5	Alkali Mariposa-Lily (*Calochortus striatus*)
6	Peirson's Morning-Glory (*Calystegia peirsonii*)
7	White Pygmy-Poppy (*Canbya candida*)
8	San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*)
9	Parry's Spineflower (*Chorizanthe parryi* var. *parryi*)
10	Clokey's Cryptantha (*Cryptantha clokeyi*)
11	Pale-Yellow Layia (*Layia heterotricha*)
12	Sagebrush Loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
13	Short-Joint Beavertail (*Opuntia basilaris* var. *brachyclada*)
	Amphibians
14	California Red-Legged Frog (*Rana draytonii*)
	Reptiles
15	Coast Horned Lizard (*Phrynosoma blainvillii*)
16	Silvery Legless Lizard (*Anniella pulchra pulchra*)
17	Two-Striped Garter Snake (*Thamnophis hammondii*)
18	Western Pond Turtle (*Emys marmorata*)
	Birds
19	Bell's Sage Sparrow (*Amphispiza belli belli*)
20	Burrowing Owl (*Athene cunicularia*)
21	Ferruginous Hawk (*Buteo regalis*)
22	Least Bell's Vireo (*Vireo bellii pusillus*)
23	Loggerhead Shrike (*Lanius ludovicianus*)
24	Merlin (*Falco columbarius*)
25	Mountain Plover (*Charadrius montanus*)
26	Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*)
27	Swainson's Hawk (*Buteo swainsoni*)
	Mammals
28	American Badger (*Taxidea taxus*)
29	Hoary Bat (*Lasiurus cinereus*)
30	Lodgepole Chipmunk (*Neotamias speciosus speciosus*)
31	Mohave Ground Squirrel (*Xerospermophilus mohavensis*)
32	Tehachapi Pocket Mouse (*Perognathus alticolus inexpectatus*)
	Fish
33	Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*)
34	Southern California Threespine Stickleback Stream



0 0.5 1 1.5 2 Miles

1:150,000

Data Sources:
- BingMaps accessed Apr 2013
- California Department of Fish and Wildlife, Natural Diversity Database (CNDDB), Apr 2013 data release

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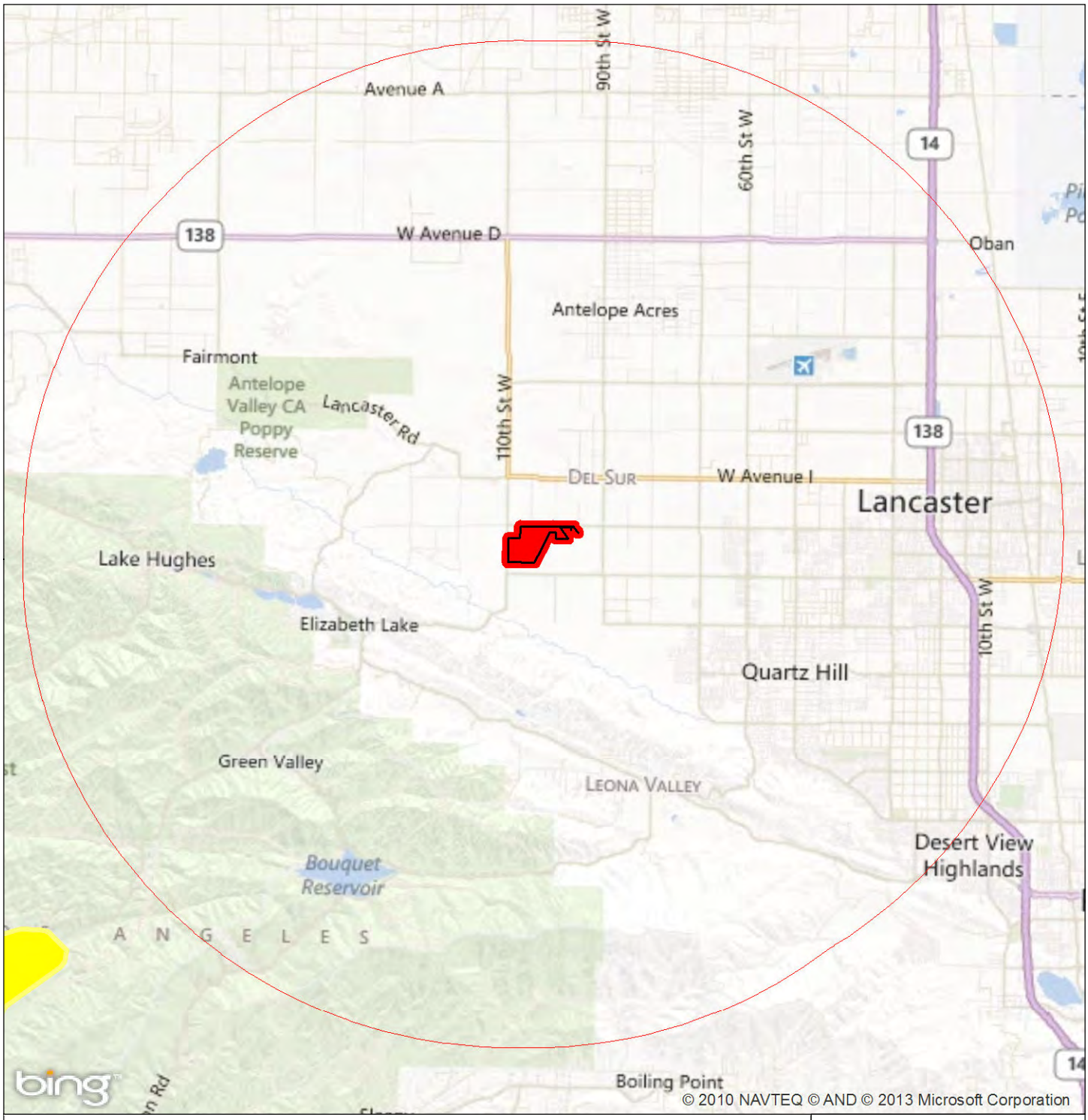
Figure 4. Literature Review



Study Area

Project Site

10-Mile Radius Around the Study Area

Critical Habitat

California Red-legged Frog *(Rana draytonii)*

Freeway

Major Road

Golf Course, National Forest or Park

Water Body

0 1 2 3 Miles

1 inch = 3 miles

Data Sources:
- BingMaps accessed Apr 2013
- US Fish and Wildlife Service critical habitat accessed Apr 2013.

Map Prepared: 4-25-13

Prepared by:

NOREAS
Environmental Engineering and Science

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Figure 5. Critical Habitat

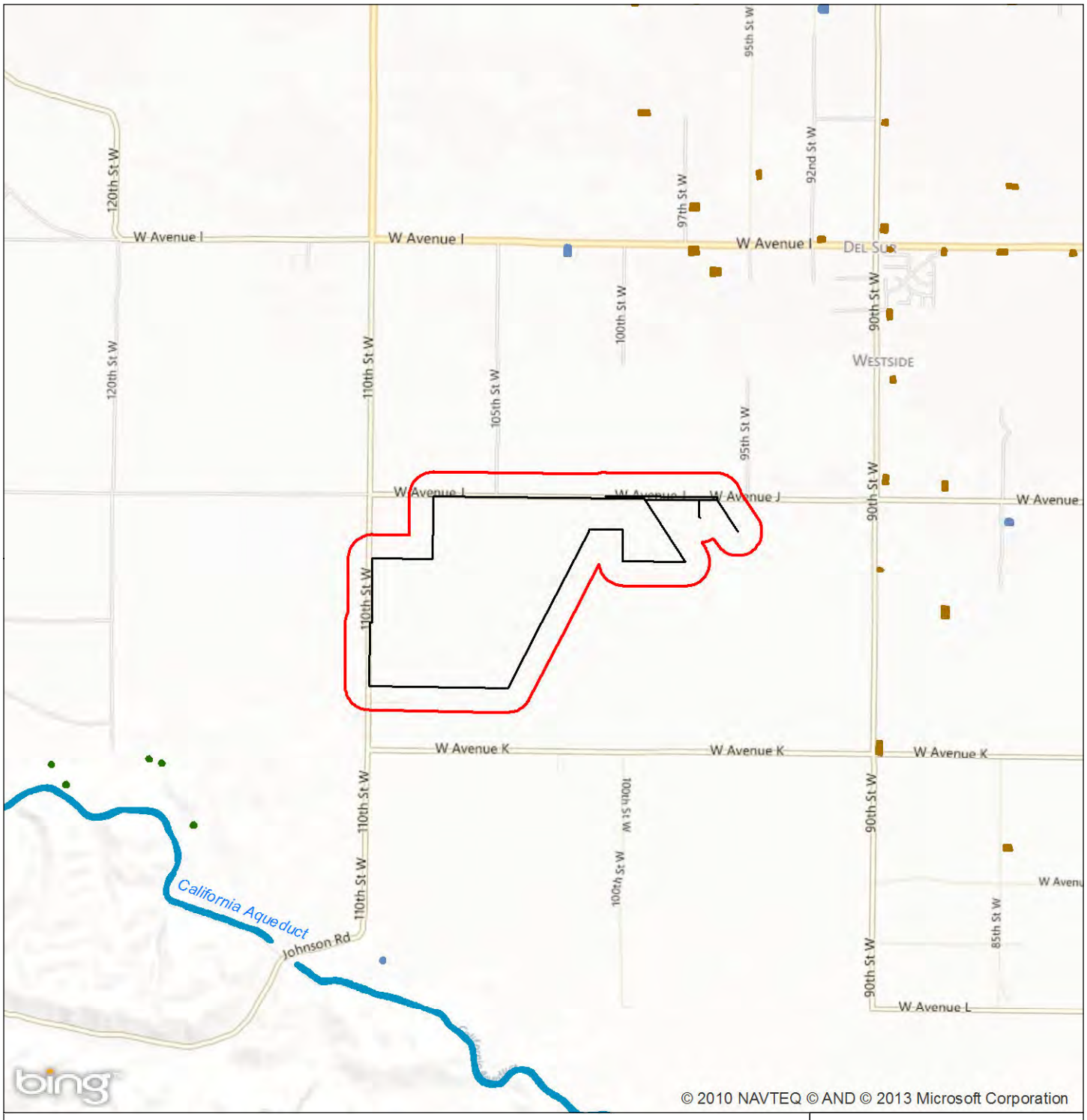
4.0 CONCLUSIONS

The majority of the Project Site consists of non-native vegetation, and given the extent of anthropogenic disturbance, any species currently using these lands are presumed to be acclimated to this depauperate ecosystem. To that end, no special status species have been documented within the Project Site nor does it include any USFWS-designated critical habitat. Burrowing Owl and other species of raptors and passerines could utilize the Project Site (transmission towers, etc.) as nesting, roosting, refuge, and foraging habitats. Nonetheless, the likelihood of raptors and passerines utilizing the Project Site as functional habitat is small, as a result of the amount of similar and higher quality habitats available within the region. National Wetland Inventory data, managed by the USFWS, suggests that the Project Site does not include any regulated wetlands or waterways (Figure 6), and over 98% of the study area consists of non-native species and developed and disturbed lands.

The following measure is recommended as a means of avoiding and minimizing adverse impacts to avian resources that occur or have the potential to occur within the Project Site:

1. In order to comply with Section 10 of the Migratory Bird Treaty Act and relevant sections of the California Department of Fish and Game Code, any vegetation clearing within the Project Site should take place outside of the typical avian nesting season, March 15th until September 1st – to the maximum extent practical. If work needs to take place between March 15th and September 1st, a pre-construction survey for nesting birds and a protocol level burrowing owl survey by a qualified biologist should be completed prior to Project activities. To the maximum extent practicable, a buffer zone from occupied nests should be maintained during physical ground disturbing activities. Once nesting has ended, the buffer may be removed.

The services performed and documented in this report have been conducted in a manner consistent with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances. No other representations are either expressed or implied, and no warranty or guarantee is included or intended in this report. Opinions relating to presence, absence, or potential for occurrence of biological resources are based on limited data and actual conditions may vary from those encountered at the times and locations where the data were obtained despite due professional care.



Study Area

Project Site

Major Road

National Wetland Inventory (NWI)

Freshwater Forested/Shrub Wetland

Freshwater Pond

Other

0 1,000 2,000 3,000 Feet

1 inch = 3,000 feet

Data Sources:
- BingMaps accessed Apr 2013
- US Fish and Wildlife Service National Wetland Inventory shapefile downoaded Apr 2013 (Data Date: Jan 2013).

Map Prepared: 4-25-13

Prepared by:

NOREAS
Environmental Engineering and Science

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Figure 6. National Wetland Inventory

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APPENDIX A

PHOTOGRAPH LOG

APPENDIX A

PHOTOGRAPH LOG

	Photograph: 1, facing east.
	Photograph: 2, facing south.

APPENDIX A

PHOTOGRAPH LOG

	Photograph: 3, facing north.
	Photograph: 4, facing east.

APPENDIX B

SPECIAL-STATUS SPECIES POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT SITE

APPENDIX B

SPECIAL-STATUS SPECIES POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT SITE

Potential for occurrence	Common name (Scientific name)	Federal listing status	State listing status	Global rank [a]	State rank [b]	CNPS list [c]	Number of records within 10 miles	Year(s) sighted	Distance from site to nearest occurrence (miles)
L	Ferruginous Hawk (*Buteo regalis*)	None	None	G4	S3S4		17	1998-2011	0.5
HP	Burrowing Owl (*Athene cunicularia*)	None	None	G4	S2		32	1993-2009	0.7
L	Coast Horned Lizard (*Phrynosoma blainvillii*)	None	None	G4G5	S3S4		19	1958-2010	1.4
L	Swainson's Hawk (*Buteo swainsoni*)	None	Threatened	G5	S2		9	1999-2011	1.4
L	Short-Joint Beavertail (*Opuntia basilaris* var. *brachyclada*)	None	None	G5T3	S3	1B.2	9	2005-2011	1.5
A	Mountain Plover (*Charadrius montanus*)	None	None	G2	S2?		6	1999-2011	1.8
L	Peirson's Morning-Glory (*Calystegia peirsonii*)	None	None	G3	S3.2	4.2	10	1972-1982	3.1
A	Silvery Legless Lizard (*Anniella pulchra pulchra*)	None	None	G3G4T3T4Q	S3		5	1988-2009	3.5
L	Round-Leaved Filaree (*California macrophylla*)	None	None	G2	S2	1B.1	1	1888	3.6
L	San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*)	Candidate	Endangered	G2T1	S1	1B.1	1	1990s	3.6
A	Clokey's Cryptantha (*Cryptantha clokeyi*)	None	None	G2	S2	1B.2	1	2003	3.6
A	Tehachapi Pocket Mouse (*Perognathus alticolus inexpectatus*)	None	None	G1G2T1T2	S1S2		1	1981	3.6
A	Western Pond Turtle (*Emys marmorata*)	None	None	G3G4	S3		3	1990-1999	3.7
A	Alkali Mariposa-Lily (*Calochortus striatus*)	None	None	G2	S2	1B.2	16	1988-2011	3.8
L	Slender Mariposa-Lily (*Calochortus clavatus* var. *gracilis*)	None	None	G4T2	S2	1B.2	2	1922-2010	5.1
A	Lodgepole Chipmunk (*Neotamias speciosus speciosus*)	None	None	G4T2T3	S2S3		1	1974	5.4
A	American Badger (*Taxidea taxus*)	None	None	G5	S4		2	1904-1988	5.6
A	California Red-Legged Frog (*Rana draytonii*)	Threatened	None	G4T2T3	S2S3		1	1995	5.8
A	Two-Striped Garter Snake (*Thamnophis hammondii*)	None	None	G3	S2		3	1995-2008	6.1
A	Hoary Bat (*Lasiurus cinereus*)	None	None	G5	S4?		1	1938	6.1
L	Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*)	None	None	G5T2T4	S2S3		1	2005	7.3
L	Bell's Sage Sparrow (*Amphispiza belli belli*)	None	None	G5T2T4	S2?		1	2005	7.5
L	Merlin (*Falco columbarius*)	None	None	G5	S3		3	1998-2011	7.5
A	Least Bell's Vireo (*Vireo bellii pusillus*)	Endangered	Endangered	G5T2	S2		1	2006	7.7
A	Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*)	None	None	G4T2	S1	1B.1	1	1902	8.1
A	White Pygmy-Poppy (*Canbya candida*)	None	None	G3	S3.2	4.2	1	unknown	8.1
L	Parry's Spineflower (*Chorizanthe parryi* var. *parryi*)	None	None	G2T2	S2	1B.1	1	1896	8.1
L	Pale-Yellow Layia (*Layia heterotricha*)	None	None	G2	S2	1B.1	1	1895	8.1
L	Loggerhead Shrike (*Lanius ludovicianus*)	None	None	G4	S4		1	2009	8.1

APPENDIX B

SPECIAL-STATUS SPECIES POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT SITE

Potential for occurrence	Common name (Scientific name)	Federal listing status	State listing status	Global rank [a]	State rank [b]	CNPS list [c]	Number of records within 10 miles	Year(s) sighted	Distance from site to nearest occurrence (miles)
A	Sagebrush Loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)	None	None	G5T2T3	S2.2	2.2	1	unknown	8.3
A	Mohave Ground Squirrel (*Xerospermophilus mohavensis*)	None	Threatened	G2G3	S2S3		1	2005	9
A	Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*)	Endangered	Endangered	G5T1	S1		1	2008	9.7
A	Southern California Threespine Stickleback Stream	None	None	G?	SNR		1	1990	9.7
A	Lincoln Rockcress (*Boechera lincolnensis*)	None	None	G4?	S2	2.3	1	2005	9.9

[a] GLOBAL RANKING

The global rank (G-rank) is a reflection of the overall condition of an element throughout its global range.

SPECIES OR NATURAL COMMUNITY LEVEL

G1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals OR less than 2,000 acres.
G2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres.
G3 = 21-100 EOs OR 3,000-10,000 individuals OR 10,000-50,000 acres.
G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.

SUBSPECIES LEVEL

Subspecies receive a T-rank attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety. For example: Chorizanthe robusta var. hartwegii. This plant is ranked G2TI. The G-rank refers to the whole species range i.e., Chorizanthe robusta. The T-rank refers only to the global condition of var. hartwegii.

[b] STATE RANKING

The state rank is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank.

S1 = Less than 6 EOs OR less than 1,000 individuals OR less than 2,000 acres
S1.1 = very threatened
S1.2 = threatened
S1.3 = no current threats known
S2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres
S2.1 = very threatened
S2.2 = threatened
S2.3 = no current threats known
S3 = 21-100 EOs or 3,000-10,000 individuals OR 10,000-50,000 acres
S3.1 = very threatened
S3.2 = threatened
S3.3 = no current threats known
S4 - Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat. NO THREAT RANK.
S5 - Demonstrably secure to ineradicable in California. NO THREAT RANK.

[c] CNPS LIST - Indicates the California Native Plant Society (CNPS) list to which the taxon is assigned (plants only).

List 1A: Plants presumed extinct in California
List 1B.1: Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California
List 1B.2: Plants rare, threatened, or endangered in California and elsewhere, fairly threatened in California
List 1B.3: Plants rare, threatened, or endangered in California and elsewhere, not very threatened in California
List 2.1: Plants rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California
List 2.2: Plants rare, threatened, or endangered in California, but more common elsewhere; fairly threatened in California
List 2.3: Plants rare, threatened, or endangered in California, but more common elsewhere; not very threatened in California
List 3.1: Plants about which we need more information; seriously threatened in California
List 3.2: Plants about which we need more information; fairly threatened in California
List 3.3: Plants about which we need more information; not very threatened in California
List 4.1: Plants of limited distribution; seriously threatened in California
List 4.2: Plants of limited distribution; fairly threatened in California
List 4.3: Plants of limited distribution; not very threatened in California

APPENDIX C

PLANT SPECIES OBSERVED WITHIN THE STUDY AREA

APPENDIX C

PLANT SPECIES OBSERVED WITHIN THE STUDY AREA

Scientific name	Common name
*Amaranthus albus**	Prostrate pigweed
*Ambrosia acanthicarpa**	Bur-sage
*Amsinckia menziesii**	Fiddleneck
*Asclepia facicularis**	Milkweed
*Bromus diandrus**	Ripgut brome
*Bromus hordeaceus**	Soft chess
*Bromus madtritensis rubens**	Foxtail chess
*Bromus tectorum**	Cheatgrass
*Conyza Canadensis**	Horseweed
*Chamaesyce albomarginata**	Rattlesnake weed
*Chamomilla suavelens**	Pineapple weed
Chrysothamnus nauseosus	Rabbitbrush
*Croton setigerus**	Turkey mullen
*Datura wrightii**	Jimson weed
Eriogonum fasciculatum	California buckwheat
*Eremocarpus setigerus**	Doveweed
*Erodium cicutarium**	Red stem filaree
Eschscholzia californica	California poppy
*Filago gallica**	Narrow leaved filago
*Gnaphalium luteo-album**	Cudweed
*Heterotheca grandiflora**	Telegraph weed
*Hirschfeldia incana**	Summer mustard
Isomeris arborea	Bladderpod
Lasthenia californica	Coast goldfields
*Lessinggia filaginifolia**	Cudweed aster
*Lupinus bicolor**	Lupine
*Marrubium vulgare**	Horehound
Nassella sp.	Nassella
*Pectocarya ferocula**	Pectocarya
*Salsola australis**	Tumbleweed
*Salsola trajus**	Russian thistle
*Schismus barbatus**	Mediterranean grass
*Sisymbrium altissmum**	Tumble mustard
*Trichostema lanceolatum**	Vinegar weed
*Vulpia myuros**	Fescue

An "*" indicates non-native taxa that have become naturalized or persist without cultivation.

APPENDIX D

WILDLIFE SPECIES OBSERVED WITHIN THE STUDY AREA

APPENDIX D

WILDLIFE SPECIES OBSERVED WITHIN THE STUDY AREA

Scientific name	Common name
Reptiles	
Crotalus oreganus	Western Rattlesnake
Crotalus scutulatus	Mojave Rattlesnake
Pituophis catenifer	Gopher Snake
Uta stansburiana	Side-blotched Lizard
Birds	
Callipepla californica	California Quail
Carpodacus mexicanus	House Finch
Corvus brachyrhynchos	American Crow
Corvus corax	Common Raven
Eremophila alpestris	Horned Lark
Euphagus cyanocephalus	Brewer's Blackbird
Lanius ludovicianus	Loggerhead Shrike
Passerculus sandwichensis	Savannah Sparrow
Sturnella neglecta	Western Meadowlark
Sturnus vulgaris	European Starling
Zenaida macroura	Mourning Dove
Mammals	
Otospermophilus beecheyi	California Ground Squirrel
Thomomys bottae	Botta’s Pocket Gopher

APPENDIX B-3.3 PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH

2013 BURROWING OWL SURVEY BIOLOGICAL TECHNICAL REPORT

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2013 BURROWING OWL SURVEY

For

WESTERN ANTELOPE BLUE SKY RANCH PROJECT
LOS ANGELES COUNTY, CALIFORNIA

Prepared by

August 2013

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Appendix B Photographic Log

1.0 INTRODUCTION

This report provides the methods, assumptions, and results of focused surveys for Burrowing Owl (*Athene cunicularia*) conducted within the limits of the proposed Western Antelope Blue Sky Ranch Project (here after referred to as the Project). The surveys were performed by NOREAS Inc., (NOREAS), on behalf of Silverado Power, LLC (Silverado). The Project is located within Los Angeles County, California (Fig.1). The Project can be found on the Del Sur United States Geological Survey (USGS 1982) 7.5-minute quadrangle map, San Bernardino Base and Meridian, Township 7 North, Range 14 West, Sections 13, 14, 23, 24, 25, and 26. For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint (Project Site), plus a 500-ft buffer where practical. The Project Site is south of West Avenue J, and north of West Avenue K at an approximate elevation of 2,600 ft above mean sea level. The study area is disturbed and supports mostly ruderal vegetation with several inclusions of native rubber rabbit brush scrub habitat, and bare ground.

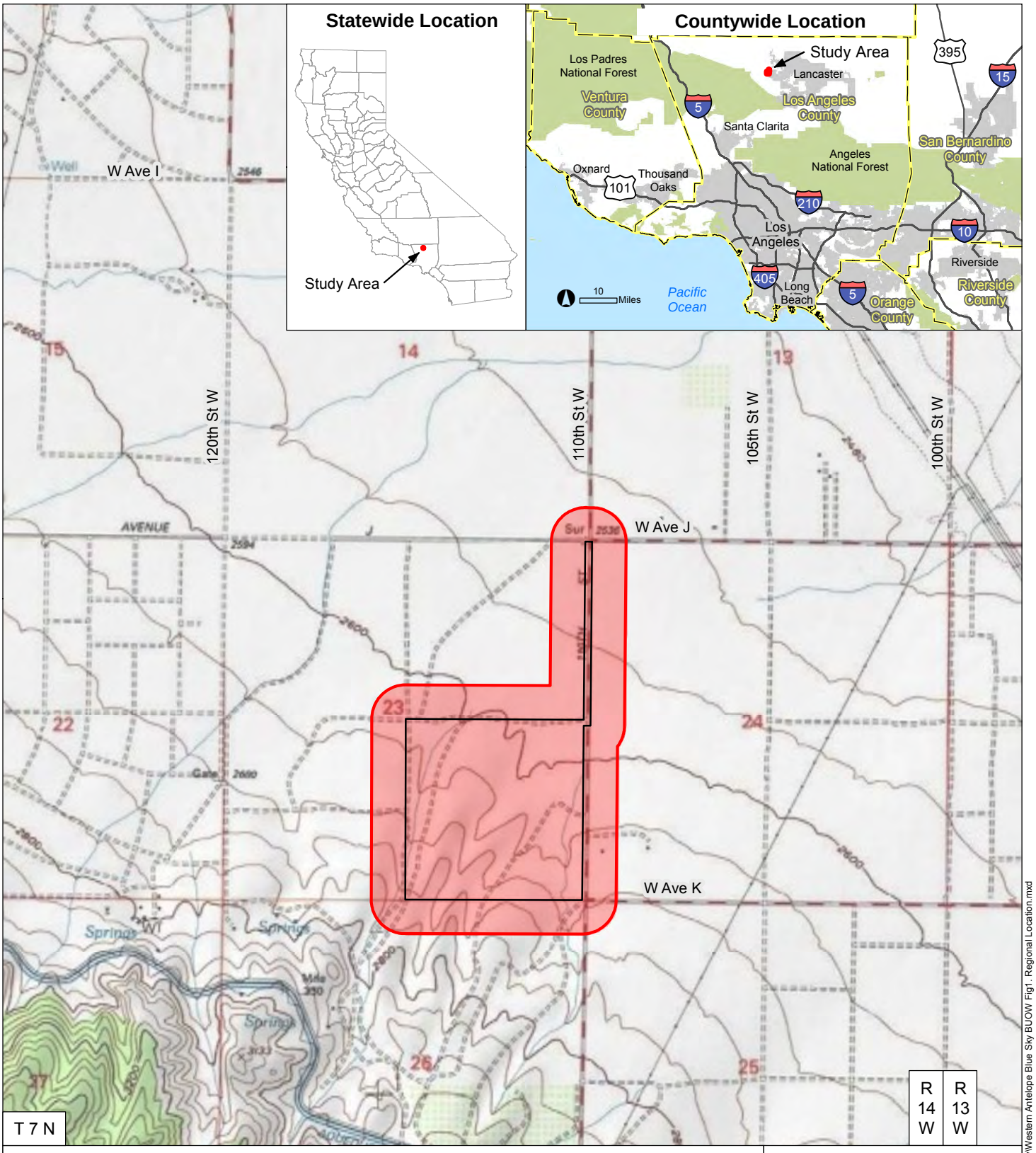


Figure 1. Regional Location

2.0 BURROWING OWL BACKGROUND

The Burrowing Owl has been designated by the California Department of Fish and Wildlife (CDFW) as a species of special concern. "State Species of Special Concern" status applies to animals not listed for protection under the federal Endangered Species Act or the California Endangered Species Act. The designation denotes that a species is declining at a rate that could result in State listing or that a species has historically occurred in low numbers and known threats to their persistence currently exist. In essence, the designation is intended to result in "special consideration" for these animals during the environmental review and discretionary permitting processes. In addition, the designation is also intended to focus research and management attention on poorly-known, potentially at-risk species by stimulating the collection of additional information on their biology, distribution, and status.

Burrowing Owls prefer open, dry annual or perennial grasslands, agricultural and rangelands, deserts, and scrublands characterized by low-growing vegetation. Burrowing Owls also prefer areas inhabited by small mammals as they predominately depend on mammal burrows (particularly ground squirrels) for subterranean nesting. Owls can be found at elevations ranging from 200 ft. below sea level to 9,000 ft. above (CDFG 1995). Burrowing Owls commonly perch on fence posts or on mounds outside their burrows. Northern populations of Burrowing Owls are usually migratory, while more southern populations may move short distances or not at all (Haug et al. 1993, Botelho 1996). Little is known about the winter ranges of migratory populations, although migratory Burrowing Owls are believed to mix with resident populations in California during the winter months (Coulombe 1971, Haug et al. 1993).

Burrowing Owls tend to be resident where food sources are stable and available year-round (Rosenberg et al. 1998). Typically, they disperse or migrate south in areas when food becomes seasonally scarce. Burrowing Owls tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a substantial portion of their diet (Rosenberg et al. 1998). Small mammals, especially mice, rats, gophers, and ground squirrels, are also important food items. Other prey animals include reptiles and amphibians, scorpions, young cottontail rabbits, bats, and birds such as sparrows and Horned Larks. Consumption of insects increases during the breeding season. Burrowing Owls hover while hunting; after catching their prey they return to perches on fence posts or the ground. Burrowing Owls are primarily active at dusk and dawn, but if necessary will hunt at any time of day (CBOC 1993, CDFG 1995; Rosenberg et al. 1998).

The breeding season for Burrowing Owls is March to late August; the season tends to last later in the northern part of the range (CBOC 1993, CDFG 1995, Klute et al. 2003). Clutch size (number of birds hatched at the same time) ranges from 1 to 12 and averages about 7 (Ehrlich 1988). The incubation period is 28–30 days (Ehrlich 1988). The female performs all the incubation and brooding (sitting on eggs to hatch them by the warmth of the body) and is believed to remain continually in the burrow while the male does all the hunting (Rosenberg et al. 1998). The young fledge (take their first flight out of the nest) at 44 days but remain near the burrow and join the adults in foraging flights at dusk (Ehrlich 1988). The maximum life span recorded for a banded bird in the wild is approximately 8.5 years (Rosenberg et al. 1998).

In resident populations, nest site fidelity is common, with many adults nesting each year in their previous year's burrow; young from the previous year often establish nest sites near (<900 ft) their natal sites (Trulio 1997, Rosenberg et al. 1998). Burrowing Owls in migratory populations

also often nest in the same burrow, particularly if the previous year's breeding was successful (Belthoff and King 1997). Other birds in the same population may move to burrows near their previous year's burrow. The species is threatened primarily by loss, degradation, and fragmentation of habitat, although they do readily inhabit anthropogenic landscapes such as agricultural fields, golf courses, and airport grasslands (Korfanta et al. 2005).

3.0 METHODS

Prior to field surveys, natural resource databases, local resource management plans, aerial photos, and other readily available commercial data associated with the Project were reviewed to determine the locations and types of avian species that have the potential to exist within the study area. Primary data sources included, but were not limited to, the following:

- U.S. Fish and Wildlife Service Critical Habitat Mapper and File Data (USFWS 2013);
- California Burrowing Owl Consortium. 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines;
- California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation; and
- 2013 California Natural Diversity Database maintained by the CDFW (CDFW 2013).

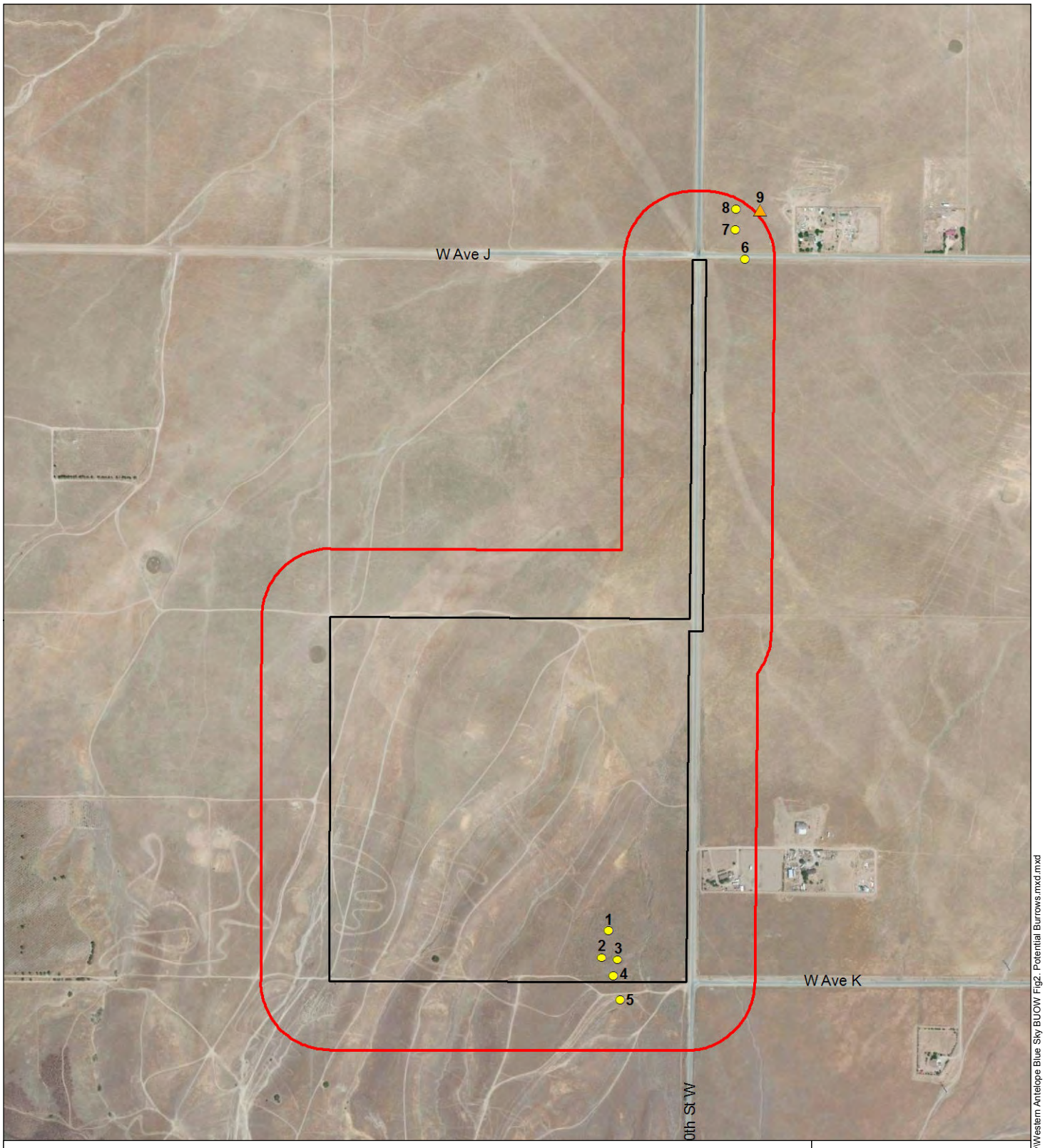
Survey methods were derived from generally accepted professional standards including the 1993 California Burrowing Owl Consortium Survey Protocol and Mitigation Guidelines (CBOC 1993), the 1995 and 2012 California Department of Fish and Game Staff Reports on Burrowing Owl Mitigation (CDFG 1995 and 2012). Accordingly, a methodical pedestrian-survey for owl burrows and sign was conducted by walking through areas of suitable habitat within study area limits (including evaluations of man-made structures, debris piles, etc.). Survey transects were spaced at approximately 100-ft intervals to allow for complete visual coverage of the study area. Where necessary, transect spacing was reduced or expanded to account for differences in terrain, vegetation density, and visibility. The presence of each observed species was based on direct observations of individual(s), sign, and/or vocalization. Avian scientific nomenclature and common names follows Sibley (2000).

Field surveys were conducted when weather conditions were conducive to observing birds. Surveys were not performed during rain, extreme temperatures, high winds (> 25 miles per hour), or dense fog. Where access was limited, observations were made from the nearest appropriate vantage points with the use of binoculars and spotting scopes. Surveys were conducted from approximately 1 hr before sunrise to 2 hr after sunset, when weather conditions were conducive to observing owls outside of burrows.

4.0 RESULTS

Field surveys were performed on 14 April, 08 May, 06 June, and 01 July 2013. Weather conditions during the surveys were sunny and clear, ambient temperature ranged from 50 to 87 degrees Fahrenheit, with wind speeds between 0-15 miles per hour. The study area is heavily disturbed as a result of persistent on- and off-highway vehicle and pedestrian-related traffic. The vast majority of the Project site supports non-native vegetation dominated by annual grass species including filaree (*Erodium cicutarium*), foxtail chess (*Bromus madtritensis* ssp. *rubens*), tumble mustard (*Sisymbrium altissimum*), Russian thistle (*Salsola tragus*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*). The southern portion of the study area includes native rubber rabbit brush (*Chrysothamnus nauseosus*).

Several extremely low quality potential burrows were observed within the southern and northern portions of the study area (Fig. 2). One Burrowing Owl was observed near West Avenue J and 110 Street West; outside of study area limits. No Burrowing Owls were observed nesting, foraging, dispersing, or utilizing refuge habitats within the Project Site. Appendix A includes a list of all avian species observed. Appendix B includes representative photographs of the study area.



Study Area (365-acres which includes a 500-ft buffer and the Project Site)

Project Site (166 acres)

Potential Burrow Locations

- Active
- Inactive

0 500 1,000 Feet

1 inch = 1,000 feet

Data Sources:
- BingMaps accessed Jul 2013
- Silverado Power 2013

Map Prepared: 7-8-13

Prepared by:
NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\LA County\Western Antelope Blue Sky BUOW Fig2. Potential Burrows.mxd

Figure 2. Potential Burrow Locations

5.0 CONCLUSIONS

No Burrowing Owls were observed within the Project Site. Given the low quality habitat and extent of anthropogenic disturbance (e.g., high levels of on- and off-highway vehicle traffic), the Project Site seems unlikely to support Burrowing Owls. The survey data suggests that no Burrowing Owls would be adversely affected by the Project.

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APPENDIX A

AVIAN COMPENDIUM

APPENDIX A

AVIAN COMPENDIUM

Scientific name	Common name
Athene cunicularia	Burrowing Owl
Amphispiza belli	Sage Sparrow
Callipepla californica	California Quail
Carpodacus mexicanus	House Finch
Chondestes grammacus	Lark Sparrow
Columba livia	Rock Pigeon
Corvus corax	Raven
Eremophila alpestris	Horned Lark
Euphagus cyanocephalus	Brewer's Blackbird
Mimus polyglottos	Northern Mockingbird
Passer domesticus	House Sparrow
Phalacrocorax auritus	Double-crested Cormorant
Sturnella neglecta	Meadowlark
Tyrannus verticalis	Western Kingbird
Zenaida macroura	Mourning Dove
Zonotrichia leucophrys	White-crowned Sparrow

APPENDIX B

PHOTOGRAPHIC LOG

APPENDIX B

PHOTOGRAPHIC LOG

	Photograph: 1 **Facing South**
	Photograph: 2 **Facing East**

Photograph: 3

Potential Burrow

BIOLOGICAL TECHNICAL REPORT FOR THE WESTERN ANTELOPE BLUE SKY RANCH SOLAR PROJECT SITE (CUP 7) CITY OF LANCASTER LOS ANGELES COUNTY, CALIFORNIA

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July 2011

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Figure 2. Project Vicinity Map 3

SECTION 1.0 – INTRODUCTION

Silverado Power, LLC (Silverado Power) is an independent solar power producer and developer of distributed solar power assets utilities that are for both municipally and investor owned. Silverado Power strives to be a leader in wholesale solar power generation and the process of developing, building, and operating solar generation facilities (SGFs).

Chambers Group, Inc. (Chambers Group) was retained by Tetratech (for Silverado Power) to conduct a literature review and biological technical report (BTR) on the proposed Western Antelope Blue Sky Ranch Solar project site located in Los Angeles County. The purpose of this document is to report the results of the reconnaissance-level biological survey.

1.1. PROJECT DESCRIPTION

Silverado Power plans to develop the Western Antelope Blue Sky Ranch SGF (the Project). The Project facilities would operate year-round, producing electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the fourth quarter of 2014.

The proposed the Project would have a generating capacity of 40 megawatts alternating current (MW-AC). The Project will employ photovoltaic (PV) modules to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system.

The Project would meet the increasing demand for electricity generated from clean, renewable technology. The recent legislation enacted in California recognizes the multiple benefits associated with the development of renewable energy resources. These benefits include a reduced reliance on foreign sources of fuel, promotion of national security, diversification of energy portfolios, reductions in greenhouse gas emissions, and the creation of “green” jobs within the state of California.

1.2. PROJECT LOCATION

The proposed Project site (APN: 3267-015-001) comprises approximately 157 acres of previously disturbed, fallow agricultural land and would produce 40 MW of renewable power. Western Antelope Blue Sky Ranch is located within the city of Lancaster, CA, on the northwest t corner of the intersection of West Avenue K and 110th Street West and is approximately 1.35 miles southwest of the Antelope Valley electrical substation. The site is located within the *Del Sur* California USGS 7.5 minute quadrangle. Fallow and active agricultural fields surround the Project site. Project Regional and Vicinity maps are presented in Figure 1 and Figure 2.

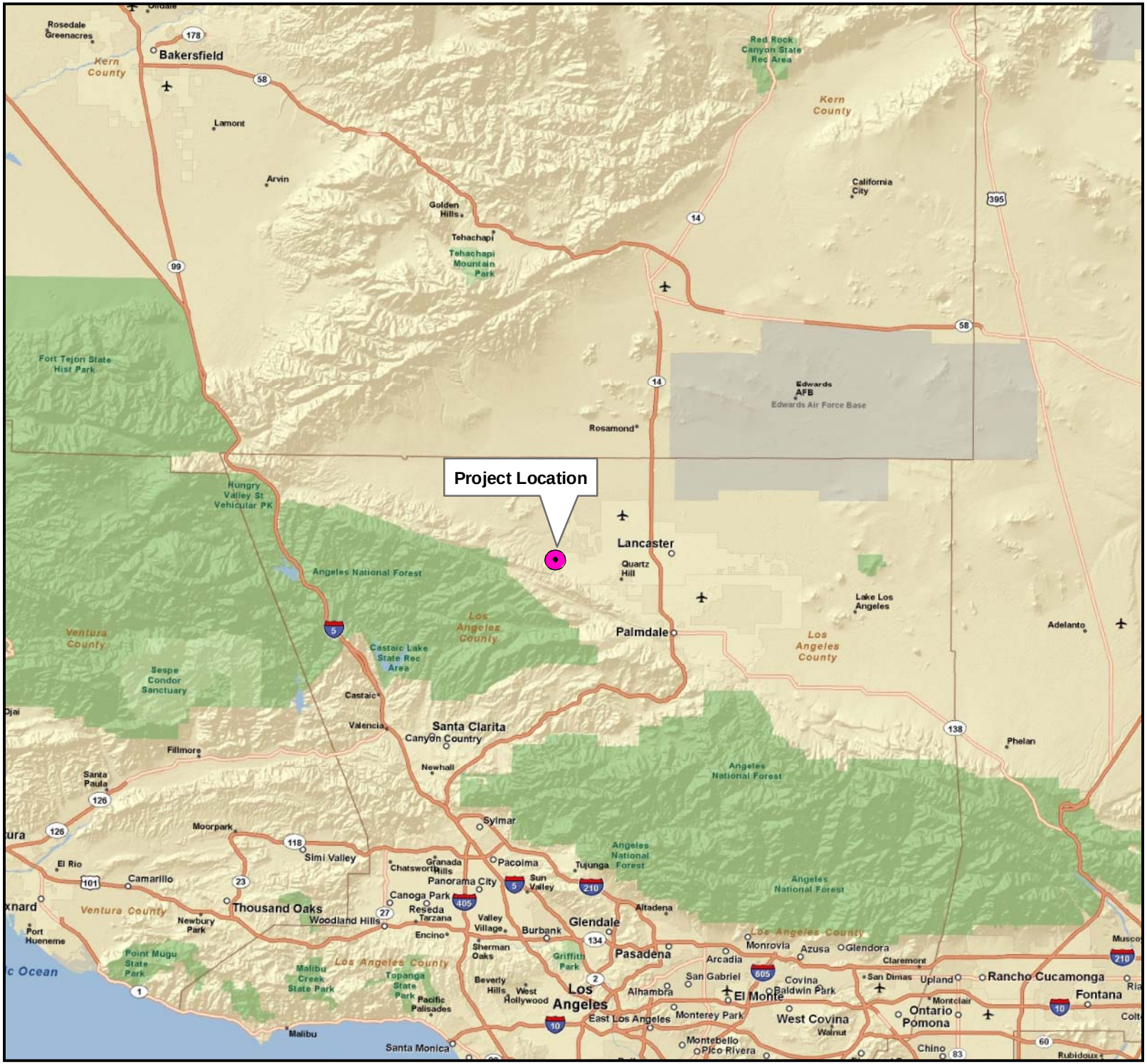

Figure 1
Regional Map
Western Antelope
Blue Sky Ranch

Legend

Project Location

N
W E
S

0 4 8 16
Miles

6-9-11
20327

Chambers Group Inc.

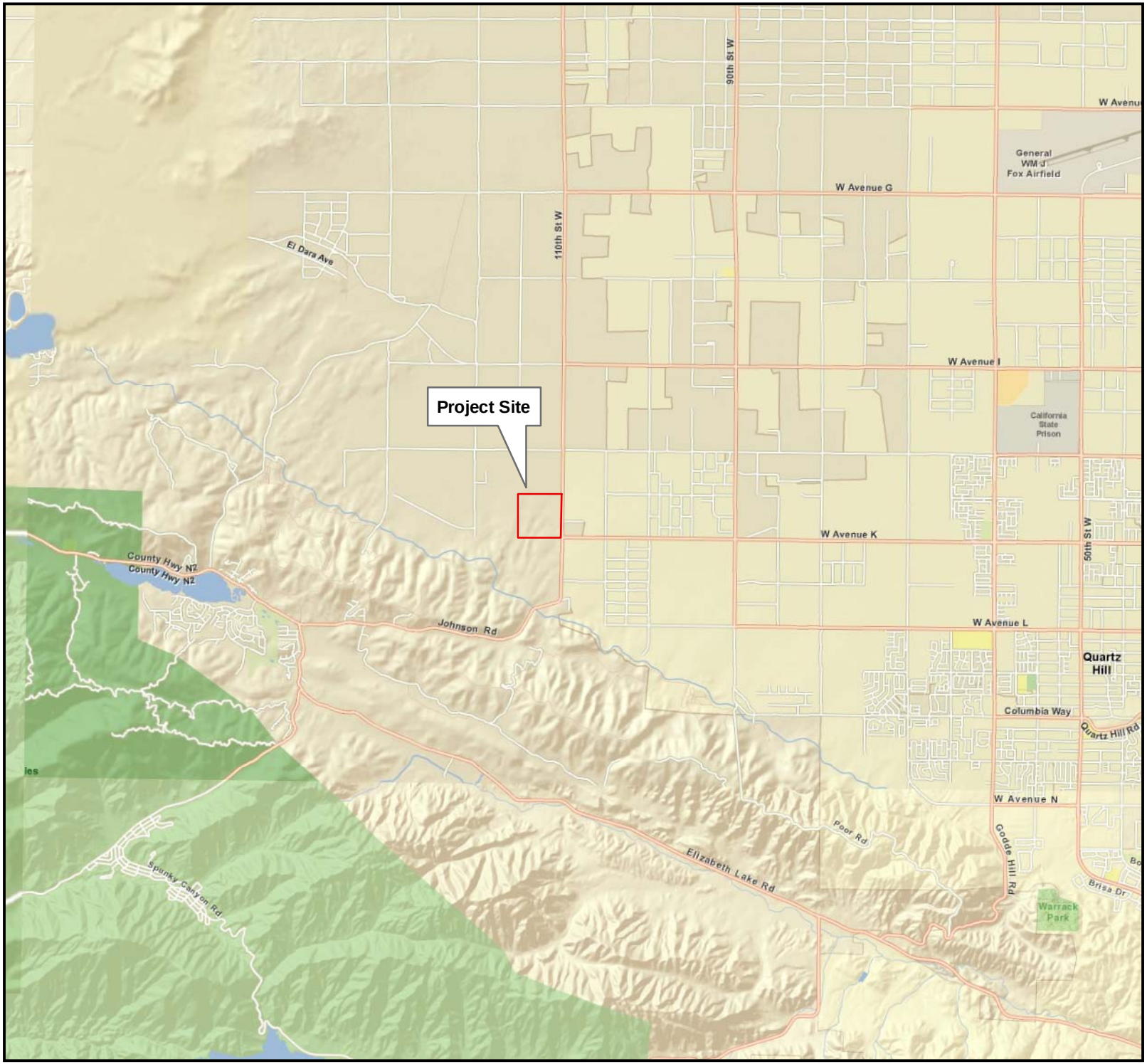

Figure 2
Vicinity Map
Western Antelope Blue Sky Ranch

Legend

Project Site

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SECTION 2.0 – METHODS

2.1. LITERATURE REVIEW

Prior to conducting the field survey, existing documentation relevant to the Project site was reviewed. The most recent records of the California Department of Fish and Game California Natural Diversity Database (CNDDB 2011) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2011) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Fairmont Butte, Little Butte, Rosamond, Rosamond Lake, Redman, Alpine Butte, Lancaster East, Lancaster West, Del Sur, Lake Hughes, Burnt Peak, Little Rock, Lovejoy Buttes, El Mirage*, California USGS 7.5 minute quadrangles). The database contains records of reported occurrences of federal- or state-listed as endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Concern (CSC), or otherwise sensitive species or habitats that may occur within or in the vicinity of the Project site.

2.2. BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

The field survey was conducted on the Project site in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support special status wildlife species and to identify any potential jurisdictional waters of the United States. Chambers Group biologists Nichole Cervin and Kun Liu conducted the general reconnaissance survey on March 19, 2011. Weather conditions during the survey included temperatures averaging approximately 60 degrees Fahrenheit with 5 percent cloud cover and no precipitation. During the survey the biologists walked the Project site documenting the native vegetation communities and took notes regarding the potential for special status species and jurisdictional waters to occur onsite. Photographs of the Project site were also taken to document existing conditions.

2.3. VEGETATION

All plant species and soil types observed onsite were noted. Plant communities on the Project site were identified, qualitatively described, and mapped onto an aerial photograph. Plant communities were determined in accordance with the categories set forth in Holland (1986) or Gray and Bramlet (1992). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California* (Hickman 1993).

2.4. WILDLIFE

All wildlife and wildlife sign observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support state- and/or federal-listed or proposed listed species. Notes were made on the general habitat types, species observed, and the conditions of the site. Photographs of the site are provided in Appendix B.

SECTION 3.0 – RESULTS

3.1. LITERATURE REVIEW

According the literature review, 19 special status plant and 31 special status wildlife species were documented to occur within the vicinity of the Project site. This list included ten wildlife species that are federal- and/or state-listed endangered or threatened. Of the 19 special status plant species listed in the literature review, none are federal- and/or state-listed endangered or threatened.

3.2. VEGETATION COMMUNITIES

The Project site is classified as Ruderal, Valley Needle Grassland, Non-Native Annual Grassland, Saltbush Scrub and Rubber Rabbitbush Scrub (See Appendix A). Western Antelope Blue Sky Ranch is surrounded by non-native grasslands and saltbush scrub.

3.2.1 Ruderal Vegetation

Areas classified as Ruderal tend to be dominated by pioneering herbaceous species that readily colonize disturbed ground and that are typically found in temporary, often frequently disturbed habitats (Barbour et al. 1999). The soils in ruderal areas are typically characterized as heavily compacted or frequently disturbed. The vegetation in these areas is adapted to living in compact soils where water does not readily penetrate the soil. Often, Ruderal areas are dominated by species of the *Centaurea*, *Brassica*, *Malva*, *Salsola*, *Eremocarpus, Amaranthus*, and *Atriplex* genera.

Areas with Ruderal vegetation are present throughout the northwest corner of the Project site. Ruderal plant species found on the project site include soft chess (*Bromus hordeaceus*) and red-stem filaree (*Erodium cicutarium*).

3.2.2 Valley Needlegrass Grassland

Valley Needlegrass Grassland is a mid-height (up to 2 feet) grassland dominated by perennial tussock-forming purple needlegrass (*Nassella pulchra*). Native and introduced annual herbaceous plants occur between the perennial grasses, often exceeding the bunchgrasses in overall vegetative cover. These grasslands are typically found on fine-textured, often clay soils, which can be moist or even waterlogged during the winter, but are very dry in the summer (Holland 1986).

Valley Needlegrass Grassland is present throughout the Project site. Plant species found within the site typical of this vegetation community include purple needlegrass.

3.2.3 Non-native Annual Grasslands

Non-Native Annual Grassland consists of a dense to sparse cover of annual grasses such as oats (*Avena* sp.), bromes (*Bromus* sp.), and ryegrass (*Lolium* sp.) with flowering culms up to 3 feet in height. This community is often associated with numerous species of showy-flowered, native annual forbs “wildflowers” such as California poppy (*Eschscholzia californica*), lupines (*Lupinus*

sp.), and goldfields (*Lasthenia* sp.) especially in years of favorable rainfall (Holland 1986). Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from winter through spring. Typically plants are dead through the summer-fall dry season persisting as seeds. Non-native grasslands can be found on fine-textured usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall.

Non-Native Grassland is present throughout the center and eastern portion of the Project site. Plant species found on the project site typical of this vegetation community include: cheat grass (*Bromus tectorum*), foxtail chess (*Bromus madritensis* ssp. *rubens*) and Mediterranean schismus (*Schismus barbatus*).

3.2.4 Desert Saltbush Scrub

Desert Saltbush Scrub is typically characterized by low, grayish microphyllous shrubs 1 to 3 feet in height dominated by saltbush (*Atriplex* sp.) with some succulent species. Cover in this community is often low with much bare ground between the widely spaced shrubs. Microhabitat consists of fine-textured, poorly drained soils with high alkalinity and/or salinity surrounding playas on slightly higher ground at elevations below 4,000 feet amsl (Holland 1986).

Desert Saltbush Scrub is present in the southeastern corner of the Project site. Plant species found within this site typical of this vegetation community include cattle saltbush (*Atriplex polycarpa*).

3.2.5 Rubber Rabbitbrush Scrub

Rubber Rabbitbrush Scrub is dominated by rubber rabbitbrush (*Chrysothamnus nauseosus*), usually approximately 3 feet in height with regularly-spaced gray-green shrubs that bloom in late summer or early fall (Holland 1986). Rabbitbrush Scrub is a disturbance-maintained community in which fire, grazing, or soil tilling perpetuate the same species within the herb and shrub layers and the disturbance occurs with regular (less than 10 years) frequency.

Rubber Rabbitbrush Scrub is present throughout the southeastern portion of the Project site. Plant species found within this site typical of this vegetation community include: western tansymustard (*Descurainia pinnata*) and rubber rabbitbrush.

3.3. JURISDICTIONAL FEATURES

There are several drainages on the Project site running in a north to south direction. Chambers Group conducted a preliminary assessment for the jurisdictional features found on the Project site. A formal delineation was not conducted.

3.4. SPECIAL STATUS SPECIES

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Project site.

CNPS

List 1A = Plants presumed extinct in California.
List 1B = Plants rare and endangered in California and throughout their range.
List 2 = Plants rare, threatened, or endangered in California but more common elsewhere in their range.
List 3 = Plants about which we need more information; a review list.
List 4 = Plants of limited distribution; a watch list.

CNPS Extensions

0.1 = Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2 = Fairly endangered in California (20 to 80 percent occurrences threatened).
0.3 = Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE = Federally listed; Endangered
FT = Federally listed; Threatened
FC = Federal Candidate for listing
FPT = Federal Proposed listing as Threatened

State

ST = State listed; Threatened
SE = State listed; Endangered
RARE = State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC = State Species of Special Concern
WL = California Department of Fish and Game (CDFG) Watch List

3.5. SENSITIVE SPECIES DESCRIPTIONS

The following is a description of sensitive plant and wildlife species with the potential to occur in the Project vicinity.

3.5.1 Sensitive Plant Species in the Los Angeles County Area

3.5.1.1 Alkali Mariposa Lily (*Calochortus striatus*) CNPS List 1B.1

Alkali mariposa lily is a CNPS List 1B.2 species. This perennial, bulbiferous herb flowers between April and June. This species occurs on alkaline and mesic soils within Chaparral, Chenopod Scrub, Mojavean Desert Scrub, and Meadows and Seeps habitats at elevations between 230 and 5,233 feet above mean sea level (amsl). Known range for this species includes: Kern, Los Angeles, San Bernardino, and Tulare Counties. Threats to alkali mariposa lily include groundwater pumping, urbanization, grazing, trampling, road construction, water diversion resulting in lowering the water table, and possibly horticultural collecting.

3.5.1.2 Barstow Woolly Sunflower (*Eriophyllum mohavense*) CNPS List 1B.2

Barstow woolly sunflower is a CNPS List 1B.2 species. This annual herb flowers between March and May. Barstow woolly sunflower occurs within Chenopod Scrub, Mojavean Desert Scrub, and Playas habitats at elevations between 1,640 and 3,150 feet amsl. Known range for this species includes: Fresno, Kern, Los Angeles, and San Bernardino Counties. Threats to this species include vehicles, grazing, energy development, and road improvements.

3.5.1.3 Clokey's Cryptantha (*Cryptantha clokeyi*) CNPS List 1B.2

Clokey's cryptantha is a CNPS List 1B.2 species. This annual herb flowers in April. Clokey's cryptantha occurs within Mojavean Desert Scrub habitat at elevations between 2,379 and 4,478 feet amsl. Known range for this species includes: Inyo, Los Angeles, and San Bernardino Counties. Major threats to this species include military activities and alteration of fire regimes.

3.5.1.4 Darwin Rock Cress (*Arabis pulchra* var. *munciensis*) CNPS List 2.3

Darwin rock cress is a CNPS List 2.3 species. This perennial herb flowers in April. Darwin rock cress occurs in carbonate soils of Chenopod Scrub and Mojavean Desert Scrub habitats at elevations between 3,608 and 6,807 feet amsl. Known range includes Inyo, Los Angeles, and San Bernardino Counties.

3.5.1.5 Davidson's Bush Mallow (*Malacothamnus davidsonii*) CNPS List 1B.2

Davidson's bush mallow is a CNPS List 1B.2 species. This perennial deciduous shrub flowers between June and January. Davidson's bush mallow occurs within chaparral, Coastal Scrub, Cismontane Woodland, and riparian woodland habitats at elevations between 607 and 2,805 feet amsl. Known ranges include: Los Angeles, Monterey, Santa Clara, San Mateo, and San Luis Obispo Counties. Urbanization, maintenance activities, and erosion are the main threats to this species.

3.5.1.6 Desert Cymopterus (*Cymopterus deserticola*) CNPS List 1B.1

Desert cymopterus is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs on sandy soils within Mojavean Desert Scrub and Joshua Tree Woodland habitats at elevations between 2,066 and 4,921 feet amsl. Known range for this species includes: Kern, Los Angeles, and San Bernardino Counties. Threats to desert cymopterus include military activities, sheep grazing, vehicles, utility construction, and urbanization.

3.5.1.7 Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*) CNPS List 1B.1

Horn's milk-vetch is a CNPS List 1B.1 species. This annual herb flowers between May and October. This species occurs along lake margins in poorly drained, alkaline soils of meadows and seeps and Playas habitats at elevations between 195 to 2,790 feet amsl. Known ranges include Inyo, Kern, and San Bernardino Counties and Nevada. Poisonous to sheep, it was subject to eradication by farmers in the early 1900s; current threats to Horn's milk-vetch are habitat alterations.

3.5.1.8 Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*) CNPS List 1B.1

Lancaster milk-vetch is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs within Chenopod Scrub habitat. Known ranges include Kern, Los Angeles, and San Bernardino Counties and Nevada. Limited range, including areas only near Lancaster and Edwards Air Force Base, is the major threat to Lancaster milk-vetch.

3.5.1.9 Pale-Yellow Layia (*Layia heterotricha*) CNPS List 1B.1

Pale-yellow layia is a CNPS List 1B.1 species. This annual herb flowers between March and June. This species occurs in alkaline or clay soils within Cismontane Woodland, Coastal Scrub, Pinyon-Juniper Woodland, and Valley and Foothill Grassland habitats at elevations between 984 and 5,594 feet amsl. Known ranges include Fresno, Kern, Kings, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, San Benito, and Ventura Counties. Threats to pale-yellow layia include vehicle use, competition from non-native plants, agricultural conversion, and grazing.

3.5.1.10 Parish's Popcorn-Flower (*Plagiobothrys parishii*) CNPS List 1B.1

Parish's popcorn-flower is a CNPS List 1B.1 species. This annual herb flowers between March and November. This species occurs on alkaline and mesic soils within Great Basin Scrub and Joshua tree Woodland habitats at elevations between 2,460 and 4,595 feet amsl. Known range for this species includes: Inyo, Los Angeles, Mono, and San Bernardino Counties. Threats to Parish's popcorn-flower include groundwater pumping.

3.5.1.11 Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) CNPS List 1B.1

Parry's spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and June. This species occurs in sandy or rocky soils and openings within Cismontane Woodland, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 902 and 4,002 feet amsl. Known ranges include Los Angeles, Riverside and San Bernardino Counties. Threats to this species include development, altered flood regime, mining, vehicles, and competition from non-native plants.

3.5.1.12 Peirson's Morning-Glory (*Calystegia peirsonii*) CNPS List 4.2

Peirson's morning-glory is a CNPS List 4.2 species. This perennial, rhizomatous herb flowers between April and June. This species occurs within chaparral, Chenopod Scrub, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, and Valley and Foothill Grassland habitats at elevations between 98 and 5,085 feet amsl. Known ranges include Los Angeles County. Major threats to Peirson's morning-glory include grazing and development; possible threats include power line construction.

3.5.1.13 Recurved Larkspur (*Delphinium recurvatum*) CNPS List 1B.2

Recurved larkspur is a CNPS List 1B.2 species. This perennial herb flowers between March and June. This species occurs on alkaline soils within Chenopod Scrub, Cismontane Woodland, and Valley and Foothill Grassland habitats at elevations between 10 and 2,460 feet amsl. Known ranges of the recurved larkspur include: Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solana, Sutter, and

Tulare Counties. Conversion of habitat, grazing, and trampling are threats to the recurved larkspur.

3.5.1.14 Round-Leaved Filaree (*California macrophylla*) CNPS List 1B.1

Round-leaved filaree is a CNPS List 1B.1 species. This annual herb flowers between March and May. Round-leaved filaree occurs in clay soils within Cismontane Woodland and Valley and Foothill Grassland habitats at elevations between 50 and 3,937 feet amsl. Known ranges include Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, Santa Barbara, San Benito, Santa Clara, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Ventura, and Yolo Counties and Santa Cruz Island. Threats to this species include urbanization, feral pigs, habitat alteration, pipeline construction, urbanization and competition from non-native plants.

3.5.1.15 Sagebrush Loeflingia (*Loeflingia squarrosa*) CNPS List 2.2

Sagebrush loeflingia is a CNPS List 2.2 species. This annual herb flowers between April and May. This species occurs in sandy soils of Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub habitats at elevations between 2,295 and 5,300 feet amsl. Known range includes Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino Counties and Nevada, Oregon, and Wyoming. Possible threats to sagebrush loeflingia include off-highway vehicles and grazing.

3.5.1.16 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*) CNPS List 1B.1

San Fernando Valley spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and July. This species occurs in sandy soils of Coastal Scrub and Valley and Foothill Grassland habitats at elevations between 492 and 4,002 feet amsl. Known range includes Los Angeles, Orange, and Ventura Counties. Possible threats to this species include competition from non-native plants and development.

3.5.1.17 Short-Joint Beavertail (*Opuntia basilaris brachyclada*) CNPS List 1B.2

Short-joint beavertail is a CNPS List 1B.2 species. This perennial stem succulent flowers between April and June. This species occurs within chaparral, Mojavean Desert Scrub, Joshua Tree Woodland, and Pinyon-Juniper Woodland habitats at elevations between 394 and 5,905 feet amsl. Known range for this species includes Los Angeles and San Bernardino Counties. Major threats to short-joint beavertail include vehicles, grazing, urbanization, mining, and horticultural collecting; possible threats include power line construction.

3.5.1.18 Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*) CNPS List 1B.1

Slender mariposa lily is a CNPS List 1B.1 species. This perennial, bulbiferous herb flowers between March and June. This species occurs within chaparral, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 1,050 and 3,280 feet amsl. Known ranges include Los Angeles and Ventura Counties. Threats to slender mariposa lily include vehicles, development, mining, and competition from non-native plants.

3.5.1.19 White Pygmy-Poppy (*Canbya candida*) CNPS List 4.2

White pygmy-poppy is a CNPS List 4.2 species. This annual herb flowers between March and June. This species occurs on gravelly, sandy, or granitic soils within Joshua Tree Woodland, Mojave Desert Scrub, and Pinyon-Juniper Woodland habitats at elevations between 600 and 4,800 feet amsl. Known ranges include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino Counties. This species is threatened by development, off-highway vehicles, grazing, mining, and competition from non-native plants.

3.5.2 Sensitive Wildlife Species in the Los Angeles County Area

3.5.2.1 American Badger (*Taxidea taxus*) CSC

The American badger is a California Species of Concern (CSC). This carnivorous species ranges over most of the western U.S and upper midwestern U.S. south into central Mexico. In California, the badger may occupy a variety of habitats, especially grasslands, savannas, montane meadows, sparse scrublands, and deserts. It prefers friable soils for burrowing, and relatively open, uncultivated ground. Prey items include gophers, ground squirrels, marmots, kangaroo rats, other rodents, and the occasional reptile or amphibian. The American badger may weigh up to 25 pounds and is easily recognized by its overall yellowish gray coloration, the white stripe on top of its head, white cheeks, and black feet with noticeably long front claws. It is a heavy-bodied animal with short legs and a characteristic pigeon-toed gait. It is chiefly nocturnal, but it is often seen by day as well. It gives birth to two to five young anywhere from February to May, depending on its altitude and latitude. Threats to this species include habitat loss to agriculture, housing, and other land conversions, and illegal hunting.

3.5.2.2 Arroyo Toad (*Anaxyrus californicus*) FE, CSC

The arroyo toad is a federally endangered species and a CSC. The range of this species is within coastal California from Monterey County into northwestern Baja California, Mexico. It is found in washes, streams, and arroyos; and preferred habitats include sandy banks within riparian woodlands such as willow, cottonwood, sycamore, mulefat, and/or coast live oak. It breeds in shallow, sandy/gravelly riverine pools with low silt content and normally disperses onto adjacent uplands after breeding. Individuals have been observed up to 2 kilometers (km) from the streams in which they breed, but most often they are within 0.5 km of those streams (USFWS 1992a). During the breeding season, males call nocturnally from open areas on banks at the edges of streams. Males typically precede females at breeding sites. Females lay their eggs among gravel, leaves, or sticks, on mud or clean sand within low to moderately flowing sections of streams in areas with little or no emergent vegetation and little woody marginal growth. Newly metamorphosed individuals remain near pools for up to several weeks until the areas dry. Juveniles begin feeding primarily on ants and shift to small beetles as they grow (Sweet 1991) before moving into adjacent wintering grounds. Many spend the next 6 to 8 months overwintering in burrows up to 20 centimeters deep in sandy substrates of these habitats. Adults obtain shelter primarily by burrowing into fine, sandy soils in both adjacent and upland habitats (Sweet 1991). This small to moderately-sized species is distinguished from other toads by its chevron-shaped marking between the eyes and by the lack of a mid-dorsal stripe. Coloration may vary from light olive gray to tannish brown above, and the unmarked undersurfaces are creamy to dirty white. The iris is dark brown with scattered gold iridophores on the upper and lower portions of the iris. The primary threat to this species is habitat loss.

3.5.2.3 Bell's Sage Sparrow (*Amphispiza belli belli*) WL

The Bell's sage sparrow is a subspecies of sage sparrow and a CDFG Watch List (WL) species. It breeds primarily in chamise chaparral along the coastal side of California from the western foothills of the Sierra Nevada to San Diego County and northwest Mexico. It also breeds less commonly in coastal sage, mixed chaparral, and big sagebrush communities. Wintering birds of this subspecies may migrate to desert floors or remain in their breeding habitats. This species is distinguished from other sparrows by its gray head and back, thin white eye-ring, single dark breast spot, and heavy whisker-like pattern about the face. Populations are in decline due to habitat loss and fragmentation, frequent wildfires, grazing, invasive plants, and brood parasitism caused by the brown-headed cowbird (*Molothrus ater*).

3.5.2.4 Burrowing Owl (*Athene cunicularia*) CSC

The burrowing owl, a CSC, is broadly distributed across the western United States with populations in Florida and Central and South America. Burrowing owls use a variety of natural and modified habitats for nesting and foraging, typically characterized by low-growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrublands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. Burrowing owls typically use burrows made by mammals, such as California ground squirrels (*Spermophilus beecheyi*), foxes, or badgers. They sometimes dig their own burrows and will often utilize man-made structures such as earthen berms; cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls often are found within, under, or in close proximity to man-made structures. Prey sources for this species include small rodents; arthropods such as spiders, crickets, centipedes, and grasshoppers; smaller birds; amphibians; reptiles; and carrion. Threats to the burrowing owl include loss of nesting burrows, habitat loss, and mortality from motor vehicles.

3.5.2.5 California Red-Legged Frog (*Rana aurora draytonii*) FT, CSC

The California red-legged frog is a federally threatened species and a CSC. It is found from Mendocino County in California south to northwestern Baja, Mexico. It may occur in a variety of habitats from near sea level to 8,000 feet in elevation and is strongly associated with permanent sources of water, including cattail and tule marshes, reservoirs, ponds, and stream sides. It prefers deep, still, or slow moving water with low salinity levels and shallow margins or riffle zones. This species may disperse far from water (up to one mile) during and after significant rain events, and other habitats may include moist woodlands and grasslands from the lowlands through the foothills. It may make seasonal movements into riparian thickets and upland habitats for foraging, where it may seek small mammal burrows, leaf litter, or other moist areas of refuge for shelter or hibernation. The metamorphosis of this species is slower than most large frog species, requiring 11 to 20 weeks of permanent water for larval development. Most individuals have a dark mask bordered by a whitish jaw stripe; a reddish-orange venter; and coarse red, yellow, black, and/or gray mottling in the groin. This subspecies of the red-legged frog has experienced dramatic population declines since the late nineteenth century; some estimates claim a 75 percent rate of disappearance from its former range. Threats to this species include habitat loss and predation by non-native species such as bullfrogs and non-

native fishes. In addition, this species was historically exploited as a source of frog legs for human consumption.

3.5.2.6 Coast Horned Lizard (*Phrynosoma blainvillii*) CSC

The coast horned lizard is a CSC found along the Pacific coast of California on the western side of the Sierra Mountains to the Baja peninsular area in Mexico. This species is found in many habitats including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet amsl. It inhabits sandy washes or areas with loose, fine, sandy soils for burying and having low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native species of ants. Populations of this species have been reduced due to development, agriculture, and the introduction of Argentine ants that heavily compete with native ant species (Stebbins 2003). This species is approximately 2 to 4 inches in snout to vent length (adult) with numerous elongated and pointed scales (spines) on the dorsal side and two rows of enlarged scales along the flank. This species is brown, yellowish, reddish, or gray with several dark bands that cross the back with highlighted white areas along the rear of the bands (Sherbrooke 2003).

3.5.2.7 Cooper's Hawk (*Accipiter cooperii*) WL

The Cooper's hawk (nesting) is a CDFG WL species. This species occurs as a migrant and/or resident over most of the U.S. from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known to breed in suburban and urban areas with similar tree structure to native habitats. This medium-sized (14 to 20 inches) hawk is well-adapted for hunting birds as prey with its long tail and short, rounded wings; these features allow maneuverability in pursuit and on the ambush. It is similar in appearance to the sharp-shinned hawk (*Accipiter striatus*) but is distinguished by its larger size, more rounded tail, and darker crown. In addition to birds, it may also take amphibians, reptiles, and small mammals as supplemental prey items. Historic population losses resulted from the widespread use of DDT. Other threats include habitat loss and illegal hunting (Remsen 1978).

3.5.2.8 Desert Tortoise (*Gopherus agassizzi*) FT, ST

The desert tortoise is a federal- and state-listed threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo Counties, as well as most of San Bernardino, Riverside, and Imperial Counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. It is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark gray-brown. Besides range, a composite of

characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

3.5.2.9 Ferruginous Hawk (*Buteo regalis*) WL

The ferruginous hawk (wintering) is a CDFG WL species. This species nests from the Canadian prairie provinces south to Oregon, Nevada, Arizona, and Oklahoma and winters in the southern half of its breeding range as well as the southwestern states from California to west Texas, then south into Mexico. It requires large, open areas of grassland, sparse shrub, or desert habitats interspersed with trees. It roosts in open areas, usually on lone trees, cliff ledge, or hill scarps. It winters in open terrain from grasslands to deserts where pocket gophers, ground squirrels, or rabbits are abundant, and it nests in either natural or human-made structures or on cliffs, buttes, cut banks, shrubs, or trees. In addition to pocket gophers, ground squirrels, and rabbits, it also eats prairie dogs, snakes, lizards, birds, large insects, and other rodents. The ferruginous hawk has distinct light and dark morphs. Light morphs are reddish or light brown above and whitish below, with rusty leg feathers and a pale tail. Dark morphs are uncommon in about less than 10 percent of the population and are a deep rufous to brown above and below with very bright white on the underside of the flight feathers and a narrow, white crescent on the underside of the wrist (Sibley 2003). This species is the largest of the buteos. The biggest threat to the ferruginous hawk is habitat loss, fragmentation, or degradation resulting from land use practices including conversion of native habitat to agriculture, urbanization, improper grazing practices, and conversion of shrubland to grassland (Collins and Reynolds 2005). Other threats include illegal shooting and collisions with cars.

3.5.2.10 Least Bell's Vireo (*Vireo bellii pusillus*) FE, SE

The least Bell's vireo was state-listed as an endangered subspecies of Bell's vireo by the CDFG in 1980 and federally listed as endangered by the U.S. Fish and Wildlife Service (USFWS) in 1986. Critical habitat for the least Bell's vireo was designated in 1994 (USFWS 1986). The least Bell's vireo subspecies is restricted to coastal and inland southern California and Baja California, Mexico. Its winter range extends along the Pacific coast from northern Mexico south to northern Nicaragua. The two major factors in the decline of least Bell's vireo populations are loss of habitat and nest parasitism by the brown headed-cowbird. Habitat loss, fragmentation, and degradation, especially along streams and rivers, due to development, agriculture, flood control projects, logging operations, and intensive cattle grazing practices, are the greatest threats to the continued existence of the least Bell's vireo. The least Bell's vireo is a small, gray songbird with pale yellow wash on its sides, two faint wing bars, and a faint eye ring. Preferred nesting habitat is low, dense, scrubby vegetation in early successional areas that are particularly dependent on riparian areas. Habitats may include willow woodlands and dense mule fat, scrub oak, coastal chaparral, and mesquite patches with dense early successional understories.

3.5.2.11 Le Conte's Thrasher (*Toxostoma lecontei*) CSC

The Le Conte's thrasher is a CSC in the San Joaquin Valley area. It occurs in deserts of the southwest U.S., southwestern Utah, southern Arizona, and northwestern Mexico (Weigand and Fitton 2008). Habitat includes open desert wash, desert scrub, alkali desert scrub, and desert

succulent shrub habitats; and in Joshua tree habitat with scattered shrubs. Le Conte's thrasher is a medium-sized songbird with a long dark tail, black decurved bill, and a plain grayish or sandy-colored body. It is distinguished from other thrashers by its unspotted breast, deep buff crissum, dark eye, and dark tail that contrasts sharply with its body. Le Conte's thrashers forage as generalists on bare ground and in vegetation litter under shrubs by scratching the soil and overturning objects (Weigand and Fitton 2008). In some parts of its range, this thrasher has lost extensive habitat to development; irrigated lawns, groves, and fields have been created over valuable xeric habitat. Development, wild burros, off-road vehicle recreation, and invasive plant species threaten this species (Weigand and Fitton 2008).

3.5.2.12 Loggerhead Shrike (*Lanius ludovicianus*) CSC

The loggerhead shrike (nesting) is a CSC. Its range includes most of the U.S. from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua tree woodlands, and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other structures that serve as lookout posts for potential prey. They prefer dense, thorny shrubs and trees, brush piles, and tumbleweeds for nesting (Seattle Audubon 2008). Both adults gather nesting materials, including twigs, grass, hair, feathers, and green vegetation; but only females build the cup-shaped nests. They lay between 5 and 6 eggs, which are incubated for 15 to 17 days; and nestlings will leave the nest after 17 to 20 days but won't fly for another week (Seattle Audubon 2008). The loggerhead shrike is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. This bird has a habit of caching its food for later consumption by impaling its prey on thorns, sharp twigs, or barbed wire; hence the term "butcher bird." It is recognized by its black facial mask; overall gray, black, and white color pattern; relatively big head; and hook-tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988, Scott and Morrison 1990).

3.5.2.13 Merlin (*Falco columbarius*) WL

The merlin (wintering) is a CDFG WL species. This species breeds in the northern parts of the Northern Hemisphere and winters in northern South America and northern Africa. In California, it occurs as a winter resident. Breeding habitats include open woodlands, savannas, cliffs near grasslands, and tundra. Migratory habitats include foothills, marshes, and open coastlines. Wintering habitats include open grasslands, semi-open forests, and coastal areas (i.e. beach dunes, marshes, and tidal flats). The merlin is a small falcon, slightly larger than the American kestrel (*Falco sparverius*), and appears heavier and bulkier in flight than the kestrel. The adult male merlin has a gray-blue back and crown and rufous washes on the sides of the breast. The adult female may be up to 30 percent larger than the male and has a brown back. The merlin mainly feeds on other birds, especially migrating and over-wintering waterfowl and shorebirds. Threats to its populations include habitat loss, pesticide use, and heavy metal poisoning.

3.5.2.14 Mohave Ground Squirrel (*Spermophilus mohavensis*) ST

The Mohave ground squirrel is a state-listed threatened species. The Mohave ground squirrel is specific to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Johnson 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 1998). They inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils. They will also feed in annual grasslands (Johnson 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study showed that most of their diet includes seeds from winter fat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and saltbush (Laabs 1998). Mohave ground squirrels are active in spring and early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (Johnson 1990).

3.5.2.15 Mountain Plover (*Charadrius montanus*) CSC, FPT

The mountain plover (wintering) is a CSC and a federally Proposed Threatened Species. This species breeds from the prairie and sagebrush country of north-central Montana, eastern Wyoming, and the area around southeastern Colorado. It winters from central California along the southern border states southward to northern Mexico (Udvardy 1977). Breeding habitats include semi-arid plains, grasslands, and plateaus. Common wintering habitats consist of dry, barren ground, smooth dirt fields, agricultural fields, and shortgrass prairies. This species tends to form small flocks in the winter. It is one of the few shorebird species that prefers habitats away from water. It is an insectivore that eats flies, beetles, grasshoppers, crickets, and other insects. The mountain plover is a relatively non-descript shorebird with a short tail, long legs, plain brown plumage above, and whiter plumage below. Males develop a black patch on the forehead during the breeding season. This species is sometimes confused with the American golden plover; but unlike that species, the belly and under-wing is a clean, white color and the legs are pale. Populations are in decline due to overgrazing practices and are also linked to declining prairie dog populations; mountain plovers often use prairie dog mounds as nest sites. The continued loss and alteration of habitats on breeding and wintering grounds are the primary threats to the mountain plover.

3.5.2.16 Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*) ST

The Nelson's antelope squirrel is a state threatened species. Nelson's antelope squirrels are restricted to the central and western areas of the San Joaquin Valley and inner coast ranges from 165 to 3,608 feet amsl. This species is found in alkali desert scrub and annual grasslands habitats on a variety of soil types including alluvial, loamy, sandy, gravely, or fine-textured sands. This species rarely digs its own burrows, preferring instead to use burrows made by other small mammals. Nelson's antelope squirrels are diurnally active, with most activity occurring in the early morning or late afternoon. This species is buff and yellow-brown above with a white stripe on each side and white under its tail. It can reach up to 10 inches in length. Nelson's ground squirrels feed primarily on grass and forb seeds, insects, and other green vegetation. The primary threats to this species include loss of habitat due to agriculture, urbanization, petroleum extraction, and rodent control poisons (Whitaker et al. 2008).

3.5.2.17 Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*) CSC

The pallid San Diego pocket mouse is a CSC. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican border. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus; and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or course gravel (Grinnell 1933, Miller and Stebbins 1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and pinyon-juniper woodlands. Pallid San Diego pocket mouse densities have been recorded as high as 39 per hectare (Lackey 1996). This species is similar in appearance to *C.f. fallax* but is lighter in overall coloration. Population declines may be due to urban and agricultural development.

3.5.2.18 San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE, CSC

The San Bernardino kangaroo rat is a federally endangered species and a CSC. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside Counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about 7 distinct populations. It prefers gravelly and sandy soils in alluvial habitats where it constructs underground burrows, and it rarely occurs in dense vegetation. This species is a small, nocturnally active rodent with pale yellow and dusky brown fur, and dark brown tail stripes, footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in is burrows for later consumption. It also consumes some green vegetation and insects when available. The primary threats to the continued existence of this species include habitat loss, degradation, and fragmentation due to developments related to housing, mining, and flood control (CDPR 1998).

3.5.2.19 Sierra Madre Yellow-Legged Frog (*Rana muscosa*) FE, SCE, CSC

The Sierra Madre yellow-legged frog is a federal-listed endangered, state candidate for listing as endangered, and a CSC. This species is found in the Sierra Nevadas from Fresno County to Kern County, and isolated populations are found in the San Gabriel, San Bernardino, and San Jacinto mountains of southern California, ranging in elevation from 4,500 to 11,980 feet amsl. This species was previously known as the mountain yellow-legged frog but is now considered a separate species from those found north of the Kings River north and middle forks, known as the Sierra Nevada yellow-legged frog (*Rana sierrae).* They range in size from 1.5 to 3.5 inches snout to vent length; and coloration is highly variable with olive, yellow, or brown with black or brown speckling above and pale yellow to orange below and on the hind legs (Calherps 2011b). They can be distinguished from *Rana sierra* by having slightly longer hind legs and a different mating call; both smell like garlic when handled (Calherps 2011b). Sierra Nevada populations occur in montane riparian, lodgepole pine, subalpine conifer, and wet meadows in association with lakes, ponds, and streams; southern California populations are found in lakes, ponds, and streams of montane conifer-hardwood, montane riparian, and ponderosa pine habitats. Adults feed on aquatic and terrestrial invertebrates; tadpoles feed on algae and diatoms. Sierra Madre

yellow-legged frogs are closely associated with aquatic environments and can be found in vegetation or on perching rocks within a few feet of water, diving into the water when threatened. They lay their eggs in shallow water and attach them to gravel or rocks; tadpoles can take up to two over-wintering periods to complete their aquatic development. They are diurnally active and will hibernate over the winter under the ice, and southern populations may estivate. Threats to this species include bullfrogs, non-native trout, cattle grazing, mining, off-road vehicles, public dumping, chytrid fungus, fires, and excessive flooding (Calherps 2011b).

3.5.2.20 Short-Eared Owl (*Asio flammeus*) CSC

The short-eared owl (nesting) is a CSC. The range of this species is nearly worldwide; and in North America, it breeds in northern Canada and Alaska as well as in large portions of the western U.S. and the Great Lakes area. In California, this species is an uncommon winter migrant in the Central Valley, Sierra Nevada, and southern California; and it is known to breed from the San Francisco area north. Migrants arrive in California in September to October and leave in April. Habitats include grasslands, prairies, dunes, tundra, meadows, irrigated fields, wetlands, and fresh and saltwater marshes. Within these open habitat types, it prefers denser areas where it can seek cover along the ground. Short-eared owls nest in depressions on dry ground where vegetation provides cover; nests are built with grasses, sticks, feathers, and forbs. Clutch size ranges from 3 to 14 eggs. Eggs are laid in April and incubated for 24 to 37 days, and the young fledge after 21 to 36 days. This owl is mostly active at night, but it may forage by day in late afternoons or on cloudy days. Although it feeds mostly on voles and other small mammals, it will also eat birds, amphibians, reptiles, and arthropods. It characteristically flies in an erratic and buoyant manner, low over open areas, before plunging feet first to catch prey. The short-eared owl is a relatively medium-sized owl with an overall tawny brown color and buffy wing patches. It has bold, yellow eyes that contrast sharply with its dark facial discs. Predators include golden eagles, great horned owls, snowy owls, and peregrine falcons. Small predatory mammals and large reptiles prey on eggs. Competitors include gulls, northern harriers, barn owls, and other owls. Overgrazing, destruction, and fragmentation of grasslands and wetland habitats, increased nest predation, and illegal shooting are all factors in the decline of this species.

3.5.2.21 Silvery Legless Lizard (*Anniella pulchra pulchra*) CSC

The silvery legless lizard is a CSC. Its range extends from the San Francisco Bay in California to northwestern Baja California, Mexico; and it can also be found on a few offshore islands of California. This species is found in chaparral, pine-oak woodlands, riparian woodlands, and also on beaches from sea level to around 5,100 feet. It occurs less commonly in desert scrub. Within these habitats, it prefers loose soils or sand for burrowing, moisture, warmth, and plant cover (Stebbins 2003). It forages in leaf litter during the day for insects such as termites, spiders, beetles, and larvae. On warm evenings, it may emerge to forage during the night. This legless lizard has a silver, gray, or beige dorsal coloration with a dark mid-dorsal line and is yellow below. The primary threats to the continued existence of this species include habitat loss due to agriculture and urban sprawl, overabundant non-native vegetation (i.e. iceplant on sand dunes), sand mining operations, off-road vehicle use, and other anthropogenic disturbances, including trampling and over-collecting for the pet trade.

3.5.2.22 Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) WL

The southern California rufous-crowned sparrow is a CDFG WL species. It is one of 17 recognized subspecies of the rufous–crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico; however, this sub-species is a resident of southwest California on the slopes of the Transverse and Coast ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martin Island. Habitats include broken sage scrub and chaparral; native grasslands with sparse shrubs; and rocky, brush-laden hillsides and canyons with open patches. It is a small non-descript sparrow with a rusty crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

3.5.2.23 Southern Grasshopper Mouse (*Onychomys torridus ramona*) CSC

The southern grasshopper mouse is a CSC. It occurs throughout desert and semi-arid habitats in the southwestern United States and much of Mexico, including western Nevada; the southern portions of California, Arizona, and New Mexico; northern Baja California; western Texas; and south to central Mexico (Hall 1981). The subspecies *ramona* is restricted to coastal southern California, with marginal records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley (Hall 1981). The grasshopper mouse rangewide is often found in low, arid scrub and semi-scrub vegetation; but this subspecies is found in grasslands and sparse sage scrub habitats. It nests in burrows often dug by kangaroo rats and pocket gophers, but it may dig its own burrows in sandy or other friable substrates (Baily and Sperry 1929, Stapp 1997). Specific habitat requirements of the southern grasshopper mouse generally are unknown, but Stapp (1997) found that grasshopper mice use open areas and microhabitats dominated by gopher mounds and burrows. Stapp suggests that grasshopper mice selected these microhabitats because of greater prey availability (i.e., arthropods using burrows for refuge), greater mobility in open areas, and dust bathing sites. It prefers low to moderate shrub cover and is active year-round. Unlike most other mice, this species is primarily carnivorous. It feeds nocturnally on a variety of arthropods, including grasshoppers, beetles, and scorpions. It will also feed on frogs, salamanders, lizards, small mammals, and, occasionally, seeds. It has been known to kill species larger than itself, such as kangaroo rats. Prey items are stalked, rushed, seized, and typically killed with a bite in the head. Curiously, it emits a howl on occasion, perhaps in defense of its territory. Home ranges can be as large as four hectares; and, consistent with its carnivorous nature, population densities are normally low. It breeds from May to June; and after about 30 days, it gives birth to an average of 4 young. Predators include snakes, raptors, and a variety of mammals, including coyotes, owls, and foxes. Habitat loss and degradation are the primary threats to this species.

3.5.2.24 Swainson's Hawk (*Buteo swainsoni*) ST

The Swainson’s hawk (nesting) is a state-listed threatened species. This species breeds from southwest Canada through the western U.S. into northern Mexico, with isolated breeding populations also observed in northern Illinois and the Sacramento and San Joaquin valleys of California. This species winters to South America. The Swainson’s hawk forages in open stands

of grass-dominated vegetation; sparse shrublands; and small, open woodlands. It typically nests in scattered trees within these grassland, shrubland, or agricultural landscapes. The Swainson's hawk feeds largely on insects, and thus is affected by pesticide use, particularly DDT and organophosphate pesticides currently used in South America (England et al. 1997).

3.5.2.25 Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*) CSC

The Tehachapi pocket mouse is a CSC. This species occurs in the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos, and east to the lower San Gabriel Mountains to Lake Elizabeth (Laabs 1998). The Tehachapi pocket mouse is one of two subspecies of *Perognathus alticola*; the second subspecies, *P. a. alticola,* occurs in the San Bernardino Mountains and has not been observed in over 50 years. Male Tehachapi pocket mice can reach up to 6.5 inches in length; while females are significantly smaller, reaching only 5.9 inches. Both sexes are yellowish-brown with a heavy overlay of black dorsally and white ventrally; facial markings are fainter, and the inside of the ears are white; its tail is bicolored and is slightly longer than head to body length (Laabs 1998). This species occurs in native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland, oak savanna, chaparral, coastal sage scrub, fallow grain fields, and rangeland at elevations ranging from 3,500 to 6,000 feet amsl, preferring loose, sandy soils for burrowing (Laabs 1998). They are nocturnal, feeding on seeds of grasses and forbs but will eat green vegetation and insects. Threats to this species include surface disturbance like mineral extraction and conversion of habitat to urban development.

3.5.2.26 Tricolored Blackbird (*Agelaius tricolor*) CSC

The tricolored blackbird (nesting colony) is a CSC that occurs primarily in California, with smaller populations in northern Mexico. This species is locally common in parts of the Central Valley and along the coast in Sonoma County but is not found commonly over most parts of its range. This species breeds near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds. Breeding season usually takes place from mid-April into late July, but Orians (1960) also reported active breeding in October and November in Sacramento Valley. Over the past few decades, numbers have been declining in California (DeHaven 1975). Reasons for the decline include the conversion of marshland habitats and agricultural poisoning.

3.5.2.27 Two-Striped Garter Snake (*Thamnophis hammondii*) CSC

The two-striped garter snake is a CSC. It is found in disjunct populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs,

small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. The historic range of this species has been lost to housing, urban development, and other human impacts by an estimated 40 percent (Stebbins 2003).

3.5.2.28 Western Pond Turtle (*Actinemys marmorata pallida*) CSC

The western pond turtle is a CSC. This species occurs along the coast of North America from Baja California up to San Francisco Bay and occurs from sea level to 5,900 feet in elevation (Calherps 2011a). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (Calherps 2011a). The western pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Basking sites are necessary for thermoregulation. Reptile body temperature is dependent upon the environment the air, the substratum, and solar radiation. Basking is absorption of the sun's radiation and/or through the substratum. This species occurs in a variety of habitat types including woodland, grassland, and open forest (Calherps 2011a). Although this species is considered aquatic, this species usually leaves the aquatic site to reproduce, to estivate, and to overwinter. Pond turtles hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (Calherps 2011a). The species is highly sensitive to disturbance and will quickly slide into water when they feel threatened. Pond turtles are diurnal and are most active from February to November; however, if water temperatures remain warm, this species may be active year long (Bury 2008). Mating takes place in April or May, and females will deposit eggs in a vegetated upland location that may be a considerable distance (400 m or more) from the aquatic habitat to the nest. Eggs are generally deposited in grassy, upland areas adjacent to streams during May and June, although some individuals may deposit eggs as early as April and as late as August. Hatchlings will stay at the nest location and will emerge in the early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and occasionally frogs and fish (Calherps 2011a). Habitat destruction is the primary threat to this species. Dams also cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury 2008).

3.5.2.29 Western Mastiff Bat (*Eumops perotis*) CSC

The western mastiff bat is listed as a CSC. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown (TPWD 2008).

3.5.2.30 Western Snowy Plover (*Charadruis alexandrinus nivosus*) FT, CSC

The western snowy plover (nesting, coastal populations) is federally listed as threatened and is also a CSC. The Pacific coastal population breeds primarily on beaches from southern Washington to southern Baja California, Mexico. Interior populations can be found in the Central Valley of California, Oregon, Nevada, and other western states. The western snowy plover nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitats, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds, and infrequently on bluff-backed beaches (USFWS 2001). This small plover has a pale tan back, rump, and tail; white underparts; and dark patches on the sides of its neck that reach around onto the top of its chest. Habitat alteration and recreational beach use have led to a serious decline in nesting habitat and populations over the last 40 years (USFWS 2001, Page et al. 1995).

3.5.2.31 White-Faced Ibis (*Plegadis chihi*) WL

The white-faced ibis (nesting colony) is a CDFG WL species. It breeds across the western United States northward to Montana, eastward to western Louisiana, and southward to South America. It winters from southern California and Louisiana southward. The white-faced ibis usually nests in low trees and shrubs over shallow water. It inhabits primarily freshwater wetlands, especially cattail and bulrush marshes. It feeds in flooded hay meadows, agricultural fields, and estuarine wetlands. The white-faced ibis is a dark bronze-colored wader with a long, decurved bill. During the breeding season, adults have distinctive white feathers along the edges of their bare facial skin. Erosion and flood-control measures and irrigation projects have eliminated or degraded traditional nesting colony sites, leading to nest abandonment. Other losses of wetland habitat can also negatively affect populations (Ryder and Manry 1994).

3.6. SPECIES OBSERVED

The following plant species were observed while habitat assessments were conducted on the Project site: Purple needlegrass, Common horehound (*Marrubium vulgare*), soft chess, common California aster (*Lessingia filaginifolia*), foxtail fescue (*Vulpia myuros*), annual mountain dandelion (*Agoseris heterophylla*), Peirson's morning glory (*Calystegia peirsonii*), Bigelow's desert four o'clock (*Mirabilis bigelovii*), doveweed (*Croton setigerus*), redstem filaree , cattle saltbush, western tansymustard, cheat grass, foxtail chess, rattlesnake-weed (*Chamaesyce albomarginata*), California goldfields, California poppy (*Eschscholzia californica*), Mediterranean schismus and rubber rabbitbrush.

The following wildlife species were observed while habitat assessments were conducted on the Project site: horned lark (*Eremophila alepestris*), American crow (*Corvus brachyrhynchos*), white-crowned sparrow (*Zonotrichia leucophrys*), western meadowlark (*Sturnella neglecta*), rock pigeon (*Columba livia*) and common raven (*Corvus corax*).

3.7. SENSITIVE SPECIES

The following 19 special status plant species are considered **absent** from the Project site due to a lack of suitable habitat or the species was not observed during protocol level focused plant surveys conducted during the appropriate blooming period:

- alkali mariposa lily
- Barstow woolly sunflower
- Clokey's cryptantha
- Davidson's bush mallow
- Darwin rock cress
- desert cymopterus
- Horn's milk-vetch
- Lancaster milk-vetch
- pale-yellow layia
- Parish's popcorn-flower
- Parry's spineflower
- Peirson's morning-glory
- recurved larkspur
- round-leaved filaree
- sagebrush loeflingia
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa lily
- white pygmy-poppy

The following 28 special status wildlife species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- American badger
- arroyo toad
- Bell's sage sparrow
- California red-legged frog
- Cooper's hawk
- desert tortoise
- least Bell's vireo
- Le Conte's thrasher
- loggerhead shrike
- Merlin
- Mohave ground squirrel
- mountain plover
- Nelson's antelope squirrel
- pallid San Diego pocket mouse
- San Bernardino kangaroo rat
- Sierra Madre yellow-legged frog
- short-eared owl
- silvery legless lizard

- southern California rufous-crowned sparrow
- southern grasshopper mouse
- Swainson's hawk
- Tehachapi pocket mouse
- tricolored blackbird
- two-striped garter snake
- western pond turtle
- western mastiff bat
- western snowy plover
- white-faced ibis

The following special status wildlife species has a **low** potential to occur onsite due to the presence of low quality suitable habitat and historical records of these species occurring within five miles of the Project site:

- Ferruginous hawk

The following special status wildlife species has a **moderate** potential to occur on the Project site due to the presence of low quality suitable habitat and historical records of these species occurring within three miles of the Project site:

- Coast horned lizard. The Project site consists of saltbush scrub, valley needle grasslands and sandy washes that provide areas for basking and cover for the coast horned lizard. Additionally, coast horned lizards have been recorded to occur within three miles of the Project site. The coast horned lizard has a moderate potential for occurrence on the Project site.

- Burrowing owl. The site consists of non-native grassland and saltbush scrub. Although no burrows were observed, there is potential habitat on the Project site. In addition, burrowing owls have been recorded to occur within three miles of the Project site. The burrowing owl could potentially use the project site and surrounding lands for foraging and nesting. Therefore, the burrowing owl has a moderate potential for occurrence on the project site.

SECTION 4.0 – CONCLUSIONS

4.1. SPECIAL STATUS SPECIES

All of the special status plant species known to occur within the vicinity of the Project site are considered absent due to lack of suitable habitat; therefore, no further surveys for special status plant species are recommended at this time.

Valley Needlegrass Grasslands were identified on portions of the Project site. Valley Needlegrass Grasslands are considered a sensitive vegetation community by CDFG and protected by the City of Lancaster and Los Angeles County.

Of the 31 special status wildlife species known to occur within the vicinity of the Project site, 29 are considered absent or have a low potential to occur due to lack of suitable habitat; therefore, no further surveys for the special status wildlife species are recommended at this time. The remaining special status wildlife species have moderate potential to occur on the Project site.

4.1.1 Coast Horned Lizard

The coast horned lizard has a moderate potential to occur on the Project site. This species is not federal- and/or state-listed as endangered or threatened; therefore, no further surveys for this species are recommended at this time.

4.1.2 Burrowing Owl

There is a moderate potential for Burrowing owl to occur on the Project site. Although burrowing owls are not federal- and/or state-listed as endangered or threatened, this species is listed as a CSC. While the majority of CSC listed species do not typically require focused surveys, specific focused survey protocol for the burrowing owl has been developed by the California Burrowing Owl Consortium and adopted by the CDFG.

4.2. JURISDICTIONAL FEATURES

Several drainages were identified within the Project site at the time of the survey. A formal delineation of the Project site was not conducted. These drainage features may fall subject to State jurisdiction.

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APPENDIX A – VEGETATION COMMUNITIES MAP

Vegetation Map
Western Antelope Blue Sky Ranch

Legend

- Project Site
- Access Road
- Cudweed Aster
- Needlegrass Grassland
- Non-Native Annual Grassland
- Rubber Rabbitbrush Scrub
- Ruderal
- Saltbush Scrub

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APPENDIX B – SITE PHOTOGRAPHS

APPEBDIX B – SITE PHOTOGRAPHS

	Photo 1- Western Antelope Blue Sky Ranch. Photo is taken looking south across the Project site from the northern boundary.
	Photo 2- Western Antelope Blue Sky Ranch. Photo is taken looking west across the Project site from the northern boundary.
	Photo 3- Western Antelope Blue Sky Ranch. Photo shows the Valley Needlegrass Grassland located on the Project site.

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APPENDIX B.3-4 PROJECT 3 AMERICAN SOLAR GREENWORKS

2013 BURROWING OWL SURVEY BIOLOGICAL TECHNICAL REPORT

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BIOLOGICAL TECHNICAL REPORT
FOR THE AMERICAN SOLAR GREENWORKS SOLAR PROJECT SITE (CUP 9) CITY OF LANCASTER
LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

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July 2011

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APPENDICES

Appendix A: Vegetation Communities Map

Appendix B: Site Photographs

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Figure 1: Project Regional Map..... **Error! Bookmark not defined.**

Figure 2: Project Vicinity Map..... **Error! Bookmark not defined.**

SECTION 1.0 – INTRODUCTION

Silverado Power, LLC (Silverado Power) is an independent solar power producer and developer of distributed solar power assets utilities that are for both municipally and investor owned. Silverado Power strives to be a leader in wholesale solar power generation and the process of developing, building, and operating solar generation facilities (SGFs).

Chambers Group, Inc. (Chambers Group) was retained by Tetratech (for Silverado Power) to conduct a literature review and biological technical report (BTR) on the proposed American Solar Greenworks project site located in Los Angeles County, California. The purpose of this document is to report the results of the reconnaissance-level biological survey.

1.1. PROJECT DESCRIPTION

Silverado Power plans to develop the American Solar Greenworks SGF (the Project). The Project facilities would operate year-round, producing electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the fourth quarter of 2014.

The proposed Project would have a generating capacity of 10 megawatts alternating current (MW-AC) and located on approximately 37 acres of non-native annual grassland in Los Angeles County. The Project will employ photovoltaic (PV) modules to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system.

The Project would meet the increasing demand for electricity generated from clean, renewable technology. The recent legislation enacted in California recognizes the multiple benefits associated with the development of renewable energy resources. These benefits include a reduced reliance on foreign sources of fuel, promotion of national security, diversification of energy portfolios, reductions in greenhouse gas emissions, and the creation of “green” jobs within the state of California.

1.2. PROJECT LOCATION

The proposed Project site (APN: 3268-018-035) is located in the Antelope Valley area of unincorporated northeastern Los Angeles County and comprises an approixmately 37-acre site. The American Solar Greenworks is located within the city of Lancaster, CA, on the southwest corner of the intersection of 70th Street West and West Avenue G, approximately 6.5 miles northwest of downtown Lancaster. The site is located within the *Del Sur* California USGS 7.5 minute quadrangle. The Project site is surrounded by fallow agricultural fields and developed areas. The Project Regional map is provided as Figure 1 and the Project Vicinity map is provided as Figure 2.

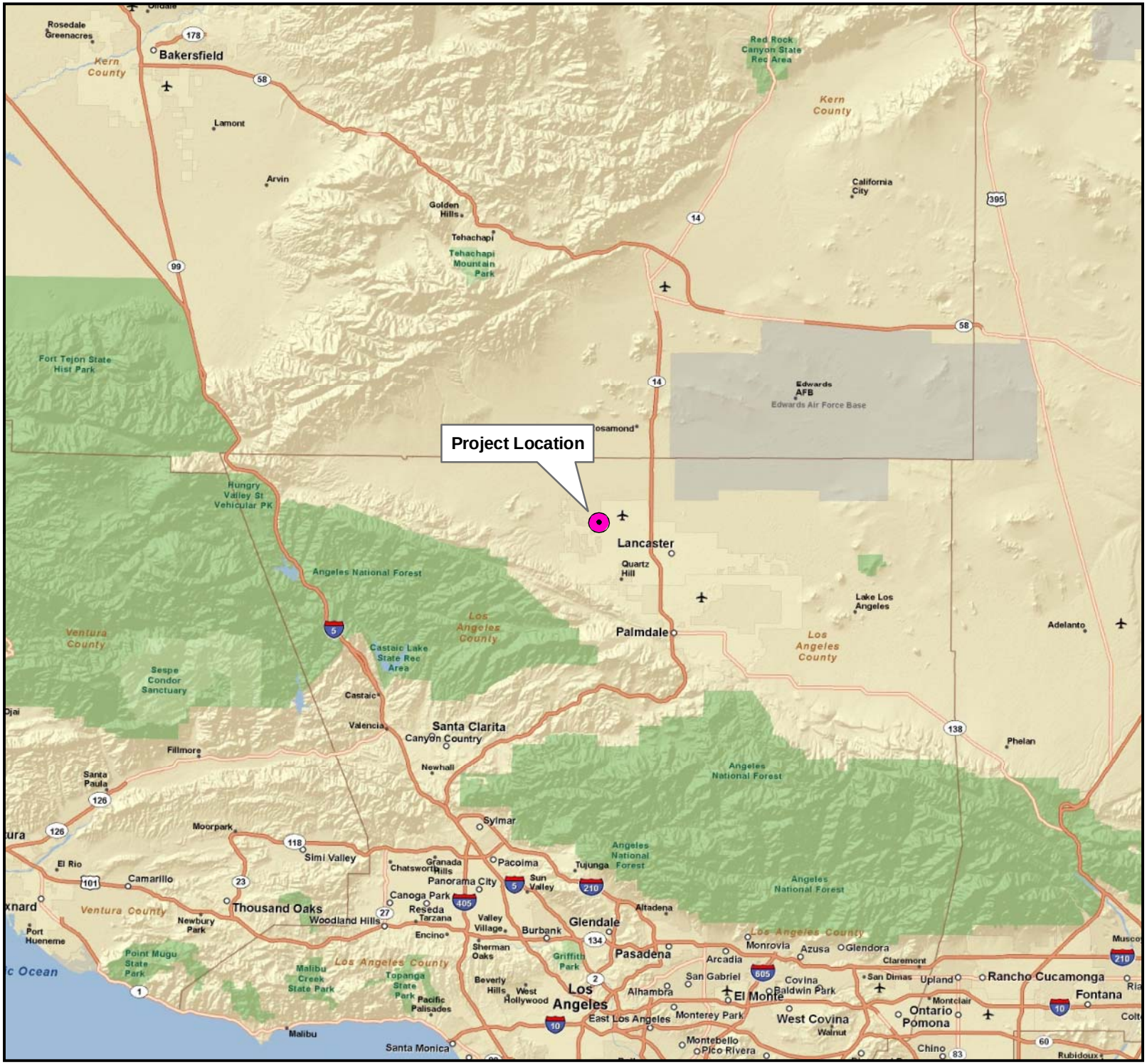

Figure 1
Regional Map
American Solar Greenworks

Legend

Project Location

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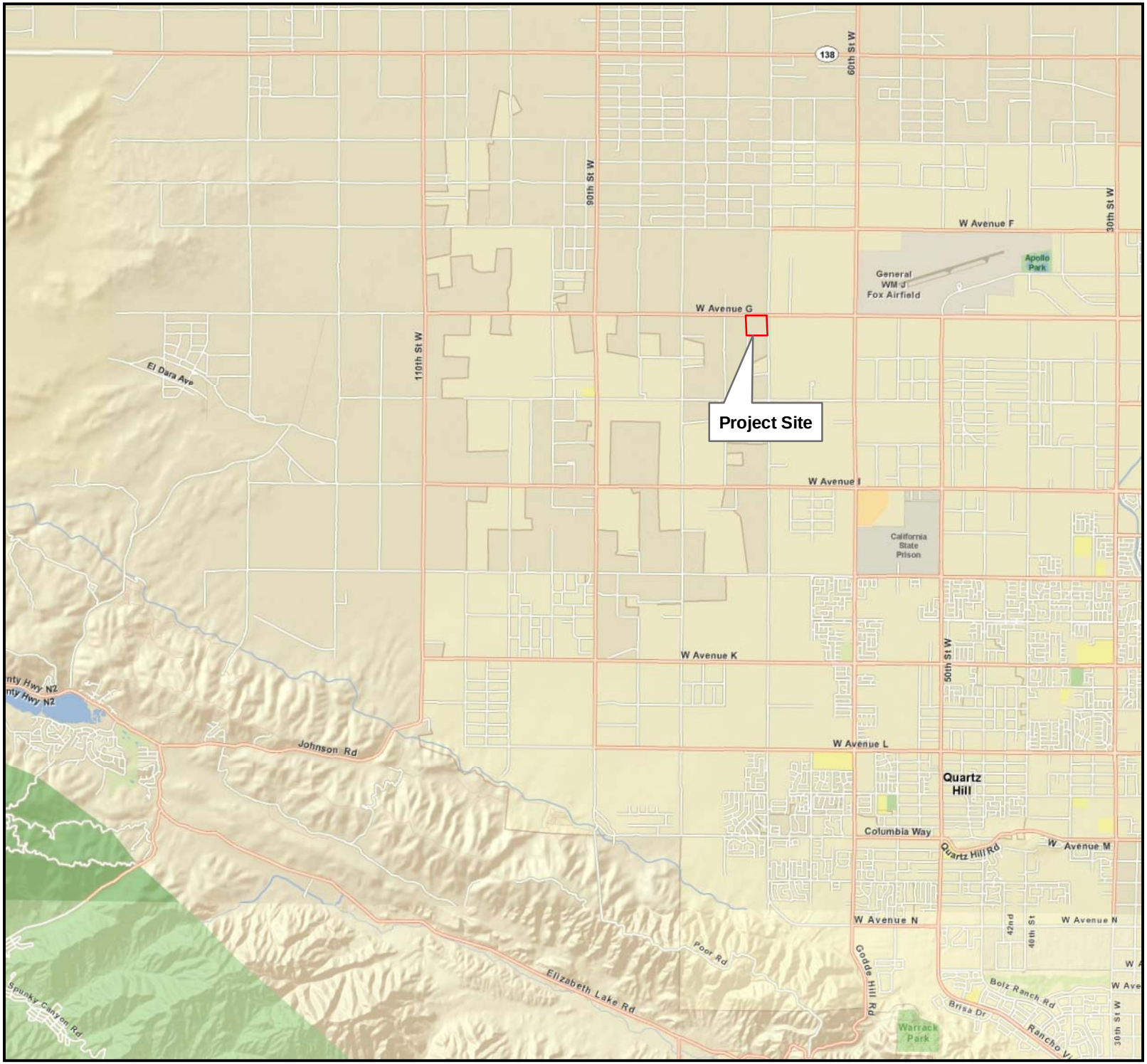
Figure 2
Vicinity Map
American Solar Greenworks



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SECTION 2.0 – METHODS

2.1. LITERATURE REVIEW

Prior to conducting the field surveys, existing documentation relevant to the Project site was reviewed. The most recent records of the California Department of Fish and Game California Natural Diversity Database (CNDDB 2011) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2011) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Fairmont Butte, Little Butte, Rosamond, Rosamond Lake, Redman, Alpine Butte, Lancaster East, Lancaster West, Del Sur, Lake Hughes, Burnt Peak, Little Rock, Lovejoy Buttes, El Mirage*, California USGS 7.5 minute quadrangles). The database contains records of reported occurrences of federal- or state-listed as endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Special Concern (CSC), or otherwise sensitive species or habitats that may occur within or in the vicinity of the Project site.

2.2. BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

The field survey was conducted on the Project site in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support special status wildlife species and to identify any potential jurisdictional waters of the United States. Chambers Group biologists Heather Clayton and Tracey Valentovich conducted the general reconnaissance survey on May 18, 2011. Weather conditions during the survey included temperatures averaging approximately 68.5 degrees Fahrenheit with 20 percent cloud cover and no precipitation. During the survey the biologists walked the Project site documenting the native vegetation communities and took notes regarding the potential for special status species and jurisdictional waters to occur onsite. Photographs of the Project site were also taken to document existing conditions.

2.3. VEGETATION

All plant species and soil types observed onsite were noted. Plant communities on the Project site were identified, qualitatively described, and mapped onto an aerial photograph. Plant communities were determined in accordance with the categories set forth in Holland (1986) or Gray and Bramlet (1992). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California* (Hickman 1993).

2.4. WILDLIFE

All wildlife and wildlife sign observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support state- and/or federal-listed or proposed listed species. Photographs of the site are provided in Appendix B.

SECTION 3.0 – RESULTS

3.1. LITERATURE REVIEW

According the literature review, 19 special status plant and 31 special status wildlife species were documented to occur within the vicinity of the Project site. This list included ten wildlife species that are federal- and/or state-listed endangered or threatened. Of the 19 special status plant species listed in the literature review, none are federal- and/or state-listed endangered or threatened.

3.2. VEGETATION COMMUNITIES

The Project site is classified as Non-native Annual Grassland. American Solar Greenworks is surrounded by fallow agricultural fields and developed areas. A map showing the location of the vegetation communities observed onsite is provided as Appendix A.

3.2.1 Non-native Annual Grassland

Non-Native Grassland consists of a dense to sparse cover of annual grasses such as oats (*Avena* sp.), bromes (*Bromus* sp.), and ryegrass (*Lolium* sp.) with flowering culms up to 3 feet in height. This community is often associated with numerous species of showy-flowered, native annual forbs "wildflowers" such as California poppy (*Eschscholzia californica*), lupines (*Lupinus* sp.), and goldfields (*Lasthenia* sp.) especially in years of favorable rainfall (Holland 1986). Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from winter through spring. Typically plants are dead through the summer-fall dry season persisting as seeds. Non-native grasslands can be found on fine-textured usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall.

The Project site is composed of this community, and many non-native annual grasslands are adjacent to the Project site. Plant species found on the project site typical of this vegetation community include: foxtail chess (*Bromus madritensis* ssp. *rubens*), common sunflower (*Helianthus annuus*) and Mediterranean schismus (*Schismus barbatus*).

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Project site.

3.3. JURISDICTIONAL FEATURES

Chambers Group conducted a preliminary assessment for jurisdictional features found on the Project site. A formal delineation was not conducted.

3.4. SPECIAL STATUS SPECIES

CNPS

List 1A = Plants presumed extinct in California.
List 1B = Plants rare and endangered in California and throughout their range.
List 2 = Plants rare, threatened or endangered in California but more common elsewhere in their range.

List 3 = Plants about which we need more information; a review list.
List 4 = Plants of limited distribution; a watch list.

CNPS Extensions

0.1 = Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2 = Fairly endangered in California (20-80 percent occurrences threatened).
0.3 = Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE = Federally listed; Endangered
FT = Federally listed; Threatened
FC = Federal Candidate for listing
FPT = Federal Proposed listing as Threatened

State

ST = State listed; Threatened
SE = State listed; Endangered
RARE = State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC = State Species of Special Concern
WL = CDFG Watch List

3.5. SENSITIVE SPECIES DESCRIPTIONS

3.5.1 Sensitive Plants in the Los Angeles County Area

3.5.1.1 Alkali Mariposa Lily (*Calochortus striatus*) CNPS List 1B.1

Alkali mariposa lily is a CNPS List 1B.2 species. This perennial, bulbiferous herb flowers between April and June. This species occurs on alkaline and mesic soils within Chaparral, Chenopod Scrub, Mojavean Desert Scrub, and Meadows and Seeps habitats at elevations between 230 and 5,233 feet above mean sea level (amsl). Known range for this species includes: Kern, Los Angeles, San Bernardino, and Tulare counties. Threats to alkali mariposa lily include groundwater urbanization, grazing, trampling, road construction, water diversion resulting in lowering the water table, and possibly horticultural collecting.

3.5.1.2 Barstow Woolly Sunflower (*Eriophyllum mohavense*) CNPS List 1B.2

Barstow woolly sunflower is a CNPS List 1B.2 species. This annual herb flowers between March and May. Barstow woolly sunflower occurs within Chenopod Scrub, Mojavean Desert Scrub, and Playas habitats at elevations between 1,640 and 3,150 feet amsl. Known range for this species includes: Fresno, Kern, Los Angeles, and San Bernardino counties. Threats to this species include vehicles, grazing, energy development, and road improvements.

3.5.1.3 Clokey's Cryptantha (*Cryptantha clokeyi*) CNPS List 1B.2

Clokey's cryptantha is a CNPS List 1B.2 species. This annual herb flowers in April. Clokey's cryptantha occurs within Mojavean Desert Scrub habitat at elevations between 2,379 and 4,478 feet amsl. Known range for this species includes: Inyo, Los Angeles, and San Bernardino counties. Major threats to this species include military activities and alteration of fire regimes.

3.5.1.4 Darwin Rock Cress (*Arabis pulchra* var. *munciensis*) CNPS List 2.3

Darwin rock cress is a CNPS List 2.3 species. This perennial herb flowers in April. Darwin rock cress occurs in carbonate soils of Chenopod Scrub and Mojavean Desert Scrub habitats at elevations between 3,608 and 6,807 feet amsl. Known range includes Inyo, Los Angeles, and San Bernardino counties.

3.5.1.5 Davidson's Bush Mallow (*Malacothamnus davidsonii*) CNPS List 1B.2

Davidson's bush mallow is a CNPS List 1B.2 species. This perennial deciduous shrub flowers between June and January. Davidson's bush mallow occurs within chaparral, Coastal Scrub, Cismontane Woodland, and riparian woodland habitats at elevations between 607 and 2,805 feet amsl. Known ranges include: Los Angeles, Monterey, Santa Clara, San Mateo, and San Luis Obispo counties. Urbanization, maintenance activities, and erosion are the main threats to this species.

3.5.1.6 Desert Cymopterus (*Cymopterus deserticola*) CNPS List 1B.1

Desert cymopterus is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs on sandy soils within Mojavean Desert Scrub and Joshua Tree Woodland habitats at elevations between 2,066 and 4,921 feet amsl. Known range for this species includes: Kern, Los Angeles, and San Bernardino counties. Threats to desert cymopterus include military activities, sheep grazing, vehicles, utility construction, and urbanization.

3.5.1.7 Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*) CNPS List 1B.1

Horn's milk-vetch is a CNPS List 1B.1 species. This annual herb flowers between May and October. This species occurs along lake margins in poorly drained, alkaline soils of meadows and seeps and Playas habitats at elevations between 195 to 2,790 feet amsl. Known ranges include Inyo, Kern, and San Bernardino counties and Nevada. Poisonous to sheep, it was subject to eradication by farmers in the early 1900s; current threats to Horn's milk-vetch are habitat alterations.

3.5.1.8 Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*) CNPS List 1B.1

Lancaster milk-vetch is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs within Chenopod Scrub habitat. Known ranges include Kern, Los Angeles and San Bernardino counties and Nevada. Limited range, including areas only near Lancaster and Edwards Air Force Base, is the major threat to Lancaster milk-vetch.

3.5.1.9 Pale-Yellow Layia (*Layia heterotricha*) CNPS List 1B.1

Pale-yellow layia is a CNPS List 1B.1 species. This annual herb flowers between March and June. This species occurs in alkaline or clay soils within Cismontane Woodland, Coastal Scrub, Pinyon-Juniper Woodland, and Valley and Foothill Grassland habitats at elevations between 984 and 5,594 feet amsl. Known ranges include Fresno, Kern, Kings, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, San

Benito, and Ventura counties. Threats to pale-yellow layia include vehicle use, non-native plants, agricultural conversion, grazing, and previous construction at San Antonio Reservoir.

3.5.1.10 Parish's Popcorn-Flower (*Plagiobothrys parishii*) CNPS List 1B.1

Parish's popcorn-flower is a CNPS List 1B.1 species. This annual herb flowers between March and November. This species occurs on alkaline and mesic soils within Great Basin scrub and Joshua tree woodland habitats at elevations between 2,460 and 4,595 feet amsl. Known range for this species includes: Inyo, Los Angeles, Mono, and San Bernardino counties. Threats to Parish's popcorn-flower include groundwater pumping.

3.5.1.11 Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) CNPS List 1B.1

Parry's spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and June. This species occurs in sandy or rocky soils and openings within Cismontane Woodland, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 902 and 4,002 feet amsl. Known ranges include Los Angeles, Riverside and San Bernardino counties. Threats to this species include development, altered flood regime, mining, vehicles, and competition from non-native plants.

3.5.1.12 Peirson's Morning-Glory (*Calystegia peirsonii*) CNPS List 4.2

Peirson's morning-glory is a CNPS List 4.2 species. This perennial, rhizomatous herb flowers between April and June. This species occurs within chaparral, Chenopod Scrub, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, and Valley and Foothill Grassland habitats at elevations between 98 and 5,085 feet amsl. Known ranges include Los Angeles county. Major threats to Peirson's morning-glory include grazing and development; possible threats include power line construction.

3.5.1.13 Recurved Larkspur (*Delphinium recurvatum*) CNPS List 1B.2

Recurved larkspur (*Delphinium recurvatum*) is a CNPS List 1B.2 species. This perennial herb flowers between March and June. This species occurs on alkaline soils within Chenopod Scrub, Cismontane Woodland, and Valley and Foothill Grassland habitats at elevations between 10 and 2,460 feet amsl. Known ranges of the recurved larkspur include: Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solana, Sutter, and Tulare counties. Conversion of habitat, grazing, and trampling are threats to the recurved larkspur.

3.5.1.14 Round-Leaved Filaree (*California macrophylla*) CNPS List 1B.1

Round-leaved filaree is a CNPS List 1B.1 species. This annual herb flowers between March and May. Round-leaved filaree occurs in clay soils within Cismontane Woodland and Valley and Foothill Grassland habitats at elevations between 50 and 3,937 feet amsl. Known ranges include Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, Santa Barbara, San Benito, Santa Clara, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Ventura, and Yolo counties and Santa Cruz Island. Threats to this species include urbanization, feral pigs, habitat alteration, pipeline construction, urbanization and competition from non-native plants.

3.5.1.15 Sagebrush Loeflingia (*Loeflingia squarrosa*) CNPS List 2.2

Sagebrush loeflingia is a CNPS List 2.2 species. This annual herb flowers between April and May. This species occurs in sandy soils of Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub habitats at

elevations between 2,295 and 5,300 feet amsl. Known range includes Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino counties and Nevada, Oregon, and Wyoming. Possible threats to sagebrush loeflingia include off-highway vehicles and grazing.

3.5.1.16 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*) CNPS List 1B.1

San Fernando Valley spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and July. This species occurs in sandy soils of Coastal Scrub and Valley and Foothill Grassland habitats at elevations between 492 and 4,002 feet amsl. Known range includes Los Angeles, Orange, and Ventura counties. Possible threats to this species include competition from non-native plants and development.

3.5.1.17 Short-Joint Beavertail (*Opuntia basilaris brachyclada*) CNPS List 1B.2

Short-joint beavertail is a CNPS List 1B.2 species. This perennial stem succulent flowers between April and June. This species occurs within chaparral, Mojavean Desert Scrub, Joshua Tree Woodland, and Pinyon-Juniper Woodland habitats at elevations between 394 and 5,905 feet amsl. Known range for this species includes Los Angeles and San Bernardino counties. Major threats to short-joint beavertail include vehicles, grazing, urbanization, mining, and horticultural collecting; possible threats include power line construction.

3.5.1.18 Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*) CNPS List 1B.1

Slender mariposa lily is a CNPS List 1B.1 species. This perennial, bulbiferous herb flowers between March and June. This species occurs within chaparral, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 1,050 and 3,280 feet amsl. Known ranges include Los Angeles and Ventura counties. Threats to slender mariposa lily include vehicles, development, mining, and competition from non-native plants.

3.5.1.19 White Pygmy-Poppy (*Canbya candida*) CNPS List 4.2

White pygmy-poppy is a CNPS List 4.2 species. This annual herb flowers between March and June. This species occurs on gravelly, sandy, or granitic soils within Joshua Tree Woodland, Mojave Desert Scrub, and Pinyon-Juniper Woodland habitats at elevations between 600 and 4,800 feet amsl. Known ranges include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino counties. This species is threatened by development, off-highway vehicles, grazing, mining, and competition from non-native plants.

3.5.2 Sensitive Wildlife Species in the Los Angeles County Area

3.5.2.1 American Badger (*Taxidea taxus*) CSC

The American badger is a California Species of Concern. This carnivorous species ranges over most of the western U.S and upper midwestern U.S. south into central Mexico. In California, the badger may occupy a variety of habitats, especially grasslands, savannas, montane meadows, sparse scrublands, and deserts. It prefers friable soils for burrowing, and relatively open, uncultivated ground. Prey items include gophers, ground squirrels, marmots, kangaroo rats, other rodents, and the occasional reptile or amphibian. The American badger may weigh up to 25 pounds and is easily recognized by its overall yellowish gray coloration, the white stripe on top of its head, white cheeks, and black feet with noticeably long front claws. It is a heavy-bodied animal with short legs and a characteristic pigeon-toed gait. It is chiefly nocturnal, but it is often seen by day as well. It gives birth to two to five young

anywhere from February to May, depending on its altitude and latitude. Threats to this species include habitat loss to agriculture, housing, and other land conversions, and illegal hunting.

3.5.2.2 Arroyo Toad (*Anaxyrus californicus*) FE, CSC

The arroyo toad is a federally endangered species and a California Species of Concern. The range of this species is within coastal California from Monterey County into northwestern Baja California, Mexico. It is found in washes, streams, and arroyos, and preferred habitats include sandy banks within riparian woodlands such as willow, cottonwood, sycamore, mulefat, and/or coast live oak. It breeds in shallow, sandy/gravelly riverine pools with low silt content and normally disperses onto adjacent uplands after breeding (USFWS 1993). Individuals have been observed up to two kilometers (km) from the streams in which they breed, but most often they are within 0.5 km of those streams (USFWS 2001). During the breeding season, males call nocturnally from open areas on banks at the edges of streams. Males typically precede females at breeding sites. Females lay their eggs among gravel, leaves, or sticks, on mud or clean sand within low to moderately flowing sections of streams in areas with little or no emergent vegetation and little woody marginal growth. Newly metamorphosed individuals remain near pools for up to several weeks until the areas dry. Juveniles begin feeding primarily on ants and shift to small beetles as they grow (Sweet 1991) before moving into adjacent wintering grounds. Many spend the next 6 to 8 months overwintering in burrows up to 20 centimeters deep in sandy substrates of these habitats. Adults obtain shelter primarily by burrowing into fine, sandy soils in both adjacent and upland habitats (Sweet 1991). This small to moderately-sized species is distinguished from other toads by its chevron-shaped marking between the eyes and by the lack of a mid-dorsal stripe. Coloration may vary from light olive gray to tannnish brown above, and the unmarked undersurfaces are creamy to dirty white. The iris is dark brown with scattered gold iridophores on the upper and lower portions of the iris. The primary threat to this species is habitat loss.

3.5.2.3 Bell's Sage Sparrow (*Amphispiza belli belli*) WL

The Bell's sage sparrow is a subspecies of sage sparrow and a Watch List species. It breeds primarily in chamise chaparral along the coastal side of California from the western foothills of the Sierra Nevada to San Diego County and northwest Mexico. It also breeds less commonly in coastal sage, mixed chaparral, and big sagebrush communities. Wintering birds of this subspecies may migrate to desert floors or remain in their breeding habitats. This species is distinguished from other sparrows by its grey head and back, thin white eye-ring, single dark breast spot, and heavy whisker-like pattern about the face. Populations are in decline due to habitat loss and fragmentation, frequent wildfires, grazing, invasive plants, and brood parasitism caused by the brown-headed cowbird (*Molothrus ater*).

3.5.2.4 Burrowing Owl (*Athene cunicularia*) CSC

The burrowing owl, a California Species of Concern, is broadly distributed across the western United States with populations in Florida and Central and South America. Burrowing owls use a variety of natural and modified habitats for nesting and foraging, typically characterized by low-growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrublands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. Burrowing owls typically use burrows made by fossorial (adapted for burrowing or digging) mammals, such as California ground squirrels (*Spermophilus beecheyi*), foxes, or badgers (*Taxidea taxus*). They sometimes dig their own burrows and will often utilize man-made structures such as earthen berms;

cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls often are found within, under, or in close proximity to man-made structures. Prey sources for this species include small rodents; arthropods such as spiders, crickets, centipedes, and grasshoppers; smaller birds; amphibians; reptiles; and carrion. Threats to the burrowing owl include loss of nesting burrows, habitat loss, and mortality from motor vehicles.

3.5.2.5 California Red-Legged Frog (*Rana aurora draytonii*) FT, CSC

The California red-legged frog is a federally threatened species and a California Species of Concern. It is found from Mendocino County in California south to northwestern Baja, Mexico. It may occur in a variety of habitats from near sea level to 8,000 feet in elevation and is strongly associated with permanent sources of water, including cattail and tule marshes, reservoirs, ponds, and streamsides. It prefers deep, still, or slow moving water with low salinity levels and shallow margins or riffle zones. This species may disperse far from water (up to one mile) during and after significant rain events, and other habitats may include moist woodlands and grasslands from the lowlands through the foothills. It may make seasonal movements into riparian thickets and upland habitats for foraging, where it may seek small mammal burrows, leaf litter, or other moist areas of refuge for shelter or hibernation. The metamorphosis of this species is slower than most large frog species, requiring 11 to 20 weeks of permanent water for larval development. Most individuals have a dark mask bordered by a whitish jaw stripe, a reddish-orange venter, and coarse red, yellow, black, and/or gray mottling in the groin. This subspecies of the red-legged frog has experienced dramatic population declines since the late nineteenth century; some estimates claim a 75 percent rate of disappearance from its former range. Threats to this species include habitat loss and predation by non-native species such as bullfrogs and non-native fishes. In addition, this species was historically exploited as a source of frog legs for human consumption.

3.5.2.6 Coast Horned Lizard (*Phrynosoma blainvillii*) CSC

The coast horned lizard is a California Species of Concern found along the Pacific coast of California on the western side of the Sierra Mountains to the Baja peninsular area in Mexico. This species is found in many habitats including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet amsl. It inhabits sandy washes or areas with loose, fine, sandy soils for burying and having low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native species of ants. Populations of this species have been reduced due to development, agriculture, and the introduction of Argentine ants that heavily compete with native ant species (Stebbins 2003). This species is approximately 2 to 4 inches in snout to vent length (adult) with numerous elongated and pointed scales (spines) on the dorsal side and two rows of enlarged scales along the flank. This species is brown, yellowish, reddish, or grey with several dark bands that cross the back with highlighted white areas along the rear of the bands (Sherbrooke 2003).

3.5.2.7 Cooper's Hawk (*Accipiter cooperii*) WL

The Cooper's hawk (nesting) is a Watch List species. This species occurs as a migrant and/or resident over most of the U.S. from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known to breed in suburban and urban areas with similar tree structure to native habitats. This medium-sized (14 to 20 inches) hawk is well-adapted for hunting birds as prey with its long tail and

short, rounded wings; these features allow maneuverability in pursuit and on the ambush. It is similar in appearance to the sharp-shinned hawk (*Accipiter striatus*) but is distinguished by its larger size, more rounded tail, and darker crown. In addition to birds, it may also take amphibians, reptiles, and small mammals as supplemental prey items. Historic population losses resulted from the widespread use of DDT. Other threats include habitat loss and illegal hunting (Remsen 1978).

3.5.2.8 Desert Tortoise (*Gopherus agassizzi*) FT, ST

The desert tortoise is a federal- and state-listed threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo counties, as well as most of San Bernardino, Riverside, and Imperial counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. It is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark grey-brown. Besides range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

3.5.2.9 Ferruginous Hawk (*Buteo regalis*) WL

The ferruginous hawk (wintering) is a Watch List species. This species nests from the Canadian prairie provinces south to Oregon, Nevada, Arizona, and Oklahoma and winters in the southern half of its breeding range as well as the southwestern states from California to west Texas, then south into Mexico. It requires large, open areas of grassland, sparse shrub, or desert habitats interspersed with trees. It roosts in open areas, usually on lone trees, cliff ledges or hill scarps. It winters in open terrain from grasslands to deserts where pocket gophers, ground squirrels, or rabbits are abundant, and it nests in either natural or human-made structures or on cliffs, buttes, cut banks, shrubs or trees. In addition to pocket gophers, ground squirrels, and rabbits, it also eats prairie dogs, snakes, lizards, birds, large insects, and other rodents. The ferruginous hawk has distinct light and dark morphs. Light morphs are reddish or light brown above and whitish below, with rusty leg feathers and a pale tail. Dark morphs are uncommon in about less than 10 percent of the population and are a deep rufous to brown above and below with very bright white on the underside of the flight feathers and a narrow, white crescent on the underside of the wrist (Sibley 2003). This species is the largest of the buteos. The biggest threat to the ferruginous hawk is habitat loss, fragmentation, or degradation resulting from land use practices including conversion of native habitat to agriculture, urbanization, improper grazing practices, and conversion of shrubland to grassland (Collins and Reynolds 2005). Other threats include illegal shooting and collisions with cars.

3.5.2.10 Least Bell's Vireo (*Vireo bellii pusillus*) FE, SE

The least Bell's vireo was state-listed as an endangered subspecies of Bell's vireo by the CDFG in 1980 and federally listed as endangered by the U.S. Fish and Wildlife Service (USFWS) in 1986. Critical habitat for the least Bell's vireo was designated in 1994 (USFWS 1986). The least Bell's vireo subspecies is restricted to coastal and inland southern California and Baja California, Mexico. Its winter range extends along the Pacific coast from northern Mexico south to northern Nicaragua. The two major factors in the decline of least Bell's vireo populations are loss of habitat and nest parasitism by the brown headed-cowbird. Habitat loss, fragmentation, and degradation, especially along streams and rivers, due to development, agriculture, flood control projects, logging operations, and intensive cattle grazing practices, are the greatest threats to the continued existence of the least Bell's vireo. The Least Bell's vireo is a small, gray songbird with pale yellow wash on its sides, two faint wing bars, and a faint eye ring. Preferred nesting habitat is low, dense, scrubby vegetation in early successional areas that are particularly dependent on riparian areas. Habitats may include willow woodlands and dense mule fat, scrub oak, coastal chaparral, and mesquite patches with dense early successional understories.

3.5.2.11 Le Conte's Thrasher (*Toxostoma lecontei*) CSC

The Le Conte's thrasher is a California Species of Concern. It occurs in deserts of the southwest U.S., southwestern Utah, southern Arizona, and northwestern Mexico (Weigand and Fitton 2008). Habitat includes open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; and in Joshua tree habitat with scattered shrubs. Le Conte's thrasher is a medium-sized songbird with a long dark tail, black decurved bill, and a plain grayish or sandy-colored body. It is distinguished from other thrashers by its unspotted breast, deep buff crissum, dark eye, and dark tail that contrasts sharply with its body. Le Conte's thrashers forage as generalists on bare ground and in vegetation litter under shrubs by scratching the soil and overturning objects (Weigand and Fitton 2008). In some parts of its range, this thrasher has lost extensive habitat to development; irrigated lawns, groves, and fields have been created over valuable xeric habitat. Development, wild burros, off-road vehicle recreation, and invasive plant species threaten this species (Weigand and Fitton 2008).

3.5.2.12 Loggerhead Shrike (*Lanius ludovicianus*) CSC

The loggerhead shrike (nesting) is a California Species of Concern. Its range includes most of the U.S. from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua Tree Woodlands, and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other structures that serve as lookout posts for potential prey. They prefer dense, thorny shrubs and trees, brush piles, and tumbleweeds for nesting (Seattle Audubon Society 2008). Both adults gather nesting materials, including twigs, grass, hair, feathers, and green vegetation; but only females build the cup-shaped nests. They lay between 5 and 6 eggs, which are incubated for 15 to 17 days; and nestlings will leave the nest after 17 to 20 days but won't fly for another week (Seattleaudubon). The loggerhead shrike is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. This bird has a habit of caching its food for later consumption by impaling its prey on thorns, sharp twigs, or barbed wire; hence the term "butcher bird." It is recognized by its black facial mask; overall gray, black, and white color pattern; relatively big head; and hook-tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988, Scott and Morrison 1990).

3.5.2.13 Merlin (*Falco columbarius*) WL

The merlin (wintering) is a Watch List species. This species breeds in the northern parts of the Northern Hemisphere and winters in northern South America and northern Africa. In California, it occurs as a winter resident. Breeding habitats include open woodlands, savannas, cliffs near grasslands, and tundra. Migratory habitats include foothills, marshes, and open coastlines. Wintering habitats include open grasslands, semi-open forests, and coastal areas (i.e. beach dunes, marshes, and tidal flats). The merlin is a small falcon, slightly larger than the American kestrel (*Falco sparverius*), and appears heavier and bulkier in flight than the kestrel. The adult male merlin has a grey-blue back and crown and rufous washes on the sides of the breast. The adult female may be up to 30 percent larger than the male and has a brown back. The merlin mainly feeds on other birds, especially migrating and over-wintering waterfowl and shorebirds. Threats to its populations include habitat loss, pesticide use, and heavy metal poisoning.

3.5.2.14 Mohave Ground Squirrel (*Spermophilus mohavensis*) ST

The Mohave ground squirrel is a state-listed threatened species. The Mohave ground squirrel is specific to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Johnson 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 1998). They inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils. They will also feed in annual grasslands (Johnson 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study showed that most of their diet includes seeds from winter fat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and saltbush (*Atriplex* sp.) (Laabs 1998). Mohave ground squirrels are active in spring and early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (Johnson 1990).

3.5.2.15 Mountain Plover (*Charadrius montanus*) CSC, FPT

The mountain plover (wintering) is a California Species of Concern and a federally Proposed Threatened Species. This species breeds from the prairie and sagebrush country of north-central Montana, eastern Wyoming, and the area around southeastern Colorado. It winters from central California along the southern border states southward to northern Mexico (Udvardy 1977). Breeding habitats include semi-arid plains, grasslands, and plateaus. Common wintering habitats consist of dry, barren ground, smooth dirt fields, agricultural fields, and shortgrass prairies. This species tends to form small flocks in the winter. It is one of the few shorebird species that prefers habitats away from water. It is an insectivore that eats flies, beetles, grasshoppers, crickets, and other insects. The mountain plover is a relatively non-descript shorebird with a short tail, long legs, plain brown plumage above, and whiter plumage below. Males develop a black patch on the forehead during the breeding season. This species is sometimes confused with the American golden plover, but unlike that species, the belly and under-wing is a clean, white color and the legs are pale. Populations are in decline due to overgrazing practices and are also linked to declining prairie dog populations; mountain plovers often use prairie dog mounds as nest sites. The continued loss and alteration of habitats on breeding and wintering grounds are the primary threats to the mountain plover.

3.5.2.16 Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*) ST

The Nelson's antelope squirrel is a state threatened species. Nelson's antelope squirrels are restricted to the central and western areas of the San Joaquin Valley and inner coast ranges from 165 to 3,608 feet amsl. This species is found in alkali Desert Scrub and Annual Grasslands habitats on a variety of soil types including alluvial, loamy, sandy, gravely, or fine-textured sands. This species rarely digs its own burrows, preferring instead to use burrows made by other small mammals. Nelson's antelope squirrels are diurnally active, with most activity occurring in the early morning or late afternoon. This species is buff and yellow-brown above with a white stripe on each side and white under its tail. It can reach up to 10 inches in length. Nelson's ground squirrels feed primarily on grass and forb seeds, insects, and other green vegetation. The primary threats to this species include loss of habitat due to agriculture, urbanization, petroleum extraction, and rodent control poisons (Whitaker et al. 2008).

3.5.2.17 Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*) CSC

The pallid San Diego pocket mouse is a California Species of Concern. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican border. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus, and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or course gravel (Grinnell 1933, Miller and Stebbins 1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and Pinyon-Juniper Woodlands. Pallid San Diego pocket mouse densities have been recorded as high as 39 per hectare (Lackey 1996). This species is similar in appearance to *C.f. fallax* but is lighter in overall coloration. Population declines may be due to urban and agricultural development.

3.5.2.18 San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE, CSC

The San Bernardino kangaroo rat is a federally endangered species and a California Species of Concern. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about seven distinct populations. It prefers gravelly and sandy soils in alluvial habitats where it constructs underground burrows, and it rarely occurs in dense vegetation. This species is a small, nocturnally active rodent with pale yellow and dusky brown fur, and dark brown tail stripes, footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in is burrows for later consumption. It also consumes some green vegetation and insects when available. The primary threats to the continued existence of this species include habitat loss, degradation, and fragmentation due to developments related to housing, mining, and flood control (CDPR 1998).

3.5.2.19 Sierra Madre Yellow-Legged Frog (*Rana muscosa*) FE, SCE, CSC

The Sierra Madre yellow-legged frog is a federal-listed endangered, state candidate for listing as endangered, and a California Species of Concern. This species is found in the Sierra Nevadas from Fresno County to Kern County, and isolated populations are found in the San Gabriel, San Bernardino and San

Jacinto mountains of southern California, ranging in elevation from 4,500 to 11,980 feet amsl. This species was previously known as the mountain yellow-legged frog but is now considered a separate species from those found north of the Kings River north and middle forks known as the Sierra Nevada yellow-legged frog (*Rana sierrae).* They range in size from 1.5 to 3.5 inches snout to vent length, and coloration is highly variable with olive, yellow, or brown with black or brown speckling above and pale yellow to orange below and on the hind legs (Calherps 2011). They can be distinguished from *Rana sierrae* by having slightly longer hind legs and a different mating call; both smell like garlic when handled (Calherps 2011). Sierra Nevada populations occur in montane riparian, lodgepole pine, subalpine conifer, and wet meadows in association with lakes, ponds, and streams; southern California populations are found in lakes, ponds and streams of montane conifer-hardwood, montane riparian and ponderosa pine habitats (Morey 2008). Adults feed on aquatic and terrestrial invertebrates, tadpoles feed on algae and diatoms. Sierra Madre yellow-legged frogs are closely associated with aquatic environments and can be found in vegetation or on perching rocks within a few feet of water, diving into the water when threatened. They lay their eggs in shallow water and attach them to gravel or rocks; tadpoles can take up to two over-wintering periods to complete their aquatic development. They are diurnally active and will hibernate over the winter under the ice, and southern populations may estivate. Threats to this species include bullfrogs, non-native trout, cattle grazing, mining, off-road vehicles, public dumping, chytrid fungus, fires, and excessive flooding (Calherps 2011).

3.5.2.20 Short-Eared Owl (*Asio flammeus*) CSC

The short-eared owl (nesting) is a California Species of Concern. The range of this species is nearly worldwide; and in North America, it breeds in northern Canada and Alaska as well as in large portions of the western U.S. and the Great Lakes area. In California, this species is an uncommon winter migrant in the Central Valley, Sierra Nevada, and southern California; and it is known to breed from the San Francisco area north. Migrants arrive in California in September to October and leave in April. Habitats include grasslands, prairies, dunes, tundra, meadows, irrigated fields, wetlands, and fresh and saltwater marshes. Within these open habitat types, it prefers denser areas where it can seek cover along the ground. Short-eared owls nest in depressions on dry ground where vegetation provides cover; nests are built with grasses, sticks, feathers, and forbs. Clutch size ranges from 3 to 14 eggs. Eggs are laid in April and incubated for 24 to 37 days, and the young fledge after 21 to 36 days. This owl is mostly active at night, but it may forage by day in late afternoons or on cloudy days. Although it feeds mostly on voles and other small mammals, it will also eat birds, amphibians, reptiles, and arthropods. It characteristically flies in an erratic and buoyant manner, low over open areas, before plunging feet first to catch prey. The short-eared owl is a relatively medium-sized owl with an overall tawny brown color and buffy wing patches. It has bold yellow eyes that contrast sharply with its dark facial discs. Predators include golden eagles, great horned owls, snowy owls, and peregrine falcons. Small predatory mammals and large reptiles prey on eggs. Competitors include gulls, northern harriers, barn owls, and other owls. Overgrazing, destruction, and fragmentation of grasslands and wetland habitats, increased nest predation, and illegal shooting are all factors in the decline of this species.

3.5.2.21 Silvery Legless Lizard (*Anniella pulchra pulchra*) CSC

The silvery legless lizard is a California Species of Concern. Its range extends from the San Francisco Bay in California to northwestern Baja California, Mexico; and it can also be found on a few offshore islands of California. This species is found in chaparral, pine-oak woodlands, riparian woodlands, and also on beaches from sea level to around 5,100 feet. It occurs less commonly in desert scrub. Within these habitats, it prefers loose soils or sand for burrowing, moisture, warmth, and plant cover (Stebbins 2003).

It forages in leaf litter during the day for insects such as termites, spiders, beetles, and larvae. On warm evenings, it may emerge to forage during the night. This legless lizard has a silver, gray, or beige dorsal coloration with a dark mid-dorsal line and is yellow below. The primary threats to the continued existence of this species include habitat loss due to agriculture and urban sprawl, overabundant non-native vegetation (i.e. iceplant on sand dunes), sand mining operations, off-road vehicle use, and other anthropogenic disturbances, including trampling and over-collecting for the pet trade.

3.5.2.22 Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) WL

The southern California rufous-crowned sparrow is a CDFG Watch List species. It is one of 17 recognized subspecies of the rufous–crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico; however, this sub-species is a resident of southwest California on the slopes of the Transverse and Coast ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martin Island. Habitats include broken sage scrub and chaparral, native grasslands with sparse shrubs, and rocky, brush-laden hillsides and canyons with open patches. It is a small non-descript sparrow with a rusty crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

3.5.2.23 Southern Grasshopper Mouse (*Onychomys torridus ramona*) CSC

The southern grasshopper mouse is a California Species of Concern. It occurs throughout desert and semi-arid habitats in the southwestern United States and much of Mexico, including western Nevada, the southern portions of California, Arizona, and New Mexico, northern Baja California, western Texas, and south to central Mexico (Hall 1981). The subspecies *ramona* is restricted to coastal southern California, with marginal records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley (Hall 1981). The grasshopper mouse rangewide is often found in low, arid scrub and semi-scrub vegetation; but this subspecies is found in grasslands and sparse sage scrub habitats. It nests in burrows often dug by kangaroo rats and pocket gophers, but it may dig its own burrows in sandy or other friable substrates (Baily and Sperry 1929, Stapp 1997). Specific habitat requirements of the southern grasshopper mouse generally are unknown, but Stapp (1997) found that grasshopper mice use open areas and microhabitats dominated by gopher mounds and burrows. Stapp suggests that grasshopper mice selected these microhabitats because of greater prey availability (i.e., arthropods using burrows for refuge), greater mobility in open areas, and dust bathing sites. It prefers low to moderate shrub cover and is active year-round. Unlike most other mice, this species is primarily carnivorous. It feeds nocturnally on a variety of arthropods, including grasshoppers, beetles, and scorpions. It will also feed on frogs, salamanders, lizards, small mammals, and, occasionally, seeds. It has been known to kill species larger than itself, such as kangaroo rats. Prey items are stalked, rushed, seized, and typically killed with a bite in the head. Curiously, it emits a howl on occasion, perhaps in defense of its territory. Home ranges can be as large as four hectares; and, consistent with its carnivorous nature, population densities are normally low. It breeds from May to June; and after about 30 days, it gives birth to an average of 4 young. Predators include snakes, raptors, and a variety of mammals, including coyotes, owls, and foxes. Habitat loss and degradation are the primary threats to this species.

3.5.2.24 Swainson's Hawk (*Buteo swainsoni*) ST

The Swainson's hawk (nesting) is a state threatened species. This species breeds from southwest Canada through the western U.S. into northern Mexico, with isolated breeding populations also observed in northern Illinois and the Sacramento and San Joaquin valleys of California. This species winters to South America. The Swainson's hawk forages in open stands of grass-dominated vegetation;, sparse shrublands; and small, open woodlands. It typically nests in scattered trees within these grassland, shrubland, or agricultural landscapes. The Swainson's hawk feeds largely on insects, and thus is affected by pesticide use, particularly DDT and organophosphate pesticides currently used in South America (England et al. 1997).

3.5.2.25 Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*) CSC

The Tehachapi pocket mouse is a California Species of Concern. This species is occurs in the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos and east to the lower San Gabriel Mountains to Lake Elizabeth (Laabs 1998). The Techachapi pocket mouse is one of two subspecies of *Perognathus alticola*; the second subspecies, *P. a. alticola,* occurs in the San Bernardino Mountains and has not been observed in over 50 years. Male Tehachapi pocket mice can reach up to 6.5 inches in length; while females are significantly smaller, reaching only 5.9 inches. Both sexes are yellowish-brown with a heavy overlay of black dorsally and white ventrally; facial markings are fainter, and the inside of the ears are white; its tail is bicolored and is slightly longer than head to body length (Laabs 1998). This species occurs in native and non-native grasslands, Joshua Tree Woodland, Pinyon-Juniper Woodland, Yellow Pine Woodland, oak savanna, chaparral, Coastal Sage Scrub, fallow grain fields, and rangeland at elevations ranging from 3,500 to 6,000 feet amsl, preferring loose, sandy soils for burrowing (Laabs 1998). They are nocturnal, feeding on seeds of grasses and forbs, but will eat green vegetation and insects. Threats to this species include surface disturbance like mineral extraction and conversion of habitat to urban development.

3.5.2.26 Tricolored Blackbird (*Agelaius tricolor*) CSC

The tricolored blackbird (nesting colony) is a California Species of Concern that occurs primarily in California, with smaller populations in northern Mexico. This species is locally common in parts of the Central Valley and along the coast in Sonoma County but is not found commonly over most parts of its range. This species breeds near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of fall and winter diet. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds. Breeding season usually takes place form mid-April into late July, but Orians (1960) also reported active breeding in October and November in Sacramento Valley. Over the past few decades, numbers have been declining in California (DeHaven 1975). Reasons for the decline include the conversion of marshland habitats and agricultural poisoning.

3.5.2.27 Two-Striped Garter Snake (*Thamnophis hammondii*) CSC

The two-striped garter snake is a California Species of Concern. It is found in disjunct populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian

forests may surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. The historic range of this species has been lost to housing, urban development, and other human impacts by an estimated 40 percent (Stebbins 2003).

3.5.2.28 Western Pond Turtle (*Actinemys marmorata pallida*) CSC

The western pond turtle is a California Species of Concern. This species occurs along the coast of North America from Baja California up to San Francisco Bay and occurs from sea level to 5,900 feet in elevation (California Reptiles and Amphibians 2011). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (California Reptiles and Amphibians 2011). The western pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Basking sites are necessary for thermoregulation. Reptile body temperature is dependent upon the environment the air, the substratum, and solar radiation. Basking is absorption of the sun's radiation and/or through the substratum. This species occurs in a variety of habitat types including woodland, grassland, and open forest (California Reptiles and Amphibians 2011). Although this species is considered aquatic, this species usually leaves the aquatic site to reproduce, to estivate, and to overwinter. Pond turtles hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (California Reptiles and Amphibians 2011). The species is highly sensitive to disturbance and will quickly slide into water when they feel threatened. Pond turtles are diurnal and are most active from February to November; however, if water temperatures remain warm, this species may be active year long (Bury 2008). Mating takes place in April or May, and females will deposit eggs in a vegetated upland location that may be a considerable distance (400 m or more) from the aquatic habitat to the nest. Eggs are generally deposited in grassy, upland areas adjacent to streams during May and June, although some individuals may deposit eggs as early as April and as late as August. Hatchlings will stay at the nest location and will emerge in the early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and occasionally frogs and fish (California Reptiles and Amphibians 2011). Habitat destruction is the primary threat to this species. Dams cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury 2008).

3.5.2.29 Western Mastiff Bat (*Eumops perotis*) CSC

The western mastiff bat is listed as a state Species of Concern. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown (TPWD 2008).

3.5.2.30 Western Snowy Plover (*Charadruis alexandrinus nivosus*) FT, CSC

The western snowy plover (nesting, coastal populations) is federally listed as threatened and is also a California Species of Concern. The Pacific coastal population breeds primarily on beaches from southern Washington to southern Baja California, Mexico. Interior populations can be found in the Central Valley of California, Oregon, Nevada, and other western states. The western snowy plover nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitats, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds, and infrequently on bluff-backed beaches (USFWS 2001). This small plover has a pale tan back, rump, and tail; white underparts; and dark patches on the sides of its neck that reach around onto the top of its chest. Habitat alteration and recreational beach use have led to a serious decline in nesting habitat and populations over the last forty years (USFWS 2001, Page et al. 1995).

3.5.2.31 White-Faced Ibis (*Plegadis chihi*) WL

The white-faced ibis (nesting colony) is a Watch List species. It breeds across the western United States northward to Montana, eastward to western Louisiana, and southward to South America. It winters from southern California and Louisiana southward. The white-faced ibis usually nests in low trees and shrubs over shallow water. It inhabits primarily freshwater wetlands, especially cattail and bulrush marshes. It feeds in flooded hay meadows, agricultural fields, and estuarine wetlands. The white-faced ibis is a dark bronze-colored wader with a long, decurved bill. During the breeding season, adults have distinctive white feathers along the edges of their bare facial skin. Erosion and flood-control measures and irrigation projects have eliminated or degraded traditional nesting colony sites, leading to nest abandonment. Other losses of wetland habitat can also negatively affect populations (Ryder and Manry 1994).

3.6. SPECIES OBSERVED

The following plant species were observed while habitat assessments were conducted on the Project site: common sunflower, tumble mustard (*Sisymbrium altissimum*), rattlesnake weed (*Chamaesyce albomarginata*), red-stemmed filaree (*Erodium cicutarium*), dune evening primrose (*Oenothera deltoides*), foxtail chess, saltgrass (*Distichlis spicata*) and Mediterranean schismus.

The following wildlife species were observed while habitat assessments were conducted on the Project site: Cassin's kingbird (*Tyrannus vociferans*), ground squirrel burrows (*Spermophillus* sp.), vole burrows (*Microtus* sp.), fox bones (*Vulpes* sp.) and domestic sheep scat (*Ovis aries*).

3.7. SENSITIVE SPECIES

The following 19 special status plant species are considered absent from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- alkali mariposa lily
- Barstow woolly sunflower
- Clokey's cryptantha
- Davidson's bush mallow
- Darwin rock cress

- desert cymopterus
- Horn's milk-vetch
- Lancaster milk-vetch
- pale-yellow layia Parish's popcorn-flower
- Parry's spineflower
- Peirson's morning-glory
- recurved larkspur
- round-leaved filaree
- sagebrush loeflingia
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa lily
- white pygmy-poppy

The following 27 special status wildlife species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- American badger
- arroyo toad
- Bell's sage sparrow
- California red-legged frog
- coast horned lizard
- Cooper's hawk
- desert tortoise
- least Bell's vireo
- Le Conte's thrasher
- loggerhead shrike
- Mohave ground squirrel
- mountain plover
- Nelson's antelope squirrel
- pallid San Diego pocket mouse
- San Bernardino kangaroo rat
- Sierra Madre yellow-legged frog
- short-eared owl
- southern California rufous-crowned sparrow
- southern grasshopper mouse
- Swainson's hawk
- Tehachapi pocket mouse
- tricolored blackbird
- two-striped garter snake
- western pond turtle
- western mastiff bat
- western snowy plover
- white-faced ibis

The following two special status wildlife species have a **low** potential to occur onsite due to the presence of low quality suitable habitat on the Project site, the quality of adjacent habitat, and historical records of these species occurring within five miles of the Project site:

- Merlin (forage)
- silvery legless lizard

The following special status wildlife species has a **moderate** potential to occur on the Project site due to the presence of low quality suitable habitat and historical records of these species occurring within three miles of the Project site:

- Burrowing owl. The Project site consists of non-native grasslands which could provide suitable habitat for burrowing owls. Several burrows small mammal burrows were also observed within the Project site which could provide suitable prey for burrowing owls. In addition, burrowing owls have been recorded to occur within 3 miles of the Project site. Therefore, the burrowing owl has a moderate potential for occurrence on the Project site.

The following special status wildlife species has a **high** potential to occur (forage) on the Project site due to the presence of high quality suitable habitat and historical records of these species occurring within 1 mile of the Project site:

- Ferruginous hawk. The Ferruginous hawk is present in southern California during the winter season. This species winters in open terrain from grasslands to deserts where small mammals are abundant. Several small mammal burrows were observed on the Project site. In addition, Ferruginous hawks have been recorded to occur within 1 mile of the site. Therefore, the ferruginous hawk has a high potential to forage on the Project site.

SECTION 4.0 – CONCLUSIONS

4.1 Special Status Species

Of the 19 special status species known to occur within the vicinity of the Project site, all are considered absent due to lack of suitable habitat; therefore, no further surveys for special status plant species are recommended at this time.

Of the 31 special status wildlife species known to occur within the vicinity of the Project site, 29 are considered absent or have a low potential to occur on the Project site. No further surveys for 29 of these special status wildlife species are recommended at this time. The remaining special status wildlife species have a moderate to high potential to occur on the Project site.

4.1.1 Burrowing Owl

There is a moderate potential for Burrowing owl to occur on the project site. Although burrowing owls are not federal- and/or state-listed as endangered or threatened, this species is listed as a CSC. While the majority of CSC listed species do not typically require focused surveys, specific focused survey protocol for the burrowing owl has been developed by the California Burrowing Owl Consortium and adopted by the CDFG (The California Burrowing Owl Consortium 1993).

4.1.2 Ferruginous Hawk

The ferruginous hawk has a high potential to forage on the Project site. This species is on the CDFG Watch List and is not federal- and/or state-listed threatened or endangered.

4.2 JURISDICTIONAL FEATURES

Based on the observation of the biologists, the man made irrigation ditches along the north and east boundaries and through the middle of the Project site do not support riparian vegetation or riparian habitats. However, these drainage features may fall subject to state jurisdiction. A formal delineation of the Project site was not conducted.

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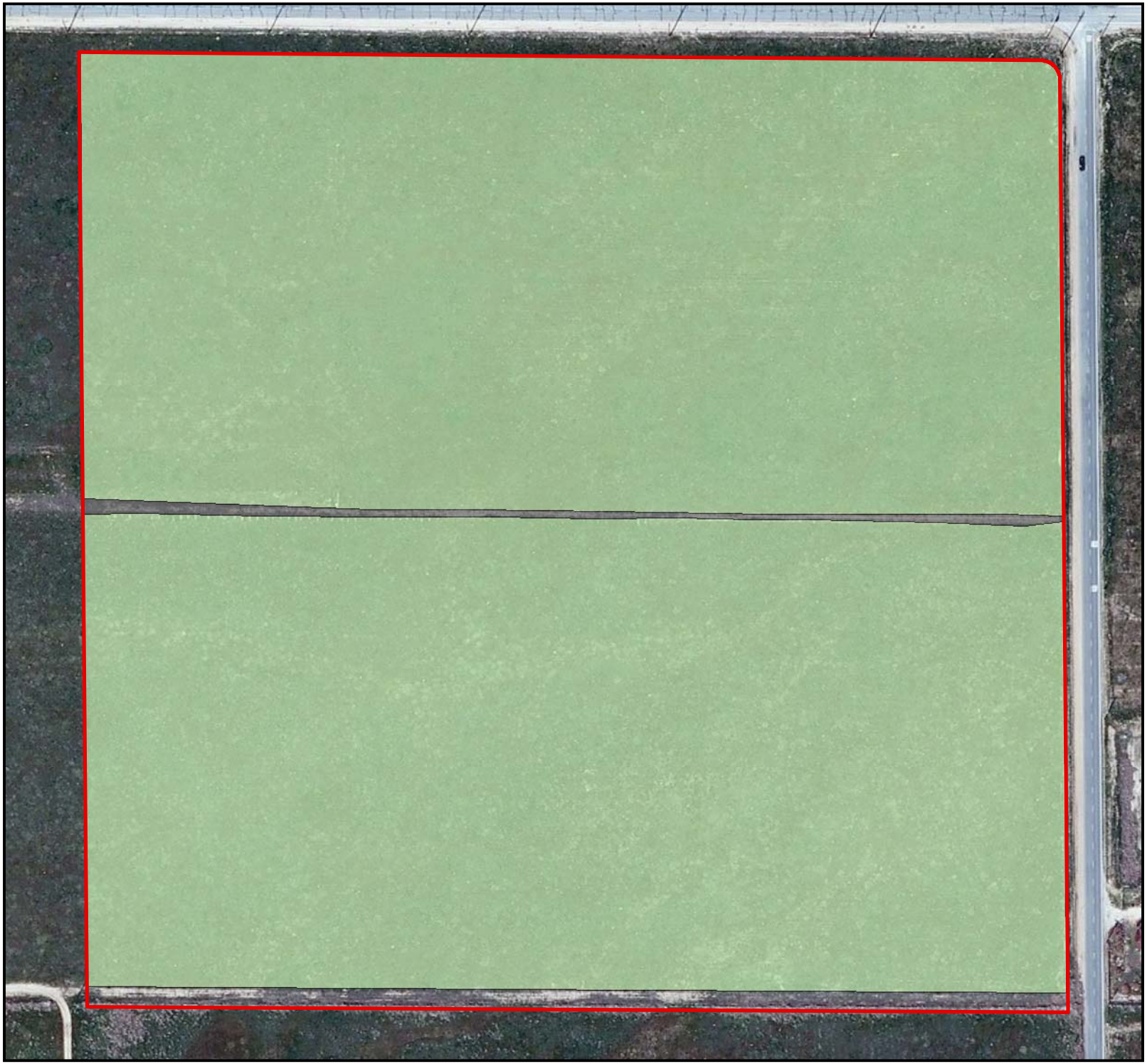
APPENDIX A – VEGETATION COMMUNITIES MAP



Vegetation Map
American Solar Greenworks

Legend

- Project Site
- Non-Native Annual Grassland
- Access Road

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Chambers Group Inc.

CHAMBERS GROUP

APPENDIX B – SITE PHOTOGRAPHS

APPENDIX B – SITE PHOTOGRAPHS

	Photo 1-American Solar Greenworks. Photo is taken looking north across the Project site from the southwest corner.
	Photo 2- American Solar Greenworks. Photo is taken looking east at the open fields from the southwest corner.
	Photo 3- American Solar Greenworks. Photo is taken looking west at the non-native grassland from the southeast corner.

BIOLOGICAL TECHNICAL REVIEW
FOR THE PINNACLE SOLAR RANCH SOLAR PROJECT SITE (CUP 9)
CITY OF LANCASTER
LOS ANGELES COUNTY, CALIFORNIA

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SECTION 1.0 – INTRODUCTION

Silverado Power, LLC (Silverado Power) is an independent solar power producer and developer of distributed solar power assets utilities that are for both municipally and investor owned. Silverado Power strives to be a leader in wholesale solar power generation and the process of developing, building, and operating solar generation facilities (SGFs).

Chambers Group, Inc. (Chambers Group) was retained by Tetratech (for Silverado Power) to conduct a literature review and biological technical report (BTR) on the proposed Pinnacle Solar Ranch site located in Los Angeles County, California. The purpose of this document is to report the results of the reconnaissance-level biological survey.

1.1. PROJECT DESCRIPTION

Silverado Power plans to develop the proposed Pinnacle Ranch SGF (the Project). The Project facilities would operate year-round, producing electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the fourth quarter of 2014.

The proposed Project would have a generating capacity of 20 megawatts alternating current (MW-AC) located on approximately 80 acres of disturbed rubber rabbitbrush scrub and non-native annual grasslands. The Project would employ photovoltaic (PV) modules that convert sunlight directly into electrical energy without use of heat transfer fluid or cooling water. The facilities would deliver the electrical output to the existing regional transmission system.

The Project would meet the increasing demand for electricity generated from clean, renewable technology. The recent legislation enacted in California recognizes the multiple benefits associated with the development of renewable energy resources. These benefits include a reduced reliance on foreign sources of fuel, promotion of national security, diversification of energy portfolios, reductions in greenhouse gas emissions, and the creation of “green” jobs within the state of California.

1.2. PROJECT LOCATION

The proposed Project site is located in the Antelope Valley area of unincorporated northeastern Los Angeles County and comprises an appoximately 80-acre site zoned as Exclusive Agriculture (AE-20). The Pinnacle Solar Ranch Project site is located within the city of Lancaster, CA, on the northwest corner of the intersection of 70th Street West and Ave G-12, 6.6 miles northwest of downtown Lancaster. The site is located within the *Del Sur* California USGS 7.5 minute quadrangle. The Project site is surrounded by old agricultural fields to the south and west while active agricultural fields surround the remaining areas. The Project Regional map is provided as Figure 1 and the Project Vicinity map is provided as Figure 2.

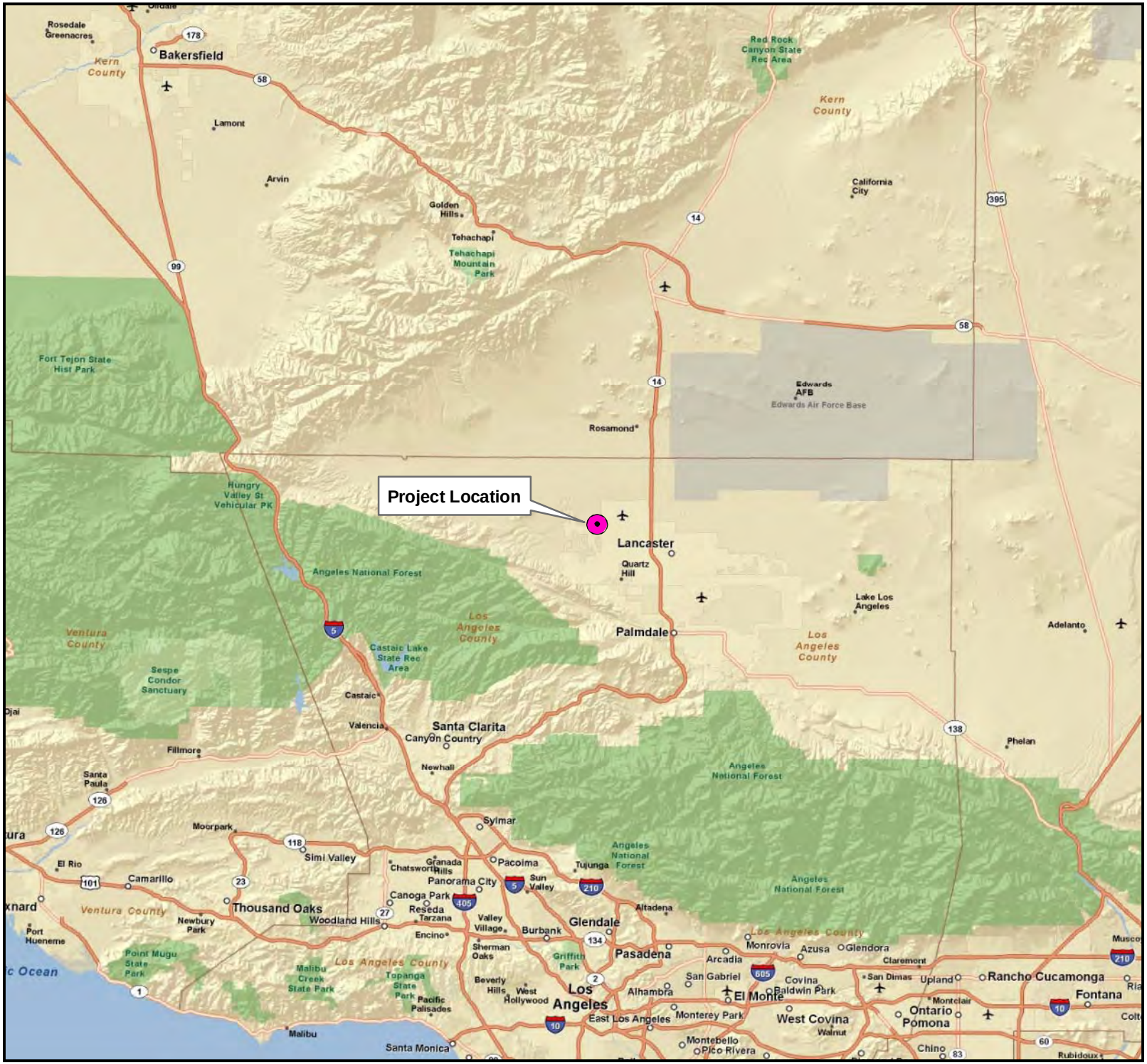

Figure 1
Regional Map
Pinnacle Solar Ranch

Legend

Project Location

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Chambers Group Inc.

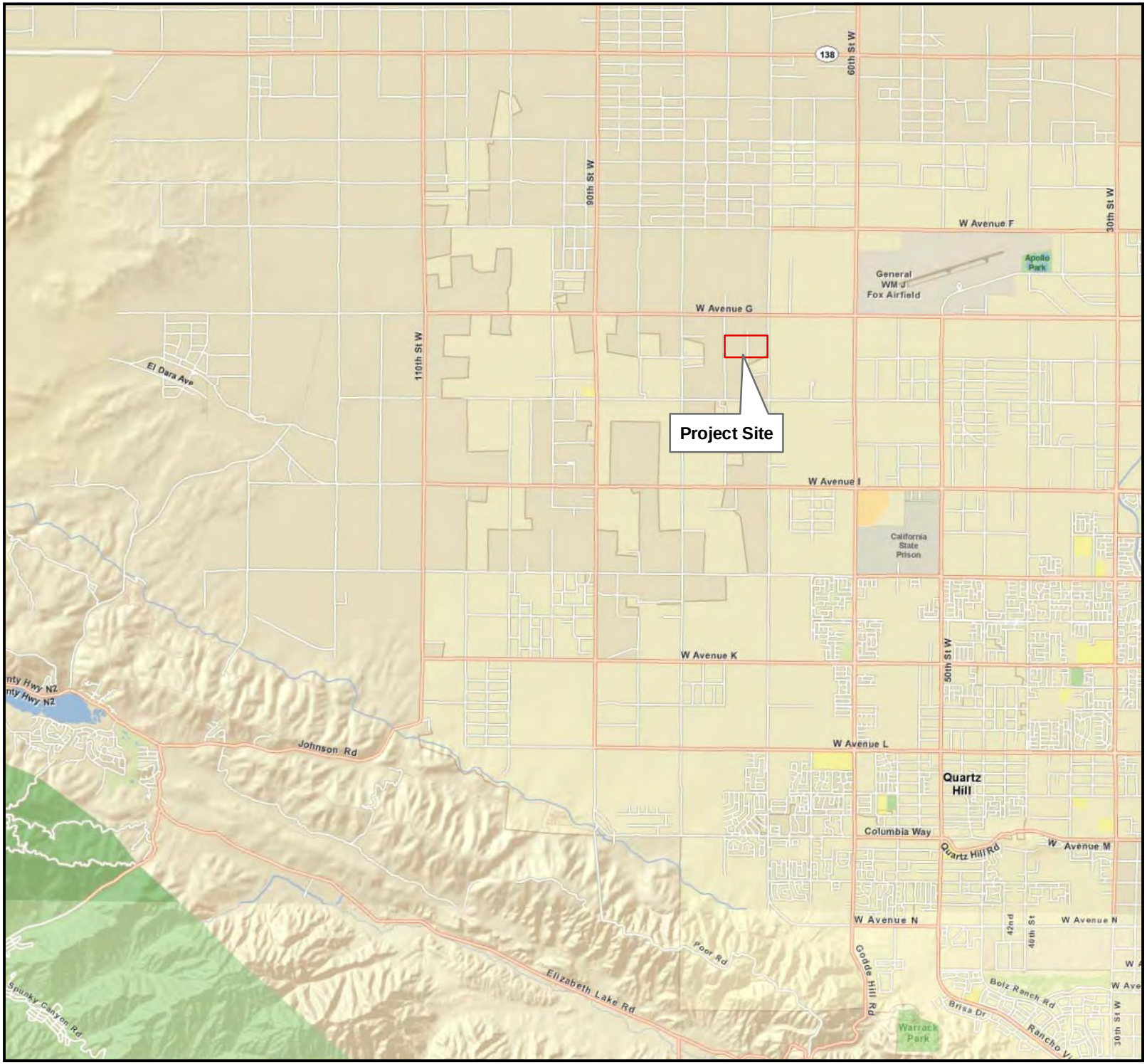

Figure 2
Vicinity Map
Pinnacle Solar Ranch

Legend

Project Site

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SECTION 2.0 – METHODS

2.1. LITERATURE REVIEW

Prior to conducting the field surveys, existing documentation relevant to the Project site was reviewed. The most recent records of the California Department of Fish and Game California Natural Diversity Database (CNDDB 2011) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2011) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Fairmont Butte, Little Butte, Rosamond, Rosamond Lake, Redman, Alpine Butte, Lancaster East, Lancaster West, Del Sur, Lake Hughes, Burnt Peak, Little Rock, Lovejoy Buttes, El Mirage*, California USGS 7.5 minute quadrangles). The database contains records of reported occurrences of federal- or state-listed as endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Special Concern (CSC), or otherwise sensitive species or habitats that may occur within or in the vicinity of the Project site.

2.2. BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

The field survey was conducted on the Project site in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support special status wildlife species and to identify any potential jurisdictional waters of the United States. Chambers Group biologists Heather Clayton and Tracey Valentovich conducted the general reconnaissance survey on May 18, 2011. Weather conditions during the survey included temperatures averaging approximately 71 degrees Fahrenheit with 20 percent cloud cover and no precipitation. During the survey the biologists walked the Project site documenting the native vegetation communities and took notes regarding the potential for special status species and jurisdictional waters to occur onsite. Photographs of the Project site were taken to document existing conditions.

2.3. VEGETATION

All plant species and soil types observed onsite were noted. Plant communities on the Project site were identified, qualitatively described, and mapped onto an aerial photograph. Plant communities were determined in accordance with the categories set forth in Holland (1986) or Gray and Bramlet (1992). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California* (Hickman 1993).

2.4. WILDLIFE

All wildlife and wildlife sign observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support state- and/or federal-listed or proposed listed species. Photographs of the site are provided in Appendix B.

SECTION 3.0 – RESULTS

3.1. LITERATURE REVIEW

According the literature review, 19 special status plant and 31 special status wildlife species were documented to occur within the vicinity of the Project site. This list included ten wildlife species that are federal- and/or state-listed endangered or threatened. Of the 19 special status plant species listed in the literature review, none are federal- and/or state-listed endangered or threatened.

3.2. VEGETATION COMMUNITIES

The Project site is classified as Disturbed Rubber Rabbitbrush scrub and Non-native Annual Grasslands. Pinnacle Solar Ranch is surrounded by fallow fields and active agriculture fields. A map of the vegetation communities observed onsite is provided in Appendix A.

3.2.1 Disturbed Rubber Rabbitbrush Scrub

Disturbed Rubber Rabbitbrush Scrub is similar to intact Rubber Rabbitbrush Scrub in which rubber rabbitbrush (*Chrysothamnus nauseosus*) remains an important component, but this community is of low-quality with a higher percentage of non-native weedy species (i.e., greater than 20 percent of the species composition) and shows evidence of prior disturbance from grading, over-grazing, or other ground-disturbance activities. Rabbitbrush Scrub is a disturbance-maintained community in which fire, grazing, or soil tilling perpetuate the same species within the herb and shrub layers and the disturbance occurs with regular (less than 10 years) frequency.

Plant species found within this site typical of this vegetation community include: big sagebrush (*Artemisia tridentata*), rubber rabbitbrush and prickly lettuce (*Lactuca serriola*).

3.2.2 Non-native Annual Grasslands

Non-Native Grassland consists of a dense to sparse cover of annual grasses such as oats (*Avena* sp.), bromes (*Bromus* sp.), and ryegrass (*Lolium* sp.) with flowering culms up to 3 feet in height. This community is often associated with numerous species of showy-flowered, native annual forbs "wildflowers" such as California poppy (*Eschscholzia californica*), lupines (*Lupinus* sp.), and goldfields (*Lasthenia* sp.) especially in years of favorable rainfall (Holland 1986). Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from winter through spring. Typically plants are dead through the summer-fall dry season persisting as seeds. Non-native grasslands can be found on fine-textured usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall. Oak woodland is often adjacent on moister, better-drained soils.

Plant species found on the project site typical of this vegetation community include: glaucous foxtail barley (*Hordeum murinum*), four wing saltbush (*Atriplex canescens*) and cheat grass (*Bromus tectorum*).

3.3. JURISDICTIONAL FEATURES

Chambers Group conducted a preliminary assessment for jurisdictional features found on the Project site. A formal delineation was not conducted.

3.4. SPECIAL STATUS SPECIES

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Project site.

CNPS

List 1A = Plants presumed extinct in California.
List 1B = Plants rare and endangered in California and throughout their range.
List 2 = Plants rare, threatened or endangered in California but more common elsewhere in their range.
List 3 = Plants about which we need more information; a review list.
List 4 = Plants of limited distribution; a watch list.

CNPS Extensions

0.1 = Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2 = Fairly endangered in California (20-80 percent occurrences threatened).
0.3 = Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE = Federally listed; Endangered
FT = Federally listed; Threatened
FC = Federal Candidate for listing
FPT = Federal Proposed listing as Threatened

State

ST = State listed; Threatened
SE = State listed; Endangered
RARE = State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC = State Species of Special Concern
WL = CDFG Watch List

3.5. SENSITIVE SPECIES DESCRIPTIONS

3.5.1 Sensitive Plants in the Los Angeles County Area

3.5.1.1 Alkali Mariposa Lily (*Calochortus striatus*) CNPS List 1B.1

Alkali mariposa lily is a CNPS List 1B.2 species. This perennial, bulbiferous herb flowers between April and June. This species occurs on alkaline and mesic soils within Chaparral, Chenopod Scrub, Mojavean Desert Scrub, and Meadows and Seeps habitats at elevations between 230 and 5,233 feet above mean sea level (amsl). Known range for this species includes: Kern, Los Angeles, San Bernardino, and Tulare

counties. Threats to alkali mariposa lily include groundwater urbanization, grazing, trampling, road construction, water diversion resulting in lowering the water table, and possibly horticultural collecting.

3.5.1.2 Barstow Woolly Sunflower (*Eriophyllum mohavense*) CNPS List 1B.2

Barstow woolly sunflower is a CNPS List 1B.2 species. This annual herb flowers between March and May. Barstow woolly sunflower occurs within Chenopod Scrub, Mojavean Desert Scrub, and Playas habitats at elevations between 1,640 and 3,150 feet amsl. Known range for this species includes: Fresno, Kern, Los Angeles, and San Bernardino counties. Threats to this species include vehicles, grazing, energy development, and road improvements.

3.5.1.3 Clokey's Cryptantha (*Cryptantha clokeyi*) CNPS List 1B.2

Clokey's cryptantha is a CNPS List 1B.2 species. This annual herb flowers in April. Clokey's cryptantha occurs within Mojavean Desert Scrub habitat at elevations between 2,379 and 4,478 feet amsl. Known range for this species includes: Inyo, Los Angeles, and San Bernardino counties. Major threats to this species include military activities and alteration of fire regimes.

3.5.1.4 Darwin Rock Cress (*Arabis pulchra* var. *munciensis*) CNPS List 2.3

Darwin rock cress is a CNPS List 2.3 species. This perennial herb flowers in April. Darwin rock cress occurs in carbonate soils of Chenopod Scrub and Mojavean Desert Scrub habitats at elevations between 3,608 and 6,807 feet amsl. Known range includes Inyo, Los Angeles, and San Bernardino counties.

3.5.1.5 Davidson's Bush Mallow (*Malacothamnus davidsonii*) CNPS List 1B.2

Davidson's bush mallow is a CNPS List 1B.2 species. This perennial deciduous shrub flowers between June and January. Davidson's bush mallow occurs within chaparral, Coastal Scrub, Cismontane Woodland, and riparian woodland habitats at elevations between 607 and 2,805 feet amsl. Known ranges include: Los Angeles, Monterey, Santa Clara, San Mateo, and San Luis Obispo counties. Urbanization, maintenance activities, and erosion are the main threats to this species.

3.5.1.6 Desert Cymopterus (*Cymopterus deserticola*) CNPS List 1B.1

Desert cymopterus is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs on sandy soils within Mojavean Desert Scrub and Joshua Tree Woodland habitats at elevations between 2,066 and 4,921 feet amsl. Known range for this species includes: Kern, Los Angeles, and San Bernardino counties. Threats to desert cymopterus include military activities, sheep grazing, vehicles, utility construction, and urbanization.

3.5.1.7 Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*) CNPS List 1B.1

Horn's milk-vetch is a CNPS List 1B.1 species. This annual herb flowers between May and October. This species occurs along lake margins in poorly drained, alkaline soils of meadows and seeps and Playas habitats at elevations between 195 to 2,790 feet amsl. Known ranges include Inyo, Kern, and San Bernardino counties and Nevada. Poisonous to sheep, it was subject to eradication by farmers in the early 1900s; current threats to Horn's milk-vetch are habitat alterations.

3.5.1.8 Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*) CNPS List 1B.1

Lancaster milk-vetch is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs within Chenopod Scrub habitat. Known ranges include Kern, Los Angeles and San Bernardino counties and Nevada. Limited range, including areas only near Lancaster and Edwards Air Force Base, is the major threat to Lancaster milk-vetch.

3.5.1.9 Pale-Yellow Layia (*Layia heterotricha*) CNPS List 1B.1

Pale-yellow layia is a CNPS List 1B.1 species. This annual herb flowers between March and June. This species occurs in alkaline or clay soils within Cismontane Woodland, Coastal Scrub, Pinyon-Juniper Woodland, and Valley and Foothill Grassland habitats at elevations between 984 and 5,594 feet amsl. Known ranges include Fresno, Kern, Kings, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, San Benito, and Ventura counties. Threats to pale-yellow layia include vehicle use, non-native plants, agricultural conversion, grazing, and previous construction at San Antonio Reservoir.

3.5.1.10 Parish's Popcorn-Flower (*Plagiobothrys parishii*) CNPS List 1B.1

Parish's popcorn-flower is a CNPS List 1B.1 species. This annual herb flowers between March and November. This species occurs on alkaline and mesic soils within Great Basin scrub and Joshua tree woodland habitats at elevations between 2,460 and 4,595 feet amsl. Known range for this species includes: Inyo, Los Angeles, Mono, and San Bernardino counties. Threats to Parish's popcorn-flower include groundwater pumping.

3.5.1.11 Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) CNPS List 1B.1

Parry's spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and June. This species occurs in sandy or rocky soils and openings within Cismontane Woodland, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 902 and 4,002 feet amsl. Known ranges include Los Angeles, Riverside and San Bernardino counties. Threats to this species include development, altered flood regime, mining, vehicles, and competition from non-native plants.

3.5.1.12 Peirson's Morning-Glory (*Calystegia peirsonii*) CNPS List 4.2

Peirson's morning-glory is a CNPS List 4.2 species. This perennial, rhizomatous herb flowers between April and June. This species occurs within chaparral, Chenopod Scrub, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, and Valley and Foothill Grassland habitats at elevations between 98 and 5,085 feet amsl. Known ranges include Los Angeles county. Major threats to Peirson's morning-glory include grazing and development; possible threats include power line construction.

3.5.1.13 Recurved Larkspur (*Delphinium recurvatum*) CNPS List 1B.2

Recurved larkspur (*Delphinium recurvatum*) is a CNPS List 1B.2 species. This perennial herb flowers between March and June. This species occurs on alkaline soils within Chenopod Scrub, Cismontane Woodland, and Valley and Foothill Grassland habitats at elevations between 10 and 2,460 feet amsl. Known ranges of the recurved larkspur include: Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solana, Sutter, and Tulare counties. Conversion of habitat, grazing, and trampling are threats to the recurved larkspur.

3.5.1.14 Round-Leaved Filaree (*California macrophylla*) CNPS List 1B.1

Round-leaved filaree is a CNPS List 1B.1 species. This annual herb flowers between March and May. Round-leaved filaree occurs in clay soils within Cismontane Woodland and Valley and Foothill Grassland habitats at elevations between 50 and 3,937 feet amsl. Known ranges include Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, Santa Barbara, San Benito, Santa Clara, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Ventura, and Yolo counties and Santa Cruz Island. Threats to this species include urbanization, feral pigs, habitat alteration, pipeline construction, urbanization and competition from non-native plants.

3.5.1.15 Sagebrush Loeflingia (*Loeflingia squarrosa*) CNPS List 2.2

Sagebrush loeflingia is a CNPS List 2.2 species. This annual herb flowers between April and May. This species occurs in sandy soils of Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub habitats at elevations between 2,295 and 5,300 feet amsl. Known range includes Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino counties and Nevada, Oregon, and Wyoming. Possible threats to sagebrush loeflingia include off-highway vehicles and grazing.

3.5.1.16 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*) CNPS List 1B.1

San Fernando Valley spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and July. This species occurs in sandy soils of Coastal Scrub and Valley and Foothill Grassland habitats at elevations between 492 and 4,002 feet amsl. Known range includes Los Angeles, Orange, and Ventura counties. Possible threats to this species include competition from non-native plants and development.

3.5.1.17 Short-Joint Beavertail (*Opuntia basilaris brachyclada*) CNPS List 1B.2

Short-joint beavertail is a CNPS List 1B.2 species. This perennial stem succulent flowers between April and June. This species occurs within chaparral, Mojavean Desert Scrub, Joshua Tree Woodland, and Pinyon-Juniper Woodland habitats at elevations between 394 and 5,905 feet amsl. Known range for this species includes Los Angeles and San Bernardino counties. Major threats to short-joint beavertail include vehicles, grazing, urbanization, mining, and horticultural collecting; possible threats include power line construction.

3.5.1.18 Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*) CNPS List 1B.1

Slender mariposa lily is a CNPS List 1B.1 species. This perennial, bulbiferous herb flowers between March and June. This species occurs within chaparral, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 1,050 and 3,280 feet amsl. Known ranges include Los Angeles and Ventura counties. Threats to slender mariposa lily include vehicles, development, mining, and competition from non-native plants.

3.5.1.19 White Pygmy-Poppy (*Canbya candida*) CNPS List 4.2

White pygmy-poppy is a CNPS List 4.2 species. This annual herb flowers between March and June. This species occurs on gravelly, sandy, or granitic soils within Joshua Tree Woodland, Mojave Desert Scrub, and Pinyon-Juniper Woodland habitats at elevations between 600 and 4,800 feet amsl. Known ranges include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino counties. This species is threatened by development, off-highway vehicles, grazing, mining, and competition from non-native plants.

3.5.2 Sensitive Wildlife Species in the Los Angeles County Area

3.5.2.1 American Badger (*Taxidea taxus*) CSC

The American badger is a California Species of Concern. This carnivorous species ranges over most of the western U.S and upper midwestern U.S. south into central Mexico. In California, the badger may occupy a variety of habitats, especially grasslands, savannas, montane meadows, sparse scrublands, and deserts. It prefers friable soils for burrowing, and relatively open, uncultivated ground. Prey items include gophers, ground squirrels, marmots, kangaroo rats, other rodents, and the occasional reptile or amphibian. The American badger may weigh up to 25 pounds and is easily recognized by its overall yellowish gray coloration, the white stripe on top of its head, white cheeks, and black feet with noticeably long front claws. It is a heavy-bodied animal with short legs and a characteristic pigeon-toed gait. It is chiefly nocturnal, but it is often seen by day as well. It gives birth to two to five young anywhere from February to May, depending on its altitude and latitude. Threats to this species include habitat loss to agriculture, housing, and other land conversions, and illegal hunting.

3.5.2.2 Arroyo Toad (*Anaxyrus californicus*) FE, CSC

The arroyo toad is a federally endangered species and a California Species of Concern. The range of this species is within coastal California from Monterey County into northwestern Baja California, Mexico. It is found in washes, streams, and arroyos, and preferred habitats include sandy banks within riparian woodlands such as willow, cottonwood, sycamore, mulefat, and/or coast live oak. It breeds in shallow, sandy/gravelly riverine pools with low silt content and normally disperses onto adjacent uplands after breeding (USFWS 1993). Individuals have been observed up to two kilometers (km) from the streams in which they breed, but most often they are within 0.5 km of those streams (USFWS 2001). During the breeding season, males call nocturnally from open areas on banks at the edges of streams. Males typically precede females at breeding sites. Females lay their eggs among gravel, leaves, or sticks, on mud or clean sand within low to moderately flowing sections of streams in areas with little or no emergent vegetation and little woody marginal growth. Newly metamorphosed individuals remain near pools for up to several weeks until the areas dry. Juveniles begin feeding primarily on ants and shift to small beetles as they grow (Sweet 1991) before moving into adjacent wintering grounds. Many spend the next 6 to 8 months overwintering in burrows up to 20 centimeters deep in sandy substrates of these habitats. Adults obtain shelter primarily by burrowing into fine, sandy soils in both adjacent and upland habitats (Sweet 1991). This small to moderately-sized species is distinguished from other toads by its chevron-shaped marking between the eyes and by the lack of a mid-dorsal stripe. Coloration may vary from light olive gray to tannnish brown above, and the unmarked undersurfaces are creamy to dirty white. The iris is dark brown with scattered gold iridophores on the upper and lower portions of the iris. The primary threat to this species is habitat loss.

3.5.2.3 Bell's Sage Sparrow (*Amphispiza belli belli*) WL

The Bell's sage sparrow is a subspecies of sage sparrow and a Watch List species. It breeds primarily in chamise chaparral along the coastal side of California from the western foothills of the Sierra Nevada to San Diego County and northwest Mexico. It also breeds less commonly in coastal sage, mixed chaparral, and big sagebrush communities. Wintering birds of this subspecies may migrate to desert floors or remain in their breeding habitats. This species is distinguished from other sparrows by its grey head and back, thin white eye-ring, single dark breast spot, and heavy whisker-like pattern about the face.

Populations are in decline due to habitat loss and fragmentation, frequent wildfires, grazing, invasive plants, and brood parasitism caused by the brown-headed cowbird (*Molothrus ater*).

3.5.2.4 Burrowing Owl (*Athene cunicularia*) CSC

The burrowing owl, a California Species of Concern, is broadly distributed across the western United States with populations in Florida and Central and South America. Burrowing owls use a variety of natural and modified habitats for nesting and foraging, typically characterized by low-growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrublands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. Burrowing owls typically use burrows made by fossorial (adapted for burrowing or digging) mammals, such as California ground squirrels (*Spermophilus beecheyi*), foxes, or badgers (*Taxidea taxus*). They sometimes dig their own burrows and will often utilize man-made structures such as earthen berms; cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls often are found within, under, or in close proximity to man-made structures. Prey sources for this species include small rodents; arthropods such as spiders, crickets, centipedes, and grasshoppers; smaller birds; amphibians; reptiles; and carrion. Threats to the burrowing owl include loss of nesting burrows, habitat loss, and mortality from motor vehicles.

3.5.2.5 California Red-Legged Frog (*Rana aurora draytonii*) FT, CSC

The California red-legged frog is a federally threatened species and a California Species of Concern. It is found from Mendocino County in California south to northwestern Baja, Mexico. It may occur in a variety of habitats from near sea level to 8,000 feet in elevation and is strongly associated with permanent sources of water, including cattail and tule marshes, reservoirs, ponds, and streamsides. It prefers deep, still, or slow moving water with low salinity levels and shallow margins or riffle zones. This species may disperse far from water (up to one mile) during and after significant rain events, and other habitats may include moist woodlands and grasslands from the lowlands through the foothills. It may make seasonal movements into riparian thickets and upland habitats for foraging, where it may seek small mammal burrows, leaf litter, or other moist areas of refuge for shelter or hibernation. The metamorphosis of this species is slower than most large frog species, requiring 11 to 20 weeks of permanent water for larval development. Most individuals have a dark mask bordered by a whitish jaw stripe, a reddish-orange venter, and coarse red, yellow, black, and/or gray mottling in the groin. This subspecies of the red-legged frog has experienced dramatic population declines since the late nineteenth century; some estimates claim a 75 percent rate of disappearance from its former range. Threats to this species include habitat loss and predation by non-native species such as bullfrogs and non-native fishes. In addition, this species was historically exploited as a source of frog legs for human consumption.

3.5.2.6 Coast Horned Lizard (*Phrynosoma blainvillii*) CSC

The coast horned lizard is a California Species of Concern found along the Pacific coast of California on the western side of the Sierra Mountains to the Baja peninsular area in Mexico. This species is found in many habitats including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet amsl. It inhabits sandy washes or areas with loose, fine, sandy soils for burying and having low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native species of ants. Populations of this

species have been reduced due to development, agriculture, and the introduction of Argentine ants that heavily compete with native ant species (Stebbins 2003). This species is approximately 2 to 4 inches in snout to vent length (adult) with numerous elongated and pointed scales (spines) on the dorsal side and two rows of enlarged scales along the flank. This species is brown, yellowish, reddish, or grey with several dark bands that cross the back with highlighted white areas along the rear of the bands (Sherbrooke 2003).

3.5.2.7 Cooper's Hawk (*Accipiter cooperii*) WL

The Cooper's hawk (nesting) is a Watch List species. This species occurs as a migrant and/or resident over most of the U.S. from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known to breed in suburban and urban areas with similar tree structure to native habitats. This medium-sized (14 to 20 inches) hawk is well-adapted for hunting birds as prey with its long tail and short, rounded wings; these features allow maneuverability in pursuit and on the ambush. It is similar in appearance to the sharp-shinned hawk (*Accipiter striatus*) but is distinguished by its larger size, more rounded tail, and darker crown. In addition to birds, it may also take amphibians, reptiles, and small mammals as supplemental prey items. Historic population losses resulted from the widespread use of DDT. Other threats include habitat loss and illegal hunting (Remsen 1978).

3.5.2.8 Desert Tortoise (*Gopherus agassizzi*) FT, ST

The desert tortoise is a federal- and state-listed threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo counties, as well as most of San Bernardino, Riverside, and Imperial counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. It is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark grey-brown. Besides range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

3.5.2.9 Ferruginous Hawk (*Buteo regalis*) WL

The ferruginous hawk (wintering) is a Watch List species. This species nests from the Canadian prairie provinces south to Oregon, Nevada, Arizona, and Oklahoma and winters in the southern half of its breeding range as well as the southwestern states from California to west Texas, then south into Mexico. It requires large, open areas of grassland, sparse shrub, or desert habitats interspersed with trees. It roosts in open areas, usually on lone trees, cliff ledges, or hill scarps. It winters in open terrain from grasslands to deserts where pocket gophers, ground squirrels, or rabbits are abundant, and it nests

in either natural or human-made structures or on cliffs, buttes, cut banks, shrubs or trees. In addition to pocket gophers, ground squirrels, and rabbits, it also eats prairie dogs, snakes, lizards, birds, large insects, and other rodents. The ferruginous hawk has distinct light and dark morphs. Light morphs are reddish or light brown above and whitish below, with rusty leg feathers and a pale tail. Dark morphs are uncommon in about less than 10 percent of the population and are a deep rufous to brown above and below with very bright white on the underside of the flight feathers and a narrow, white crescent on the underside of the wrist (Sibley 2003). This species is the largest of the buteos. The biggest threat to the ferruginous hawk is habitat loss, fragmentation, or degradation resulting from land use practices including conversion of native habitat to agriculture, urbanization, improper grazing practices, and conversion of shrubland to grassland (Collins and Reynolds 2005). Other threats include illegal shooting and collisions with cars.

3.5.2.10 Least Bell's Vireo (*Vireo bellii pusillus*) FE, SE

The least Bell's vireo was state-listed as an endangered subspecies of Bell's vireo by the CDFG in 1980 and federally listed as endangered by the U.S. Fish and Wildlife Service (USFWS) in 1986. Critical habitat for the least Bell's vireo was designated in 1994 (USFWS 1986). The least Bell's vireo subspecies is restricted to coastal and inland southern California and Baja California, Mexico. Its winter range extends along the Pacific coast from northern Mexico south to northern Nicaragua. The two major factors in the decline of least Bell's vireo populations are loss of habitat and nest parasitism by the brown headed-cowbird. Habitat loss, fragmentation, and degradation, especially along streams and rivers, due to development, agriculture, flood control projects, logging operations, and intensive cattle grazing practices, are the greatest threats to the continued existence of the least Bell's vireo. The Least Bell's vireo is a small, gray songbird with pale yellow wash on its sides, two faint wing bars, and a faint eye ring. Preferred nesting habitat is low, dense, scrubby vegetation in early successional areas that are particularly dependent on riparian areas. Habitats may include willow woodlands and dense mule fat, scrub oak, coastal chaparral, and mesquite patches with dense early successional understories.

3.5.2.11 Le Conte's Thrasher (*Toxostoma lecontei*) CSC

The Le Conte's thrasher is a California Species of Concern. It occurs in deserts of the southwest U.S., southwestern Utah, southern Arizona, and northwestern Mexico (Weigand and Fitton 2008). Habitat includes open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; and in Joshua tree habitat with scattered shrubs. Le Conte's thrasher is a medium-sized songbird with a long dark tail, black decurved bill, and a plain grayish or sandy-colored body. It is distinguished from other thrashers by its unspotted breast, deep buff crissum, dark eye, and dark tail that contrasts sharply with its body. Le Conte's thrashers forage as generalists on bare ground and in vegetation litter under shrubs by scratching the soil and overturning objects (Weigand and Fitton 2008). In some parts of its range, this thrasher has lost extensive habitat to development; irrigated lawns, groves, and fields have been created over valuable xeric habitat. Development, wild burros, off-road vehicle recreation, and invasive plant species threaten this species (Weigand and Fitton 2008).

3.5.2.12 Loggerhead Shrike (*Lanius ludovicianus*) CSC

The loggerhead shrike (nesting) is a California Species of Concern. Its range includes most of the U.S. from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua Tree Woodlands,

and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other structures that serve as lookout posts for potential prey. They prefer dense, thorny shrubs and trees, brush piles, and tumbleweeds for nesting (Seattle Audubon Society 2008). Both adults gather nesting materials, including twigs, grass, hair, feathers, and green vegetation; but only females build the cup-shaped nests. They lay between 5 and 6 eggs, which are incubated for 15 to 17 days; and nestlings will leave the nest after 17 to 20 days but won't fly for another week (Seattleaudubon). The loggerhead shrike is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. This bird has a habit of caching its food for later consumption by impaling its prey on thorns, sharp twigs, or barbed wire; hence the term "butcher bird." It is recognized by its black facial mask; overall gray, black, and white color pattern; relatively big head; and hook-tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988, Scott and Morrison 1990).

3.5.2.13 Merlin (*Falco columbarius*) WL

The merlin (wintering) is a Watch List species. This species breeds in the northern parts of the Northern Hemisphere and winters in northern South America and northern Africa. In California, it occurs as a winter resident. Breeding habitats include open woodlands, savannas, cliffs near grasslands, and tundra. Migratory habitats include foothills, marshes, and open coastlines. Wintering habitats include open grasslands, semi-open forests, and coastal areas (i.e. beach dunes, marshes, and tidal flats). The merlin is a small falcon, slightly larger than the American kestrel (*Falco sparverius*), and appears heavier and bulkier in flight than the kestrel. The adult male merlin has a grey-blue back and crown and rufous washes on the sides of the breast. The adult female may be up to 30 percent larger than the male and has a brown back. The merlin mainly feeds on other birds, especially migrating and over-wintering waterfowl and shorebirds. Threats to its populations include habitat loss, pesticide use, and heavy metal poisoning.

3.5.2.14 Mohave Ground Squirrel (*Spermophilus mohavensis*) ST

The Mohave ground squirrel is a state-listed threatened species. The Mohave ground squirrel is specific to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Johnson 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 1998). They inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils. They will also feed in annual grasslands (Johnson 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study showed that most of their diet includes seeds from winter fat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and saltbush (*Atriplex* sp.) (Laabs 1998). Mohave ground squirrels are active in spring and early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (Johnson 1990).

3.5.2.15 Mountain Plover (*Charadrius montanus*) CSC, FPT

The mountain plover (wintering) is a California Species of Concern and a federally Proposed Threatened Species. This species breeds from the prairie and sagebrush country of north-central Montana, eastern Wyoming, and the area around southeastern Colorado. It winters from central California along the southern border states southward to northern Mexico (Udvardy 1977). Breeding habitats include semi-arid plains, grasslands, and plateaus. Common wintering habitats consist of dry, barren ground, smooth

dirt fields, agricultural fields, and shortgrass prairies. This species tends to form small flocks in the winter. It is one of the few shorebird species that prefers habitats away from water. It is an insectivore that eats flies, beetles, grasshoppers, crickets, and other insects. The mountain plover is a relatively non-descript shorebird with a short tail, long legs, plain brown plumage above, and whiter plumage below. Males develop a black patch on the forehead during the breeding season. This species is sometimes confused with the American golden plover, but unlike that species, the belly and under-wing is a clean, white color and the legs are pale. Populations are in decline due to overgrazing practices and are also linked to declining prairie dog populations; mountain plovers often use prairie dog mounds as nest sites. The continued loss and alteration of habitats on breeding and wintering grounds are the primary threats to the mountain plover.

3.5.2.16 Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*) ST

The Nelson's antelope squirrel is a state threatened species. Nelson's antelope squirrels are restricted to the central and western areas of the San Joaquin Valley and inner coast ranges from 165 to 3,608 feet amsl. This species is found in alkali Desert Scrub and Annual Grasslands habitats on a variety of soil types including alluvial, loamy, sandy, gravely, or fine-textured sands. This species rarely digs its own burrows, preferring instead to use burrows made by other small mammals. Nelson's antelope squirrels are diurnally active, with most activity occurring in the early morning or late afternoon. This species is buff and yellow-brown above with a white stripe on each side and white under its tail. It can reach up to 10 inches in length. Nelson's ground squirrels feed primarily on grass and forb seeds, insects, and other green vegetation. The primary threats to this species include loss of habitat due to agriculture, urbanization, petroleum extraction, and rodent control poisons (Whitaker et al. 2008).

3.5.2.17 Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*) CSC

The pallid San Diego pocket mouse is a California Species of Concern. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican border. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus, and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or course gravel (Grinnell 1933, Miller and Stebbins 1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and Pinyon-Juniper Woodlands. Pallid San Diego pocket mouse densities have been recorded as high as 39 per hectare (Lackey 1996). This species is similar in appearance to *C.f. fallax* but is lighter in overall coloration. Population declines may be due to urban and agricultural development.

3.5.2.18 San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE, CSC

The San Bernardino kangaroo rat is a federally endangered species and a California Species of Concern. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about seven distinct populations. It prefers gravelly and sandy soils in alluvial habitats where it constructs underground burrows, and it rarely occurs in dense vegetation. This species is a small, nocturnally active rodent with pale yellow and dusky brown fur, and dark brown tail stripes,

footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in is burrows for later consumption. It also consumes some green vegetation and insects when available. The primary threats to the continued existence of this species include habitat loss, degradation, and fragmentation due to developments related to housing, mining, and flood control (CDPR 1998).

3.5.2.19 Sierra Madre Yellow-Legged Frog (*Rana muscosa*) FE, SCE, CSC

The Sierra Madre yellow-legged frog is a federal-listed endangered, state candidate for listing as endangered, and a California Species of Concern. This species is found in the Sierra Nevadas from Fresno County to Kern County, and isolated populations are found in the San Gabriel, San Bernardino and San Jacinto mountains of southern California, ranging in elevation from 4,500 to 11,980 feet amsl. This species was previously known as the mountain yellow-legged frog but is now considered a separate species from those found north of the Kings River north and middle forks known as the Sierra Nevada yellow-legged frog (*Rana sierrae).* They range in size from 1.5 to 3.5 inches snout to vent length, and coloration is highly variable with olive, yellow, or brown with black or brown speckling above and pale yellow to orange below and on the hind legs (Calherps 2011). They can be distinguished from *Rana sierrae* by having slightly longer hind legs and a different mating call; both smell like garlic when handled (Calherps 2011). Sierra Nevada populations occur in montane riparian, lodgepole pine, subalpine conifer, and wet meadows in association with lakes, ponds, and streams; southern California populations are found in lakes, ponds and streams of montane conifer-hardwood, montane riparian and ponderosa pine habitats (Morey 2008). Adults feed on aquatic and terrestrial invertebrates, tadpoles feed on algae and diatoms. Sierra Madre yellow-legged frogs are closely associated with aquatic environments and can be found in vegetation or on perching rocks within a few feet of water, diving into the water when threatened. They lay their eggs in shallow water and attach them to gravel or rocks; tadpoles can take up to two over-wintering periods to complete their aquatic development. They are diurnally active and will hibernate over the winter under the ice, and southern populations may estivate. Threats to this species include bullfrogs, non-native trout, cattle grazing, mining, off-road vehicles, public dumping, chytrid fungus, fires, and excessive flooding (Calherps 2011).

3.5.2.20 Short-Eared Owl (*Asio flammeus*) CSC

The short-eared owl (nesting) is a California Species of Concern. The range of this species is nearly worldwide; and in North America, it breeds in northern Canada and Alaska as well as in large portions of the western U.S. and the Great Lakes area. In California, this species is an uncommon winter migrant in the Central Valley, Sierra Nevada, and southern California; and it is known to breed from the San Francisco area north. Migrants arrive in California in September to October and leave in April. Habitats include grasslands, prairies, dunes, tundra, meadows, irrigated fields, wetlands, and fresh and saltwater marshes. Within these open habitat types, it prefers denser areas where it can seek cover along the ground. Short-eared owls nest in depressions on dry ground where vegetation provides cover; nests are built with grasses, sticks, feathers, and forbs. Clutch size ranges from 3 to 14 eggs. Eggs are laid in April and incubated for 24 to 37 days, and the young fledge after 21 to 36 days. This owl is mostly active at night, but it may forage by day in late afternoons or on cloudy days. Although it feeds mostly on voles and other small mammals, it will also eat birds, amphibians, reptiles, and arthropods. It characteristically flies in an erratic and buoyant manner, low over open areas, before plunging feet first to catch prey. The short-eared owl is a relatively medium-sized owl with an overall tawny brown color and buffy wing patches. It has bold yellow eyes that contrast sharply with its dark facial discs. Predators include golden eagles, great horned owls, snowy owls, and peregrine falcons. Small predatory mammals

and large reptiles prey on eggs. Competitors include gulls, northern harriers, barn owls, and other owls. Overgrazing, destruction, and fragmentation of grasslands and wetland habitats, increased nest predation, and illegal shooting are all factors in the decline of this species.

3.5.2.21 Silvery Legless Lizard (*Anniella pulchra pulchra*) CSC

The silvery legless lizard is a California Species of Concern. Its range extends from the San Francisco Bay in California to northwestern Baja California, Mexico; and it can also be found on a few offshore islands of California. This species is found in chaparral, pine-oak woodlands, riparian woodlands, and also on beaches from sea level to around 5,100 feet. It occurs less commonly in desert scrub. Within these habitats, it prefers loose soils or sand for burrowing, moisture, warmth, and plant cover (Stebbins 2003). It forages in leaf litter during the day for insects such as termites, spiders, beetles, and larvae. On warm evenings, it may emerge to forage during the night. This legless lizard has a silver, gray, or beige dorsal coloration with a dark mid-dorsal line and is yellow below. The primary threats to the continued existence of this species include habitat loss due to agriculture and urban sprawl, overabundant non-native vegetation (i.e. iceplant on sand dunes), sand mining operations, off-road vehicle use, and other anthropogenic disturbances, including trampling and over-collecting for the pet trade.

3.5.2.22 Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) WL

The southern California rufous-crowned sparrow is a CDFG and Game Watch List species. It is one of 17 recognized subspecies of the rufous–crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico; however, this sub-species is a resident of southwest California on the slopes of the Transverse and Coast ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martin Island. Habitats include broken sage scrub and chaparral, native grasslands with sparse shrubs, and rocky, brush-laden hillsides and canyons with open patches. It is a small non-descript sparrow with a rusty crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

3.5.2.23 Southern Grasshopper Mouse (*Onychomys torridus ramona*) CSC

The southern grasshopper mouse is a California Species of Concern. It occurs throughout desert and semi-arid habitats in the southwestern United States and much of Mexico, including western Nevada, the southern portions of California, Arizona, and New Mexico, northern Baja California, western Texas, and south to central Mexico (Hall 1981). The subspecies *ramona* is restricted to coastal southern California, with marginal records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley (Hall 1981). The grasshopper mouse rangewide is often found in low, arid scrub and semi-scrub vegetation; but this subspecies is found in grasslands and sparse sage scrub habitats. It nests in burrows often dug by kangaroo rats and pocket gophers, but it may dig its own burrows in sandy or other friable substrates (Baily and Sperry 1929, Stapp 1997). Specific habitat requirements of the southern grasshopper mouse generally are unknown, but Stapp (1997) found that grasshopper mice use open areas and microhabitats dominated by gopher mounds and burrows. Stapp suggests that grasshopper mice selected these microhabitats because of greater prey availability (i.e., arthropods using burrows for refuge), greater mobility in open areas, and dust bathing sites. It prefers low to moderate shrub cover and is active year-round. Unlike most other mice, this species is primarily carnivorous. It feeds

nocturnally on a variety of arthropods, including grasshoppers, beetles, and scorpions. It will also feed on frogs, salamanders, lizards, small mammals, and, occasionally, seeds. It has been known to kill species larger than itself, such as kangaroo rats. Prey items are stalked, rushed, seized, and typically killed with a bite in the head. Curiously, it emits a howl on occasion, perhaps in defense of its territory. Home ranges can be as large as four hectares; and, consistent with its carnivorous nature, population densities are normally low. It breeds from May to June; and after about 30 days, it gives birth to an average of 4 young. Predators include snakes, raptors, and a variety of mammals, including coyotes, owls, and foxes. Habitat loss and degradation are the primary threats to this species.

3.5.2.24 Swainson's Hawk (*Buteo swainsoni*) ST

The Swainson's hawk (nesting) is a state threatened species. This species breeds from southwest Canada through the western U.S. into northern Mexico, with isolated breeding populations also observed in northern Illinois and the Sacramento and San Joaquin valleys of California. This species winters to South America. The Swainson's hawk forages in open stands of grass-dominated vegetation;, sparse shrublands; and small, open woodlands. It typically nests in scattered trees within these grassland, shrubland, or agricultural landscapes. The Swainson's hawk feeds largely on insects, and thus is affected by pesticide use, particularly DDT and organophosphate pesticides currently used in South America (England et al. 1997).

3.5.2.25 Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*) CSC

The Tehachapi pocket mouse is a California Species of Concern. This species is occurs in the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos and east to the lower San Gabriel Mountains to Lake Elizabeth (Laabs 1998). The Techachapi pocket mouse is one of two subspecies of *Perognathus alticola*; the second subspecies, *P. a. alticola,* occurs in the San Bernardino Mountains and has not been observed in over 50 years. Male Tehachapi pocket mice can reach up to 6.5 inches in length; while females are significantly smaller, reaching only 5.9 inches. Both sexes are yellowish-brown with a heavy overlay of black dorsally and white ventrally; facial markings are fainter, and the inside of the ears are white; its tail is bicolored and is slightly longer than head to body length (Laabs 1998). This species occurs in native and non-native grasslands, Joshua Tree Woodland, Pinyon-Juniper Woodland, Yellow Pine Woodland, oak savanna, chaparral, Coastal Sage Scrub, fallow grain fields, and rangeland at elevations ranging from 3,500 to 6,000 feet amsl, preferring loose, sandy soils for burrowing (Laabs 1998). They are nocturnal, feeding on seeds of grasses and forbs, but will eat green vegetation and insects. Threats to this species include surface disturbance like mineral extraction and conversion of habitat to urban development.

3.5.2.26 Tricolored Blackbird (*Agelaius tricolor*) CSC

The tricolored blackbird (nesting colony) is a California Species of Concern that occurs primarily in California, with smaller populations in northern Mexico. This species is locally common in parts of the Central Valley and along the coast in Sonoma County but is not found commonly over most parts of its range. This species breeds near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of fall and winter diet. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds. Breeding season usually takes place form mid-April into late July, but Orians (1960) also reported active breeding in October and November

in Sacramento Valley. Over the past few decades, numbers have been declining in California (DeHaven 1975). Reasons for the decline include the conversion of marshland habitats and agricultural poisoning.

3.5.2.27 Two-Striped Garter Snake (*Thamnophis hammondii*) CSC

The two-striped garter snake is a California Species of Concern. It is found in disjunct populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. The historic range of this species has been lost to housing, urban development, and other human impacts by an estimated 40 percent (Stebbins 2003).

3.5.2.28 Western Pond Turtle (*Actinemys marmorata pallida*) CSC

The western pond turtle is a California Species of Concern. This species occurs along the coast of North America from Baja California up to San Francisco Bay and occurs from sea level to 5,900 feet in elevation (California Reptiles and Amphibians 2011). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (California Reptiles and Amphibians 2011). The western pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Basking sites are necessary for thermoregulation. Reptile body temperature is dependent upon the environment the air, the substratum, and solar radiation. Basking is absorption of the sun's radiation and/or through the substratum. This species occurs in a variety of habitat types including woodland, grassland, and open forest (California Reptiles and Amphibians 2011). Although this species is considered aquatic, this species usually leaves the aquatic site to reproduce, to estivate, and to overwinter. Pond turtles hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (California Reptiles and Amphibians 2011). The species is highly sensitive to disturbance and will quickly slide into water when they feel threatened. Pond turtles are diurnal and are most active from February to November; however, if water temperatures remain warm, this species may be active year long (Bury 2008). Mating takes place in April or May, and females will deposit eggs in a vegetated upland location that may be a considerable distance (400 m or more) from the aquatic habitat to the nest. Eggs are generally deposited in grassy, upland areas adjacent to streams during May and June, although some individuals may deposit eggs as early as April and as late as August. Hatchlings will stay at the nest location and will emerge in the early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and occasionally frogs and fish (California Reptiles and Amphibians 2011). Habitat destruction is the primary threat to this species. Dams cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury 2008).

3.5.2.29 Western Mastiff Bat (*Eumops perotis*) CSC

The western mastiff bat is listed as a state Species of Concern. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown (TPWD 2008).

3.5.2.30 Western Snowy Plover (*Charadruis alexandrinus nivosus*) FT, CSC

The western snowy plover (nesting, coastal populations) is federally listed as threatened and is also a California Species of Concern. The Pacific coastal population breeds primarily on beaches from southern Washington to southern Baja California, Mexico. Interior populations can be found in the Central Valley of California, Oregon, Nevada, and other western states. The western snowy plover nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitats, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds, and infrequently on bluff-backed beaches (USFWS 2001). This small plover has a pale tan back, rump, and tail; white underparts; and dark patches on the sides of its neck that reach around onto the top of its chest. Habitat alteration and recreational beach use have led to a serious decline in nesting habitat and populations over the last forty years (USFWS 2001, Page et al. 1995).

3.5.2.31 White-Faced Ibis (*Plegadis chihi*) WL

The white-faced ibis (nesting colony) is a Watch List species. It breeds across the western United States northward to Montana, eastward to western Louisiana, and southward to South America. It winters from southern California and Louisiana southward. The white-faced ibis usually nests in low trees and shrubs over shallow water. It inhabits primarily freshwater wetlands, especially cattail and bulrush marshes. It feeds in flooded hay meadows, agricultural fields, and estuarine wetlands. The white-faced ibis is a dark bronze-colored wader with a long, decurved bill. During the breeding season, adults have distinctive white feathers along the edges of their bare facial skin. Erosion and flood-control measures and irrigation projects have eliminated or degraded traditional nesting colony sites, leading to nest abandonment. Other losses of wetland habitat can also negatively affect populations (Ryder and Manry 1994).

3.6. SPECIES OBSERVED

The following plant species were observed while conducting habitat assessments of the project site: Silver Sagebrush (*Artemisia cana* ssp. *bolanderi*), pineapple weed (*Chamomilla suaveolens*), rubber rabbitbrush, prickly lettuce, coast goldfields (*Lasthenia californica*), common fiddleneck (*Amsinckia menziesii*), tumble mustard (*Sisymbrium altissimum*), four-wing saltbush, foxtail chess (*Bromus madritensis* ssp. *rubens*), cheat grass (*Bromus tectorum*), glaucous foxtail barley (*Hordeum murinum*), Mediterranean schismus (*Schismus barbatus*) and small fescue (*Vulpia microstachys*).

The following wildlife species were observed while habitat assessments were conducted on the Project site: common raven (*Corvus corax*), domestic sheep bones (*Ovis aries*), Vole holes (*Microtus* sp.), gopher

mounds (*Thomomys* sp.), Cassin's kingbird (*Tyrannus vociferans),* house finch (*Carpodacus mexicanus*) and unidentified ground squirrel burrows (*Spermophillus* sp.)

3.7. SENSITIVE SPCIES

The following 19 special status plant species are considered absent from both Project sites due to a lack of suitable habitat or the Project site occurs outside the elevation range or historic range of the species:

- alkali mariposa lily
- Barstow woolly sunflower
- Clokey's cryptantha
- Darwin rock cress
- Davidson's bush mallow
- desert cympoterus
- Horn's milk-vetch
- Lancaster milk-vetch
- Pale-yellow layia
- Parish's popcorn-flower
- Parry's spineflower
- Peirson's morning-glory
- recurved larkspur
- round-leaved filaree
- sagebrush loeflingia
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa lily
- white pygmy-poppy

The following 27 special status wildlife species are considered absent from both Project sites due to a lack of suitable habitat:

- American badger
- arroyo toad
- Bell's sage sparrow
- California red-legged frog
- coast horned lizard
- Cooper's hawk
- desert tortoise
- least Bell's vireo
- Le Conte's thrasher
- loggerhead shrike
- Mohave ground squirrel
- mountain plover
- Nelson's antelope squirrel
- pallid San Diego pocket mouse
- San Bernardino kangaroo rat
- Sierra Madre yellow-legged frog
- short-eared owl

- southern California rufous-crowned sparrow
- southern grasshopper mouse
- Swainson's hawk
- Tehachapi pocket mouse
- tricolored blackbird
- two-striped garter snake
- western pond turtle
- western mastiff bat
- western snowy plover
- white-faced ibis

The following 2 special status wildlife species have a **low** potential to occur on the Project site due to the presence of low quality suitable habitat on the Project site, the quality of habitat, and historical records of these species occurring within five miles of the Project sites:

- Merlin (foraging)
- silvery legless lizard

The following special status wildlife species have **moderate** potential to occur on both sites due to the presence of low quality suitable habitat and historical records of these species occurring within three miles of the Project site:

- Burrowing owl. The project site has open fields with disturbed rubber rabbitbrush scrub and non-native grasslands with ground squirrel burrows onsite and pipes that could be used for burrows. Additionally, burrowing owls have been recorded to occur within 3 mile of the project site. The burrowing owls could potentially use the project site for foraging. Therefore, the burrowing owl has a moderate potential for occurrence on the project site.

The following special status wildlife species has a **high** potential to occur on the Project site due to the presence of high quality suitable habitat and historical records of these species occurring within one mile of the Project site:

- Ferruginous hawk. The ferruginous hawk is present in southern California during the winter season. The Project site consists of open areas of grassland and sparse shrub which the ferruginous hawk prefers. Ferruginous hawk will winter in the area and roost in open areas with lone trees where pocket gophers, ground squirrels, or rabbits are abundant. Additionally, ferruginous hawk have been recorded to occur within one mile of the project site. The ferruginous hawk could potentially use the project site for foraging. Therefore, the ferruginous hawk has a high potential to forage on the Project site.

SECTION 4.0 – CONCLUSIONS

4.1. SPECIAL STATUS SPECIES

Of the 19 special status plant species known to occur within the vicinity of the Project site, all are considered absent due to lack of suitable habitat; therefore, no further surveys for special status plant species are recommended at this time.

Of the 31 special status wildlife species known to occur within the vicinity of the Project site, 29 are considered absent or have a low potential to occur due to lack of suitable habitat; therefore, no further surveys for the special status wildlife species are recommended at this time.

4.1.1 Burrowing Owl

There is a moderate potential for burrowing owls to occur on the Project site. Although burrowing owls are not federal- and/or state-listed as endangered or threatened, this species is listed as a CSC. While the majority of CSC listed species do not typically require focused surveys, specific focused survey protocol for the burrowing owl has been developed by the California Burrowing Owl Consortium and adopted by the CDFG (The California Burrowing Owl Consortium 1993).

4.1.2 Ferruginous Hawk

There is a high potential for the ferruginous hawk to occur (forage) on the Project site. This species is not federal- and/or state-listed as endangered or threatened; it is listed as a Watch List species.

4.2. JURISDICTIONAL FEATURES

No Jurisdictional features were identified within the Project sites at the time of the survey; therefore, additional jurisdictional surveys are not required at this time.

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APPENDIX A – VEGETATION COMMUNITIES MAP

Vegetation Map
Pinnacle Solar Ranch

Legend

- Project Site
- Disturbed Rubber Rabbitbrush Scrub
- Disturbed or Barren
- Non-Native Annual Grassland

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APPENDIX B – SITE PHOTOGRAPHS

APPENDIX B – SITE PHOTOGRAPHS

	Photo 1-Pinnacle Solar Ranch. Photo is taken looking east across the Project site from the northwest corner.
	Photo 2- Pinnacle Solar Ranch. Photo is taken looking south at the open fields from the northwest corner.
	Photo 3- Pinnacle Solar Ranch. Photo is taken looking north at the distribution power line and dried field from the southeast corner.

BIOLOGICAL TECHNICAL REVIEW
FOR THE WEST LA GREENWORKS SOLAR PROJECT SITE (CUP 9)
CITY OF LANCASTER
LOS ANGELES COUNTY, CALIFORNIA

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SECTION 1.0 – INTRODUCTION

Silverado Power, LLC (Silverado Power) is an independent solar power producer and developer of distributed solar power assets utilities that are for both municipally and investor owned. Silverado Power strives to be a leader in wholesale solar power generation and the process of developing, building, and operating solar generation facilities (SGFs).

Chambers Group, Inc. (Chambers Group) was retained by Tetratech (for Silverado Power) to conduct a literature review and biological technical report (BTR) on the proposed West LA Greenworks project site located in Los Angeles County, California. The purpose of this document is to report the results of the reconnaissance-level biological survey.

1.1. PROJECT DESCRIPTION

Silverado Power plans to develop the West LA Greenworks SGF (the Project). The Project facilities would operate year-round, producing electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the fourth quarter of 2014.

The proposed Project would have a generating capacity of 5 megawatts alternating current (MW-AC). The Project will employ photovoltaic (PV) modules to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system.

The Project would meet the increasing demand for electricity generated from clean, renewable technology. The recent legislation enacted in California recognizes the multiple benefits associated with the development of renewable energy resources. These benefits include a reduced reliance on foreign sources of fuel, promotion of national security, diversification of energy portfolios, reductions in greenhouse gas emissions, and the creation of “green” jobs within the state of California.

1.2. PROJECT LOCATION

The proposed Project site (APN: 3268-018-035) is located in the Antelope Valley area of unincorporated northeastern Los Angeles County and comprises approximately 19 acres of non-native annual grasslands. West LA Greenworks is located within the City of Lancaster, CA, on the southwest corner of the intersection of West Avenue G and 70th Street West, approximately 6.8 miles northwest of downtown Lancaster. The Project site is located within the *Del Sur* California USGS 7.5 minute quadrangle. Fallow fields border the north and west boundaries of the Project site and active agriculture fields border the south and east boundaries of the Project site. The Project Regional map is provided as Figure 1 and the Project Vicinity map is provided as Figure 2.

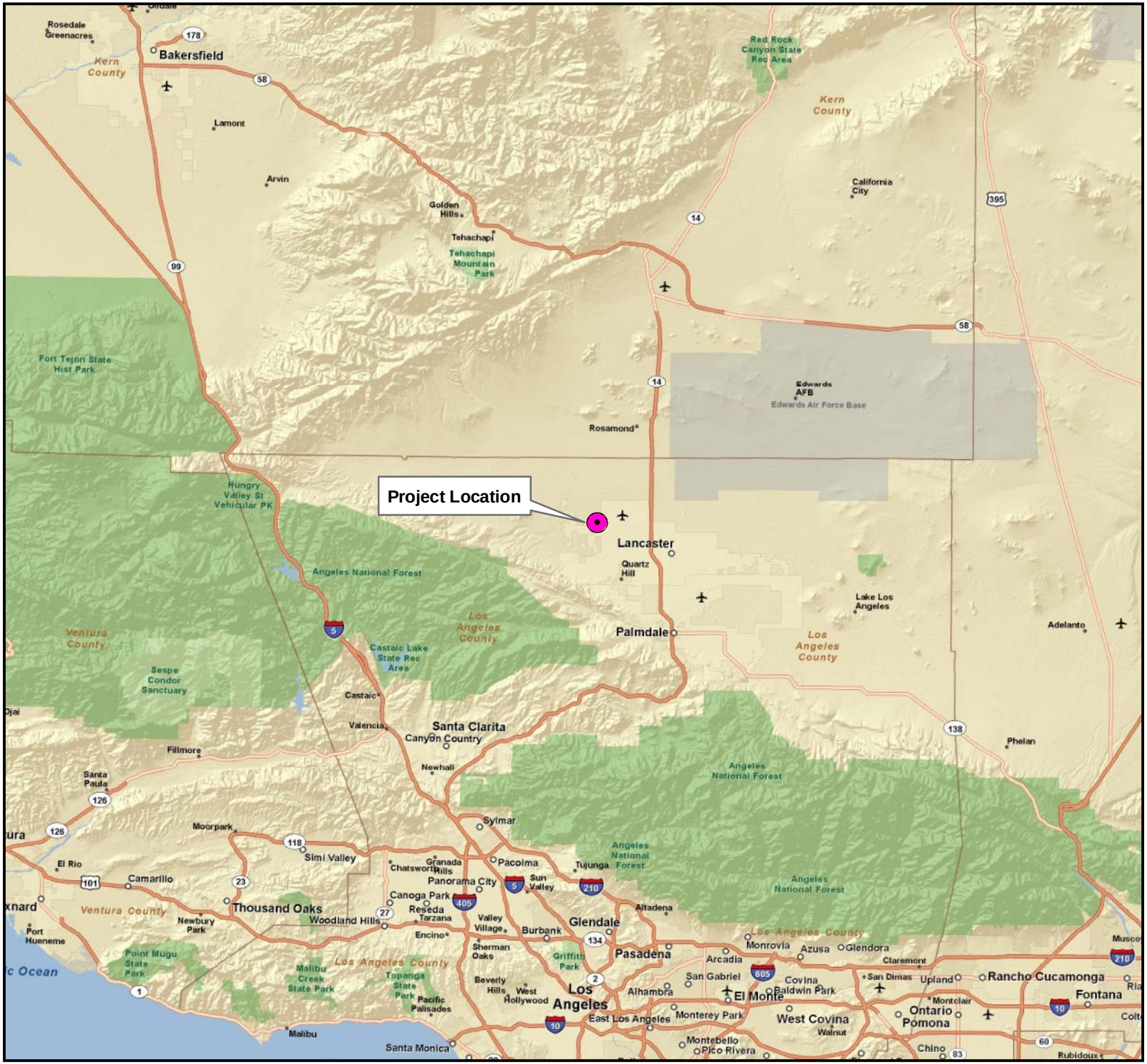

Figure 1
Regional Map
West LA Greenworks

Legend

Project Location

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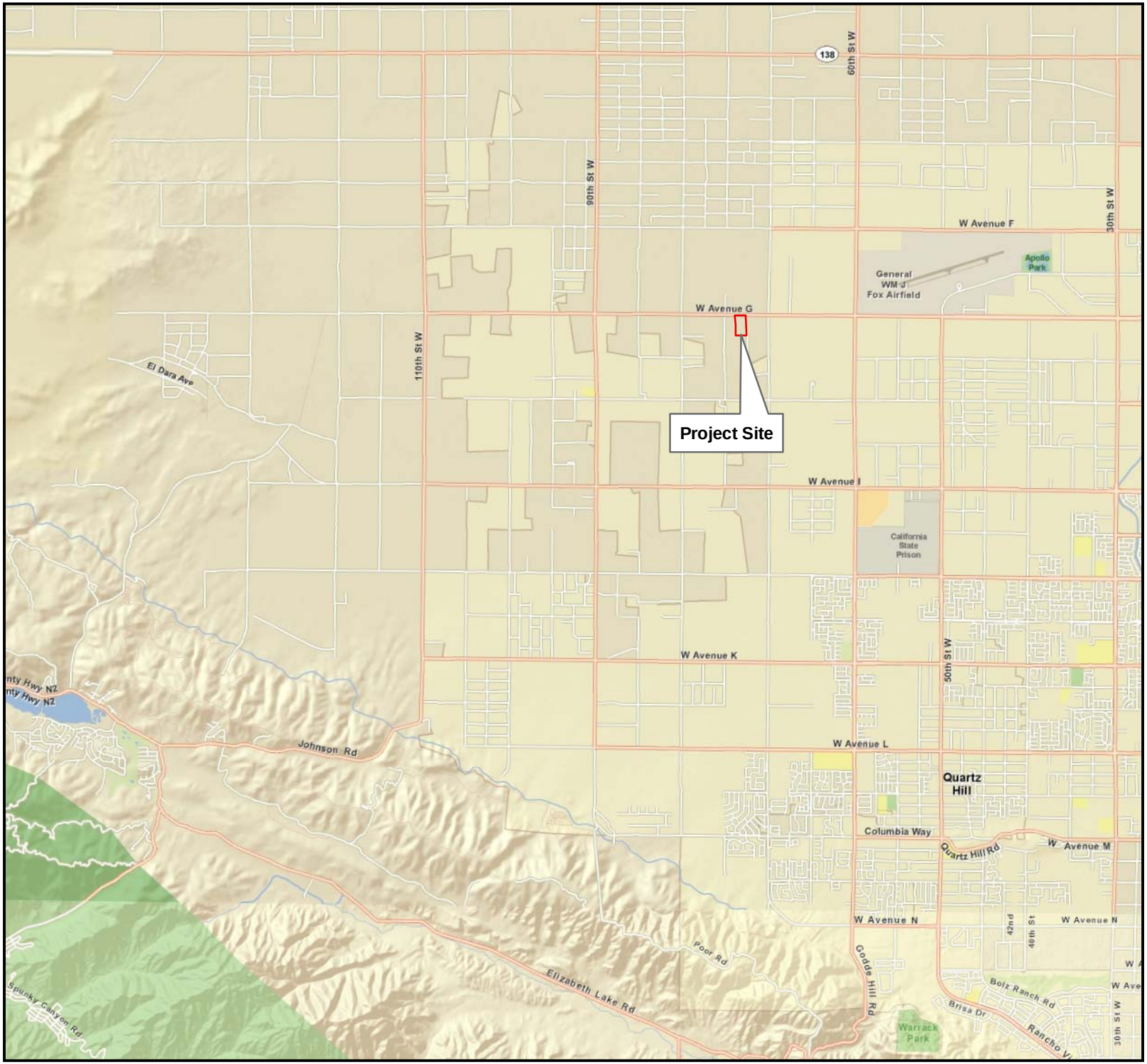

Figure 2
Vicinity Map
West LA Greenworks

Legend

Project Site

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SECTION 2.0 – METHODS

2.1. LITERATURE REVIEW

Prior to conducting the field surveys, existing documentation relevant to the Project site was reviewed. The most recent records of the California Department of Fish and Game California Natural Diversity Database (CNDDB 2011) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2011) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Fairmont Butte, Little Butte, Rosamond, Rosamond Lake, Redman, Alpine Butte, Lancaster East, Lancaster West, Del Sur, Lake Hughes, Burnt Peak, Little Rock, Lovejoy Buttes, El Mirage*, California USGS 7.5 minute quadrangles). The database contains records of reported occurrences of federal- or state-listed as endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Special Concern (CSC), or otherwise sensitive species or habitats that may occur within or in the vicinity of the Project site.

2.2. BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

The field survey was conducted on the Project site in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support special status wildlife species and to identify any potential jurisdictional waters of the United States. Chambers Group biologists Heather Clayton and Tracey Valentovich conducted the general reconnaissance survey on May 18, 2011. Weather conditions during the survey included temperatures averaging approximately 70 degrees Fahrenheit with 40 percent cloud cover and no precipitation. During the survey the biologists walked the Project site documenting the native vegetation communities and took notes regarding the potential for special status species and jurisdictional waters to occur onsite. Photographs of the Project site were also taken to document existing conditions.

2.3. VEGETATION

All plant species and soil types observed onsite were noted. Plant communities on the Project site were identified, qualitatively described, and mapped onto an aerial photograph. Plant communities were determined in accordance with the categories set forth in Holland (1986) or Gray and Bramlet (1992). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California* (Hickman 1993). A map displaying the location of the plant communities on the Project site is provided as Appendix A.

2.4. WILDLIFE

All wildlife and wildlife sign observed, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support state- and/or federal-listed or proposed listed species. Photographs of the site are provided in Appendix B.

SECTION 3.0 – RESULTS

3.1. LITERATURE REVIEW

According the literature review, 19 special status plant and 31 special status wildlife species were documented to occur within the vicinity of the Project site. This list included ten wildlife species that are federal- and/or state-listed endangered or threatened. Of the 19 special status plant species listed in the literature review, none are federal- and/or state-listed endangered or threatened.

3.2. VEGETATION COMMUNITIES

The Project site is classified as Non-Native Annual Grasslands. West LA Greenworks is surrounded by active and fallow agriculture fields.

3.2.1 Non-native Annual Grasslands

Non-Native Grassland consists of a dense to sparse cover of annual grasses such as oats (*Avena* sp.), bromes (*Bromus* sp.), and ryegrass (*Lolium* sp.) with flowering culms up to 3 feet in height. This community is often associated with numerous species of showy-flowered, native annual forbs "wildflowers" such as California poppy (*Eschscholzia californica*), lupines (*Lupinus* sp.), and goldfields (*Lasthenia* sp.) especially in years of favorable rainfall (Holland 1986). Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from winter through spring. Typically plants are dead through the summer-fall dry season persisting as seeds. Non-native grasslands can be found on fine-textured usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall.

The Project site is primarily composed of this community, and many non-native annual grasslands are adjacent to the Project site. Plant species found on the project site typical of this vegetation community include: cheat grass (*Bromus tectorum*), foxtail chess (*Bromus madritensis* ssp. *rubens*) and Mediterranean schismus (*Schismus barbatus*).

3.3. JURISDICTIONAL FEATURES

Chambers Group conducted a preliminary assessment for jurisdictional features found on the Project site. A formal delineation was not conducted.

3.3.1 Swale Features

A swale is a low-lying area or depression that can become innundated with water for periods of time. The Project site contains swale features. These features did not contain plant species indicative of riparian vegetation.

3.4. SPECIAL STATUS SPECIES

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Project site.

CNPS

List 1A = Plants presumed extinct in California.
List 1B = Plants rare and endangered in California and throughout their range.
List 2 = Plants rare, threatened, or endangered in California but more common elsewhere in their range.
List 3 = Plants about which we need more information; a review list.
List 4 = Plants of limited distribution; a watch list.

CNPS Extensions

0.1 = Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2 = Fairly endangered in California (20 to 80 percent occurrences threatened).
0.3 = Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE = Federally listed; Endangered
FT = Federally listed; Threatened
FC = Federal Candidate for listing
FPT = Federal Proposed listing as Threatened

State

ST = State listed; Threatened
SE = State listed; Endangered
RARE = State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC = State Species of Special Concern
WL = California Department of Fish and Game (CDFG) Watch List

3.5. SENSITIVE SPECIES DESCRIPTIONS

3.5.1 Sensitive Plants in the Los Angeles County Area

3.5.1.1 Alkali Mariposa Lily (*Calochortus striatus*) CNPS List 1B.1

Alkali mariposa lily is a CNPS List 1B.2 species. This perennial, bulbiferous herb flowers between April and June. This species occurs on alkaline and mesic soils within Chaparral, Chenopod Scrub, Mojavean Desert Scrub, and Meadows and Seeps habitats at elevations between 230 and 5,233 feet above mean sea level (amsl). Known range for this species includes: Kern, Los Angeles, San Bernardino, and Tulare counties. Threats to alkali mariposa lily include groundwater urbanization, grazing, trampling, road construction, water diversion resulting in lowering the water table, and possibly horticultural collecting.

3.5.1.2 Barstow Woolly Sunflower (*Eriophyllum mohavense*) CNPS List 1B.2

Barstow woolly sunflower is a CNPS List 1B.2 species. This annual herb flowers between March and May. Barstow woolly sunflower occurs within Chenopod Scrub, Mojavean Desert Scrub, and Playas habitats at elevations between 1,640 and 3,150 feet amsl. Known range for this species includes: Fresno, Kern, Los

Angeles, and San Bernardino counties. Threats to this species include vehicles, grazing, energy development, and road improvements.

3.5.1.3 Clokey's Cryptantha (*Cryptantha clokeyi*) CNPS List 1B.2

Clokey's cryptantha is a CNPS List 1B.2 species. This annual herb flowers in April. Clokey's cryptantha occurs within Mojavean Desert Scrub habitat at elevations between 2,379 and 4,478 feet amsl. Known range for this species includes: Inyo, Los Angeles, and San Bernardino counties. Major threats to this species include military activities and alteration of fire regimes.

3.5.1.4 Darwin Rock Cress (*Arabis pulchra* var. *munciensis*) CNPS List 2.3

Darwin rock cress is a CNPS List 2.3 species. This perennial herb flowers in April. Darwin rock cress occurs in carbonate soils of Chenopod Scrub and Mojavean Desert Scrub habitats at elevations between 3,608 and 6,807 feet amsl. Known range includes Inyo, Los Angeles, and San Bernardino counties.

3.5.1.5 Davidson's Bush Mallow (*Malacothamnus davidsonii*) CNPS List 1B.2

Davidson's bush mallow is a CNPS List 1B.2 species. This perennial deciduous shrub flowers between June and January. Davidson's bush mallow occurs within chaparral, Coastal Scrub, Cismontane Woodland, and riparian woodland habitats at elevations between 607 and 2,805 feet amsl. Known ranges include: Los Angeles, Monterey, Santa Clara, San Mateo, and San Luis Obispo counties. Urbanization, maintenance activities, and erosion are the main threats to this species.

3.5.1.6 Desert Cymopterus (*Cymopterus deserticola*) CNPS List 1B.1

Desert cymopterus is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs on sandy soils within Mojavean Desert Scrub and Joshua Tree Woodland habitats at elevations between 2,066 and 4,921 feet amsl. Known range for this species includes: Kern, Los Angeles, and San Bernardino counties. Threats to desert cymopterus include military activities, sheep grazing, vehicles, utility construction, and urbanization.

3.5.1.7 Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*) CNPS List 1B.1

Horn's milk-vetch is a CNPS List 1B.1 species. This annual herb flowers between May and October. This species occurs along lake margins in poorly drained, alkaline soils of meadows and seeps and Playas habitats at elevations between 195 to 2,790 feet amsl. Known ranges include Inyo, Kern, and San Bernardino counties and Nevada. Poisonous to sheep, it was subject to eradication by farmers in the early 1900s; current threats to Horn's milk-vetch are habitat alterations.

3.5.1.8 Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*) CNPS List 1B.1

Lancaster milk-vetch is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs within Chenopod Scrub habitat. Known ranges include Kern, Los Angeles and San Bernardino counties and Nevada. Limited range, including areas only near Lancaster and Edwards Air Force Base, is the major threat to Lancaster milk-vetch.

3.5.1.9 Pale-Yellow Layia (*Layia heterotricha*) CNPS List 1B.1

Pale-yellow layia is a CNPS List 1B.1 species. This annual herb flowers between March and June. This species occurs in alkaline or clay soils within Cismontane Woodland, Coastal Scrub, Pinyon-Juniper Woodland, and Valley and Foothill Grassland habitats at elevations between 984 and 5,594 feet amsl. Known ranges include Fresno, Kern, Kings, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, San Benito, and Ventura counties. Threats to pale-yellow layia include vehicle use, non-native plants, agricultural conversion, grazing, and previous construction at San Antonio Reservoir.

3.5.1.10 Parish's Popcorn-Flower (*Plagiobothrys parishii*) CNPS List 1B.1

Parish's popcorn-flower is a CNPS List 1B.1 species. This annual herb flowers between March and November. This species occurs on alkaline and mesic soils within Great Basin scrub and Joshua tree woodland habitats at elevations between 2,460 and 4,595 feet amsl. Known range for this species includes: Inyo, Los Angeles, Mono, and San Bernardino counties. Threats to Parish's popcorn-flower include groundwater pumping.

3.5.1.11 Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) CNPS List 1B.1

Parry's spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and June. This species occurs in sandy or rocky soils and openings within Cismontane Woodland, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 902 and 4,002 feet amsl. Known ranges include Los Angeles, Riverside and San Bernardino counties. Threats to this species include development, altered flood regime, mining, vehicles, and competition from non-native plants.

3.5.1.12 Peirson's Morning-Glory (*Calystegia peirsonii*) CNPS List 4.2

Peirson's morning-glory is a CNPS List 4.2 species. This perennial, rhizomatous herb flowers between April and June. This species occurs within chaparral, Chenopod Scrub, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, and Valley and Foothill Grassland habitats at elevations between 98 and 5,085 feet amsl. Known ranges include Los Angeles county. Major threats to Peirson's morning-glory include grazing and development; possible threats include power line construction.

3.5.1.13 Recurved Larkspur (*Delphinium recurvatum*) CNPS List 1B.2

Recurved larkspur (*Delphinium recurvatum*) is a CNPS List 1B.2 species. This perennial herb flowers between March and June. This species occurs on alkaline soils within Chenopod Scrub, Cismontane Woodland, and Valley and Foothill Grassland habitats at elevations between 10 and 2,460 feet amsl. Known ranges of the recurved larkspur include: Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solana, Sutter, and Tulare counties. Conversion of habitat, grazing, and trampling are threats to the recurved larkspur.

3.5.1.14 Round-Leaved Filaree (*California macrophylla*) CNPS List 1B.1

Round-leaved filaree is a CNPS List 1B.1 species. This annual herb flowers between March and May. Round-leaved filaree occurs in clay soils within Cismontane Woodland and Valley and Foothill Grassland habitats at elevations between 50 and 3,937 feet amsl. Known ranges include Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside,

Santa Barbara, San Benito, Santa Clara, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Ventura, and Yolo counties and Santa Cruz Island. Threats to this species include urbanization, feral pigs, habitat alteration, pipeline construction, urbanization and competition from non-native plants.

3.5.1.15 Sagebrush Loeflingia (*Loeflingia squarrosa*) CNPS List 2.2

Sagebrush loeflingia is a CNPS List 2.2 species. This annual herb flowers between April and May. This species occurs in sandy soils of Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub habitats at elevations between 2,295 and 5,300 feet amsl. Known range includes Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino counties and Nevada, Oregon, and Wyoming. Possible threats to sagebrush loeflingia include off-highway vehicles and grazing.

3.5.1.16 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*) CNPS List 1B.1

San Fernando Valley spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and July. This species occurs in sandy soils of Coastal Scrub and Valley and Foothill Grassland habitats at elevations between 492 and 4,002 feet amsl. Known range includes Los Angeles, Orange, and Ventura counties. Possible threats to this species include competition from non-native plants and development.

3.5.1.17 Short-Joint Beavertail (*Opuntia basilaris brachyclada*) CNPS List 1B.2

Short-joint beavertail is a CNPS List 1B.2 species. This perennial stem succulent flowers between April and June. This species occurs within chaparral, Mojavean Desert Scrub, Joshua Tree Woodland, and Pinyon-Juniper Woodland habitats at elevations between 394 and 5,905 feet amsl. Known range for this species includes Los Angeles and San Bernardino counties. Major threats to short-joint beavertail include vehicles, grazing, urbanization, mining, and horticultural collecting; possible threats include power line construction.

3.5.1.18 Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*) CNPS List 1B.1

Slender mariposa lily is a CNPS List 1B.1 species. This perennial, bulbiferous herb flowers between March and June. This species occurs within chaparral, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 1,050 and 3,280 feet amsl. Known ranges include Los Angeles and Ventura counties. Threats to slender mariposa lily include vehicles, development, mining, and competition from non-native plants.

3.5.1.19 White Pygmy-Poppy (*Canbya candida*) CNPS List 4.2

White pygmy-poppy is a CNPS List 4.2 species. This annual herb flowers between March and June. This species occurs on gravelly, sandy, or granitic soils within Joshua Tree Woodland, Mojave Desert Scrub, and Pinyon-Juniper Woodland habitats at elevations between 600 and 4,800 feet amsl. Known ranges include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino counties. This species is threatened by development, off-highway vehicles, grazing, mining, and competition from non-native plants.

3.5.2 Sensitive Wildlife Species in the Los Angeles County Area

3.5.2.1 American Badger (*Taxidea taxus*) CSC

The American badger is a California Species of Concern (CSC). This carnivorous species ranges over most of the western U.S and upper midwestern U.S. south into central Mexico. In California, the badger may occupy a variety of habitats, especially grasslands, savannas, montane meadows, sparse scrublands, and deserts. It prefers friable soils for burrowing, and relatively open, uncultivated ground. Prey items include gophers, ground squirrels, marmots, kangaroo rats, other rodents, and the occasional reptile or amphibian. The American badger may weigh up to 25 pounds and is easily recognized by its overall yellowish gray coloration, the white stripe on top of its head, white cheeks, and black feet with noticeably long front claws. It is a heavy-bodied animal with short legs and a characteristic pigeon-toed gait. It is chiefly nocturnal, but it is often seen by day as well. It gives birth to two to five young anywhere from February to May, depending on its altitude and latitude. Threats to this species include habitat loss to agriculture, housing, and other land conversions, and illegal hunting.

3.5.2.2 Arroyo Toad (*Anaxyrus californicus*) FE, CSC

The arroyo toad is a federally endangered species and a CSC. The range of this species is within coastal California from Monterey County into northwestern Baja California, Mexico. It is found in washes, streams, and arroyos; and preferred habitats include sandy banks within riparian woodlands such as willow, cottonwood, sycamore, mulefat, and/or coast live oak. It breeds in shallow, sandy/gravelly riverine pools with low silt content and normally disperses onto adjacent uplands after breeding. Individuals have been observed up to 2 kilometers (km) from the streams in which they breed, but most often they are within 0.5 km of those streams (USFWS 1992a). During the breeding season, males call nocturnally from open areas on banks at the edges of streams. Males typically precede females at breeding sites. Females lay their eggs among gravel, leaves, or sticks, on mud or clean sand within low to moderately flowing sections of streams in areas with little or no emergent vegetation and little woody marginal growth. Newly metamorphosed individuals remain near pools for up to several weeks until the areas dry. Juveniles begin feeding primarily on ants and shift to small beetles as they grow (Sweet 1991) before moving into adjacent wintering grounds. Many spend the next 6 to 8 months overwintering in burrows up to 20 centimeters deep in sandy substrates of these habitats. Adults obtain shelter primarily by burrowing into fine, sandy soils in both adjacent and upland habitats (Sweet 1991). This small to moderately-sized species is distinguished from other toads by its chevron-shaped marking between the eyes and by the lack of a mid-dorsal stripe. Coloration may vary from light olive gray to tannish brown above, and the unmarked undersurfaces are creamy to dirty white. The iris is dark brown with scattered gold iridophores on the upper and lower portions of the iris. The primary threat to this species is habitat loss.

3.5.2.3 Bell's Sage Sparrow (*Amphispiza belli belli*) WL

The Bell's sage sparrow is a subspecies of sage sparrow and a CDFG Watch List (WL) species. It breeds primarily in chamise chaparral along the coastal side of California from the western foothills of the Sierra Nevada to San Diego County and northwest Mexico. It also breeds less commonly in coastal sage, mixed chaparral, and big sagebrush communities. Wintering birds of this subspecies may migrate to desert floors or remain in their breeding habitats. This species is distinguished from other sparrows by its gray head and back, thin white eye-ring, single dark breast spot, and heavy whisker-like pattern about the

face. Populations are in decline due to habitat loss and fragmentation, frequent wildfires, grazing, invasive plants, and brood parasitism caused by the brown-headed cowbird (*Molothrus ater*).

3.5.2.4 Burrowing Owl (*Athene cunicularia*) CSC

The burrowing owl, a CSC, is broadly distributed across the western United States with populations in Florida and Central and South America. Burrowing owls use a variety of natural and modified habitats for nesting and foraging, typically characterized by low-growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrublands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. Burrowing owls typically use burrows made by mammals, such as California ground squirrels (*Spermophilus beecheyi*), foxes, or badgers. They sometimes dig their own burrows and will often utilize man-made structures such as earthen berms; cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls often are found within, under, or in close proximity to man-made structures. Prey sources for this species include small rodents; arthropods such as spiders, crickets, centipedes, and grasshoppers; smaller birds; amphibians; reptiles; and carrion. Threats to the burrowing owl include loss of nesting burrows, habitat loss, and mortality from motor vehicles.

3.5.2.5 California Red-Legged Frog (*Rana aurora draytonii*) FT, CSC

The California red-legged frog is a federally threatened species and a CSC. It is found from Mendocino County in California south to northwestern Baja, Mexico. It may occur in a variety of habitats from near sea level to 8,000 feet in elevation and is strongly associated with permanent sources of water, including cattail and tule marshes, reservoirs, ponds, and stream sides. It prefers deep, still, or slow moving water with low salinity levels and shallow margins or riffle zones. This species may disperse far from water (up to one mile) during and after significant rain events, and other habitats may include moist woodlands and grasslands from the lowlands through the foothills. It may make seasonal movements into riparian thickets and upland habitats for foraging, where it may seek small mammal burrows, leaf litter, or other moist areas of refuge for shelter or hibernation. The metamorphosis of this species is slower than most large frog species, requiring 11 to 20 weeks of permanent water for larval development. Most individuals have a dark mask bordered by a whitish jaw stripe; a reddish-orange venter; and coarse red, yellow, black, and/or gray mottling in the groin. This subspecies of the red-legged frog has experienced dramatic population declines since the late nineteenth century; some estimates claim a 75 percent rate of disappearance from its former range. Threats to this species include habitat loss and predation by non-native species such as bullfrogs and non-native fishes. In addition, this species was historically exploited as a source of frog legs for human consumption.

3.5.2.6 Coast Horned Lizard (*Phrynosoma blainvillii*) CSC

The coast horned lizard is a CSC found along the Pacific coast of California on the western side of the Sierra Mountains to the Baja peninsular area in Mexico. This species is found in many habitats including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet amsl. It inhabits sandy washes or areas with loose, fine, sandy soils for burying and having low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native species of ants. Populations of this species have been reduced due to development, agriculture, and the introduction of Argentine ants that heavily compete with native ant species (Stebbins 2003). This species is approximately 2 to 4 inches in snout to vent

length (adult) with numerous elongated and pointed scales (spines) on the dorsal side and two rows of enlarged scales along the flank. This species is brown, yellowish, reddish, or gray with several dark bands that cross the back with highlighted white areas along the rear of the bands (Sherbrooke 2003).

3.5.2.7 Cooper's Hawk (*Accipiter cooperii*) WL

The Cooper's hawk (nesting) is a CDFG WL species. This species occurs as a migrant and/or resident over most of the U.S. from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known to breed in suburban and urban areas with similar tree structure to native habitats. This medium-sized (14 to 20 inches) hawk is well-adapted for hunting birds as prey with its long tail and short, rounded wings; these features allow maneuverability in pursuit and on the ambush. It is similar in appearance to the sharp-shinned hawk (*Accipiter striatus*) but is distinguished by its larger size, more rounded tail, and darker crown. In addition to birds, it may also take amphibians, reptiles, and small mammals as supplemental prey items. Historic population losses resulted from the widespread use of DDT. Other threats include habitat loss and illegal hunting (Remsen 1978).

3.5.2.8 Desert Tortoise (*Gopherus agassizzi*) FT, ST

The desert tortoise is a federal- and state-listed threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo Counties, as well as most of San Bernardino, Riverside, and Imperial Counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. It is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark gray-brown. Besides range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

3.5.2.9 Ferruginous Hawk (*Buteo regalis*) WL

The ferruginous hawk (wintering) is a CDFG WL species. This species nests from the Canadian prairie provinces south to Oregon, Nevada, Arizona, and Oklahoma and winters in the southern half of its breeding range as well as the southwestern states from California to west Texas, then south into Mexico. It requires large, open areas of grassland, sparse shrub, or desert habitats interspersed with trees. It roosts in open areas, usually on lone trees, cliff ledge, or hill scarps. It winters in open terrain from grasslands to deserts where pocket gophers, ground squirrels, or rabbits are abundant, and it nests in either natural or human-made structures or on cliffs, buttes, cut banks, shrubs, or trees. In addition to pocket gophers, ground squirrels, and rabbits, it also eats prairie dogs, snakes, lizards, birds, large insects, and other rodents. The ferruginous hawk has distinct light and dark morphs. Light morphs are

reddish or light brown above and whitish below, with rusty leg feathers and a pale tail. Dark morphs are uncommon in about less than 10 percent of the population and are a deep rufous to brown above and below with very bright white on the underside of the flight feathers and a narrow, white crescent on the underside of the wrist (Sibley 2003). This species is the largest of the buteos. The biggest threat to the ferruginous hawk is habitat loss, fragmentation, or degradation resulting from land use practices including conversion of native habitat to agriculture, urbanization, improper grazing practices, and conversion of shrubland to grassland (Collins and Reynolds 2005). Other threats include illegal shooting and collisions with cars.

3.5.2.10 Least Bell's Vireo (*Vireo bellii pusillus*) FE, SE

The least Bell's vireo was state-listed as an endangered subspecies of Bell's vireo by the CDFG in 1980 and federally listed as endangered by the U.S. Fish and Wildlife Service (USFWS) in 1986. Critical habitat for the least Bell's vireo was designated in 1994 (USFWS 1986). The least Bell's vireo subspecies is restricted to coastal and inland southern California and Baja California, Mexico. Its winter range extends along the Pacific coast from northern Mexico south to northern Nicaragua. The two major factors in the decline of least Bell's vireo populations are loss of habitat and nest parasitism by the brown headed-cowbird. Habitat loss, fragmentation, and degradation, especially along streams and rivers, due to development, agriculture, flood control projects, logging operations, and intensive cattle grazing practices, are the greatest threats to the continued existence of the least Bell's vireo. The least Bell's vireo is a small, gray songbird with pale yellow wash on its sides, two faint wing bars, and a faint eye ring. Preferred nesting habitat is low, dense, scrubby vegetation in early successional areas that are particularly dependent on riparian areas. Habitats may include willow woodlands and dense mule fat, scrub oak, coastal chaparral, and mesquite patches with dense early successional understories.

3.5.2.11 Le Conte's Thrasher (*Toxostoma lecontei*) CSC

The Le Conte's thrasher is a CSC in the San Joaquin Valley area. It occurs in deserts of the southwest U.S., southwestern Utah, southern Arizona, and northwestern Mexico (Weigand and Fitton 2008). Habitat includes open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; and in Joshua tree habitat with scattered shrubs. Le Conte's thrasher is a medium-sized songbird with a long dark tail, black decurved bill, and a plain grayish or sandy-colored body. It is distinguished from other thrashers by its unspotted breast, deep buff crissum, dark eye, and dark tail that contrasts sharply with its body. Le Conte's thrashers forage as generalists on bare ground and in vegetation litter under shrubs by scratching the soil and overturning objects (Weigand and Fitton 2008). In some parts of its range, this thrasher has lost extensive habitat to development; irrigated lawns, groves, and fields have been created over valuable xeric habitat. Development, wild burros, off-road vehicle recreation, and invasive plant species threaten this species (Weigand and Fitton 2008).

3.5.2.12 Loggerhead Shrike (*Lanius ludovicianus*) CSC

The loggerhead shrike (nesting) is a CSC. Its range includes most of the U.S. from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua tree woodlands, and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other structures that serve as lookout posts for potential prey. They prefer dense, thorny shrubs and trees, brush piles, and tumbleweeds for nesting (Seattle Audubon 2008). Both adults gather nesting materials,

including twigs, grass, hair, feathers, and green vegetation; but only females build the cup-shaped nests. They lay between 5 and 6 eggs, which are incubated for 15 to 17 days; and nestlings will leave the nest after 17 to 20 days but won't fly for another week (Seattle Audubon 2008). The loggerhead shrike is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. This bird has a habit of caching its food for later consumption by impaling its prey on thorns, sharp twigs, or barbed wire; hence the term "butcher bird." It is recognized by its black facial mask; overall gray, black, and white color pattern; relatively big head; and hook-tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988, Scott and Morrison 1990).

3.5.2.13 Merlin (*Falco columbarius*) WL

The merlin (wintering) is a CDFG WL species. This species breeds in the northern parts of the Northern Hemisphere and winters in northern South America and northern Africa. In California, it occurs as a winter resident. Breeding habitats include open woodlands, savannas, cliffs near grasslands, and tundra. Migratory habitats include foothills, marshes, and open coastlines. Wintering habitats include open grasslands, semi-open forests, and coastal areas (i.e. beach dunes, marshes, and tidal flats). The merlin is a small falcon, slightly larger than the American kestrel (*Falco sparverius*), and appears heavier and bulkier in flight than the kestrel. The adult male merlin has a gray-blue back and crown and rufous washes on the sides of the breast. The adult female may be up to 30 percent larger than the male and has a brown back. The merlin mainly feeds on other birds, especially migrating and over-wintering waterfowl and shorebirds. Threats to its populations include habitat loss, pesticide use, and heavy metal poisoning.

3.5.2.14 Mohave Ground Squirrel (*Spermophilus mohavensis*) ST

The Mohave ground squirrel is a state-listed threatened species. The Mohave ground squirrel is specific to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Johnson 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 1998). They inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils. They will also feed in annual grasslands (Johnson 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study showed that most of their diet includes seeds from winter fat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and saltbush (Laabs 1998). Mohave ground squirrels are active in spring and early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (Johnson 1990).

3.5.2.15 Mountain Plover (*Charadrius montanus*) CSC, FPT

The mountain plover (wintering) is a CSC and a federally Proposed Threatened Species. This species breeds from the prairie and sagebrush country of north-central Montana, eastern Wyoming, and the area around southeastern Colorado. It winters from central California along the southern border states southward to northern Mexico (Udvardy 1977). Breeding habitats include semi-arid plains, grasslands, and plateaus. Common wintering habitats consist of dry, barren ground, smooth dirt fields, agricultural fields, and shortgrass prairies. This species tends to form small flocks in the winter. It is one of the few shorebird species that prefers habitats away from water. It is an insectivore that eats flies, beetles, grasshoppers, crickets, and other insects. The mountain plover is a relatively non-descript shorebird with a short tail, long legs, plain brown plumage above, and whiter plumage below. Males develop a

black patch on the forehead during the breeding season. This species is sometimes confused with the American golden plover; but unlike that species, the belly and under-wing is a clean, white color and the legs are pale. Populations are in decline due to overgrazing practices and are also linked to declining prairie dog populations; mountain plovers often use prairie dog mounds as nest sites. The continued loss and alteration of habitats on breeding and wintering grounds are the primary threats to the mountain plover.

3.5.2.16 Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*) ST

The Nelson's antelope squirrel is a state threatened species. Nelson's antelope squirrels are restricted to the central and western areas of the San Joaquin Valley and inner coast ranges from 165 to 3,608 feet amsl. This species is found in alkali desert scrub and annual grasslands habitats on a variety of soil types including alluvial, loamy, sandy, gravely, or fine-textured sands. This species rarely digs its own burrows, preferring instead to use burrows made by other small mammals. Nelson's antelope squirrels are diurnally active, with most activity occurring in the early morning or late afternoon. This species is buff and yellow-brown above with a white stripe on each side and white under its tail. It can reach up to 10 inches in length. Nelson's ground squirrels feed primarily on grass and forb seeds, insects, and other green vegetation. The primary threats to this species include loss of habitat due to agriculture, urbanization, petroleum extraction, and rodent control poisons (Whitaker et al. 2008).

3.5.2.17 Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*) CSC

The pallid San Diego pocket mouse is a CSC. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican border. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus; and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or course gravel (Grinnell 1933, Miller and Stebbins 1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and pinyon-juniper woodlands. Pallid San Diego pocket mouse densities have been recorded as high as 39 per hectare (Lackey 1996). This species is similar in appearance to *C.f. fallax* but is lighter in overall coloration. Population declines may be due to urban and agricultural development.

3.5.2.18 San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE, CSC

The San Bernardino kangaroo rat is a federally endangered species and a CSC. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside Counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about 7 distinct populations. It prefers gravelly and sandy soils in alluvial habitats where it constructs underground burrows, and it rarely occurs in dense vegetation. This species is a small, nocturnally active rodent with pale yellow and dusky brown fur, and dark brown tail stripes, footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in is burrows for later consumption. It also consumes some green vegetation and insects when available. The primary threats to the continued existence of this species include habitat loss,

degradation, and fragmentation due to developments related to housing, mining, and flood control (CDPR 1998).

3.5.2.19 Sierra Madre Yellow-Legged Frog (*Rana muscosa*) FE, SCE, CSC

The Sierra Madre yellow-legged frog is a federal-listed endangered, state candidate for listing as endangered, and a CSC. This species is found in the Sierra Nevadas from Fresno County to Kern County, and isolated populations are found in the San Gabriel, San Bernardino, and San Jacinto mountains of southern California, ranging in elevation from 4,500 to 11,980 feet amsl. This species was previously known as the mountain yellow-legged frog but is now considered a separate species from those found north of the Kings River north and middle forks, known as the Sierra Nevada yellow-legged frog (*Rana sierrae).* They range in size from 1.5 to 3.5 inches snout to vent length; and coloration is highly variable with olive, yellow, or brown with black or brown speckling above and pale yellow to orange below and on the hind legs (Calherps 2011b). They can be distinguished from *Rana sierra* by having slightly longer hind legs and a different mating call; both smell like garlic when handled (Calherps 2011b). Sierra Nevada populations occur in montane riparian, lodgepole pine, subalpine conifer, and wet meadows in association with lakes, ponds, and streams; southern California populations are found in lakes, ponds, and streams of montane conifer-hardwood, montane riparian, and ponderosa pine habitats. Adults feed on aquatic and terrestrial invertebrates; tadpoles feed on algae and diatoms. Sierra Madre yellow-legged frogs are closely associated with aquatic environments and can be found in vegetation or on perching rocks within a few feet of water, diving into the water when threatened. They lay their eggs in shallow water and attach them to gravel or rocks; tadpoles can take up to two over-wintering periods to complete their aquatic development. They are diurnally active and will hibernate over the winter under the ice, and southern populations may estivate. Threats to this species include bullfrogs, non-native trout, cattle grazing, mining, off-road vehicles, public dumping, chytrid fungus, fires, and excessive flooding (Calherps 2011b).

3.5.2.20 Short-Eared Owl (*Asio flammeus*) CSC

The short-eared owl (nesting) is a CSC. The range of this species is nearly worldwide; and in North America, it breeds in northern Canada and Alaska as well as in large portions of the western U.S. and the Great Lakes area. In California, this species is an uncommon winter migrant in the Central Valley, Sierra Nevada, and southern California; and it is known to breed from the San Francisco area north. Migrants arrive in California in September to October and leave in April. Habitats include grasslands, prairies, dunes, tundra, meadows, irrigated fields, wetlands, and fresh and saltwater marshes. Within these open habitat types, it prefers denser areas where it can seek cover along the ground. Short-eared owls nest in depressions on dry ground where vegetation provides cover; nests are built with grasses, sticks, feathers, and forbs. Clutch size ranges from 3 to 14 eggs. Eggs are laid in April and incubated for 24 to 37 days, and the young fledge after 21 to 36 days. This owl is mostly active at night, but it may forage by day in late afternoons or on cloudy days. Although it feeds mostly on voles and other small mammals, it will also eat birds, amphibians, reptiles, and arthropods. It characteristically flies in an erratic and buoyant manner, low over open areas, before plunging feet first to catch prey. The short-eared owl is a relatively medium-sized owl with an overall tawny brown color and buffy wing patches. It has bold, yellow eyes that contrast sharply with its dark facial discs. Predators include golden eagles, great horned owls, snowy owls, and peregrine falcons. Small predatory mammals and large reptiles prey on eggs. Competitors include gulls, northern harriers, barn owls, and other owls. Overgrazing, destruction, and fragmentation of grasslands and wetland habitats, increased nest predation, and illegal shooting are all factors in the decline of this species.

3.5.2.21 Silvery Legless Lizard (*Anniella pulchra pulchra*) CSC

The silvery legless lizard is a CSC. Its range extends from the San Francisco Bay in California to northwestern Baja California, Mexico; and it can also be found on a few offshore islands of California. This species is found in chaparral, pine-oak woodlands, riparian woodlands, and also on beaches from sea level to around 5,100 feet. It occurs less commonly in desert scrub. Within these habitats, it prefers loose soils or sand for burrowing, moisture, warmth, and plant cover (Stebbins 2003). It forages in leaf litter during the day for insects such as termites, spiders, beetles, and larvae. On warm evenings, it may emerge to forage during the night. This legless lizard has a silver, gray, or beige dorsal coloration with a dark mid-dorsal line and is yellow below. The primary threats to the continued existence of this species include habitat loss due to agriculture and urban sprawl, overabundant non-native vegetation (i.e. iceplant on sand dunes), sand mining operations, off-road vehicle use, and other anthropogenic disturbances, including trampling and over-collecting for the pet trade.

3.5.2.22 Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) WL

The southern California rufous-crowned sparrow is a CDFG WL species. It is one of 17 recognized subspecies of the rufous–crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico; however, this sub-species is a resident of southwest California on the slopes of the Transverse and Coast ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martin Island. Habitats include broken sage scrub and chaparral; native grasslands with sparse shrubs; and rocky, brush-laden hillsides and canyons with open patches. It is a small non-descript sparrow with a rusty crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

3.5.2.23 Southern Grasshopper Mouse (*Onychomys torridus ramona*) CSC

The southern grasshopper mouse is a CSC. It occurs throughout desert and semi-arid habitats in the southwestern United States and much of Mexico, including western Nevada; the southern portions of California, Arizona, and New Mexico; northern Baja California; western Texas; and south to central Mexico (Hall 1981). The subspecies *ramona* is restricted to coastal southern California, with marginal records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley (Hall 1981). The grasshopper mouse rangewide is often found in low, arid scrub and semi-scrub vegetation; but this subspecies is found in grasslands and sparse sage scrub habitats. It nests in burrows often dug by kangaroo rats and pocket gophers, but it may dig its own burrows in sandy or other friable substrates (Baily and Sperry 1929, Stapp 1997). Specific habitat requirements of the southern grasshopper mouse generally are unknown, but Stapp (1997) found that grasshopper mice use open areas and microhabitats dominated by gopher mounds and burrows. Stapp suggests that grasshopper mice selected these microhabitats because of greater prey availability (i.e., arthropods using burrows for refuge), greater mobility in open areas, and dust bathing sites. It prefers low to moderate shrub cover and is active year-round. Unlike most other mice, this species is primarily carnivorous. It feeds nocturnally on a variety of arthropods, including grasshoppers, beetles, and scorpions. It will also feed on frogs, salamanders, lizards, small mammals, and, occasionally, seeds. It has been known to kill species larger than itself, such as kangaroo rats. Prey items are stalked, rushed, seized, and typically killed with a bite in the head. Curiously, it emits a howl on occasion, perhaps in defense of its territory. Home ranges can be as large

as four hectares; and, consistent with its carnivorous nature, population densities are normally low. It breeds from May to June; and after about 30 days, it gives birth to an average of 4 young. Predators include snakes, raptors, and a variety of mammals, including coyotes, owls, and foxes. Habitat loss and degradation are the primary threats to this species.

3.5.2.24 Swainson's Hawk (*Buteo swainsoni*) ST

The Swainson's hawk (nesting) is a state-listed threatened species. This species breeds from southwest Canada through the western U.S. into northern Mexico, with isolated breeding populations also observed in northern Illinois and the Sacramento and San Joaquin valleys of California. This species winters to South America. The Swainson's hawk forages in open stands of grass-dominated vegetation; sparse shrublands; and small, open woodlands. It typically nests in scattered trees within these grassland, shrubland, or agricultural landscapes. The Swainson's hawk feeds largely on insects, and thus is affected by pesticide use, particularly DDT and organophosphate pesticides currently used in South America (England et al. 1997).

3.5.2.25 Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*) CSC

The Tehachapi pocket mouse is a CSC. This species occurs in the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos, and east to the lower San Gabriel Mountains to Lake Elizabeth (Laabs 1998). The Tehachapi pocket mouse is one of two subspecies of *Perognathus alticola*; the second subspecies, *P. a. alticola,* occurs in the San Bernardino Mountains and has not been observed in over 50 years. Male Tehachapi pocket mice can reach up to 6.5 inches in length; while females are significantly smaller, reaching only 5.9 inches. Both sexes are yellowish-brown with a heavy overlay of black dorsally and white ventrally; facial markings are fainter, and the inside of the ears are white; its tail is bicolored and is slightly longer than head to body length (Laabs 1998). This species occurs in native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland, oak savanna, chaparral, coastal sage scrub, fallow grain fields, and rangeland at elevations ranging from 3,500 to 6,000 feet amsl, preferring loose, sandy soils for burrowing (Laabs 1998). They are nocturnal, feeding on seeds of grasses and forbs but will eat green vegetation and insects. Threats to this species include surface disturbance like mineral extraction and conversion of habitat to urban development.

3.5.2.26 Tricolored Blackbird (*Agelaius tricolor*) CSC

The tricolored blackbird (nesting colony) is a CSC that occurs primarily in California, with smaller populations in northern Mexico. This species is locally common in parts of the Central Valley and along the coast in Sonoma County but is not found commonly over most parts of its range. This species breeds near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds. Breeding season usually takes place from mid-April into late July, but Orians (1960) also reported active breeding in October and November in Sacramento Valley. Over the past few decades, numbers have been declining in California (DeHaven 1975). Reasons for the decline include the conversion of marshland habitats and agricultural poisoning.

3.5.2.27 Two-Striped Garter Snake (*Thamnophis hammondii*) CSC

The two-striped garter snake is a CSC. It is found in disjunct populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. The historic range of this species has been lost to housing, urban development, and other human impacts by an estimated 40 percent (Stebbins 2003).

3.5.2.28 Western Pond Turtle (*Actinemys marmorata pallida*) CSC

The western pond turtle is a CSC. This species occurs along the coast of North America from Baja California up to San Francisco Bay and occurs from sea level to 5,900 feet in elevation (Calherps 2011a). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (Calherps 2011a). The western pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Basking sites are necessary for thermoregulation. Reptile body temperature is dependent upon the environment the air, the substratum, and solar radiation. Basking is absorption of the sun's radiation and/or through the substratum. This species occurs in a variety of habitat types including woodland, grassland, and open forest (Calherps 2011a). Although this species is considered aquatic, this species usually leaves the aquatic site to reproduce, to estivate, and to overwinter. Pond turtles hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (Calherps 2011a). The species is highly sensitive to disturbance and will quickly slide into water when they feel threatened. Pond turtles are diurnal and are most active from February to November; however, if water temperatures remain warm, this species may be active year long (Bury 2008). Mating takes place in April or May, and females will deposit eggs in a vegetated upland location that may be a considerable distance (400 m or more) from the aquatic habitat to the nest. Eggs are generally deposited in grassy, upland areas adjacent to streams during May and June, although some individuals may deposit eggs as early as April and as late as August. Hatchlings will stay at the nest location and will emerge in the early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and occasionally frogs and fish (Calherps 2011a). Habitat destruction is the primary threat to this species. Dams also cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury 2008).

3.5.2.29 Western Mastiff Bat (*Eumops perotis*) CSC

The western mastiff bat is listed as a CSC. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural

substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown (TPWD 2008).

3.5.2.30 Western Snowy Plover (*Charadruis alexandrinus nivosus*) FT, CSC

The western snowy plover (nesting, coastal populations) is federally listed as threatened and is also a CSC. The Pacific coastal population breeds primarily on beaches from southern Washington to southern Baja California, Mexico. Interior populations can be found in the Central Valley of California, Oregon, Nevada, and other western states. The western snowy plover nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitats, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds, and infrequently on bluff-backed beaches (USFWS 2001). This small plover has a pale tan back, rump, and tail; white underparts; and dark patches on the sides of its neck that reach around onto the top of its chest. Habitat alteration and recreational beach use have led to a serious decline in nesting habitat and populations over the last 40 years (USFWS 2001, Page et al. 1995).

3.5.2.31 White-Faced Ibis (*Plegadis chihi*) WL

The white-faced ibis (nesting colony) is a CDFG WL species. It breeds across the western United States northward to Montana, eastward to western Louisiana, and southward to South America. It winters from southern California and Louisiana southward. The white-faced ibis usually nests in low trees and shrubs over shallow water. It inhabits primarily freshwater wetlands, especially cattail and bulrush marshes. It feeds in flooded hay meadows, agricultural fields, and estuarine wetlands. The white-faced ibis is a dark bronze-colored wader with a long, decurved bill. During the breeding season, adults have distinctive white feathers along the edges of their bare facial skin. Erosion and flood-control measures and irrigation projects have eliminated or degraded traditional nesting colony sites, leading to nest abandonment. Other losses of wetland habitat can also negatively affect populations (Ryder and Manry 1994).

3.6. SPECIES OBSERVED

The following plant species were observed while habitat assessments were conducted on the Project site: Nevada ephedra (*Ephedra nevadensis*), annual bur-sage (*Ambrosia acanthicarpa*), prickly lettuce (*Lactuca serriola*), coast goldfields (*Lasthenia californica*), common fiddleneck (*Amsinckia menziesii*), western tansy-mustard (*Descurainia pinnata*), tumble mustard (*Sisymbrium altissimum*), spiny saltbrush (*Atriplex confertifolia*), Russian thistle (*Salsola tragus*), broad-lobed filaree (*Erodium botrys*), red-stemmed filaree (*Erodium cicutarium*), Mojave spineflower (*Chorizanthe spinosa*), annual buckwheat (*Eriogonum gracillimum*), needlegrass (*Achnatherum* sp.), soft chess (*Bromus hordeaceus*), foxtail chess, cheat grass, saltgrass (*Distichlis spicata*), glaucous foxtail barley (*Hordeum murinum*), Mediterranean schismus, cereal rye (*Secale cereale*) and fescue (*Vulpia myuros*).

The following wildlife species were observed while habitat assessments were conducted on the Project site: sage sparrow (*Amphispiza belli*), owl pellets, California quail (*Callipepla californica*), American crow (*Corvus brachyrhynchos*) and black-tailed jackrabbit (*Lepus californicus*).

3.7. SENSITIVE SPECIES

The following 19 special status plant species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of these species occurring within ten miles of the Project site:

- Alkali mariposa lily
- Barstow woolly sunflower
- Clokey's cryptantha
- Davidson's bush mallow
- Darwin rock cress
- desert cymopterus
- Horn's milk-vetch
- Lancaster milk-vetch
- pale-yellow layia Parish's popcorn-flower
- Parry's spineflower
- Peirson's morning-glory
- recurved larkspur
- round-leaved filaree
- sagebrush loeflingia
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa lily
- white pygmy-poppy

The following 27 special status wildlife species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of these species occurring within ten miles of the Project site:

- American badger
- arroyo toad
- Bell's sage sparrow
- coast horned lizard
- California red-legged frog
- Cooper's hawk
- desert tortoise
- least Bell's vireo
- Le Conte's thrasher
- loggerhead shrike
- Mohave ground squirrel
- mountain plover
- Nelson's antelope squirrel
- pallid San Diego pocket mouse
- San Bernardino kangaroo rat
- Sierra Madre yellow-legged frog
- short-eared owl
- southern California rufous- crowned sparrow
- southern grasshopper mouse

- Swainson's hawk
- Tehachapi pocket mouse
- tricolored blackbird
- two-striped garter snake
- western pond turtle
- western mastiff bat
- western snowy plover
- white-faced ibis

The following two special status wildlife species have **low** potential to occur onsite due to the presence of low quality suitable habitat on the Project site, the quality of adjacent habitat, and historical records of these species occurring within five miles of the Project site:

- silvery legless lizard
- merlin

The following special status wildlife species has a **moderate** potential to occur on the Project site due to the presence of low quality suitable habitat and historical records of these species occurring within three miles of the Project site:

- Burrowing owl. The site consists of non-native grassland. Although no burrows were observed, there is potential habitat near the Project site. In addition, burrowing owls have been recorded to occur within three miles of the Project site. The burrowing owls could potentially use the project site and surrounding lands for foraging and nesting. Therefore, the burrowing owl has a moderate potential for occurrence on the project site.

The following special status wildlife species has a **high** potential to occur on the Project site due to the presence of high quality suitable habitat and historical records of these species occurring within one mile of the Project site:

- Ferruginous hawk. Suitable foraging habitat occurs on the Project site. Additionally, the ferruginous hawk has been recorded within one mile of the site. Therefore, the ferruginous hawk has a high potential for occurrence (foraging) on the Project site.

SECTION 4.0 – CONCLUSIONS

4.1. SPECIAL STATUS SPECIES

Of the 19 special status plant species known to occur within the vicinity of the Project site all are considered absent due to lack of suitable habitat or because the species was not found onsite during focused surveys conducted during the appropriate blooming period. No further surveys for sensitive plant species are recommended at this time.

Of the 31 special status wildlife species known to occur within the vicinity of the Project site, 29 are considered absent or have a low potential to occur due to lack of suitable habitat; therefore, no further surveys for the special status wildlife species are recommended at this time. The remaining special status wildlife species have a moderate potential to occur on the Project site.

4.1.1 Burrowing Owl

There is a moderate potential for Burrowing owl to occur on the project site. Although burrowing owls are not federal- and/or state-listed as endangered or threatened, this species is listed as a CSC. While the majority of CSC listed species do not typically require focused surveys, specific focused survey protocol for the burrowing owl has been developed by the California Burrowing Owl Consortium and adopted by the CDFG (The California Burrowing Owl Consortium 1993).

4.1.2 Ferruginous Hawk

The ferruginous hawk has a high potential to forage on the Project site. This species is on the CDFG watch list and is not federal- and/or state-listed threatened or endangered; therefore, no further surveys for this species are recommended at this time.

4.2. JURISDICTIONAL FEATURES

A formal delineation of the Project site was not conducted. Based on the observation of the biologists, the natural depressions and swales located onsite do not support riparian vegetation or riparian habitats. However, these features may fall subject to state jurisdiction.

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CHAMBERS GROUP

APPENDIX A – VEGETATION COMMUNITIES MAP

Vegetation Map
West L.A. Greenworks

Legend

Non-Native Annual Grassland

N
W E
S

0 65 130 260
Feet

8-6-11
20327

Chambers Group Inc.

CHAMBERS GROUP

APPENDIX B – SITE PHOTOGRAPHS

APPENDIX B – SITE PHOTOGRAPHS

	Photo 1-West LA Greenworks. Photo is taken looking south across the Project site from the northwest corner.
	Photo 2- West LA Greenworks. Photo is taken looking east at the power line and open fields from the northwest corner.
	Photo 3- West LA Greenworks. Photo is taken looking north across the Project site from the southeast corner.

2013 BURROWING OWL SURVEY

For

AMERICAN SOLAR GREENWORKS PROJECT
LOS ANGLES COUNTY, CALIFORNIA

Prepared by

August 2013

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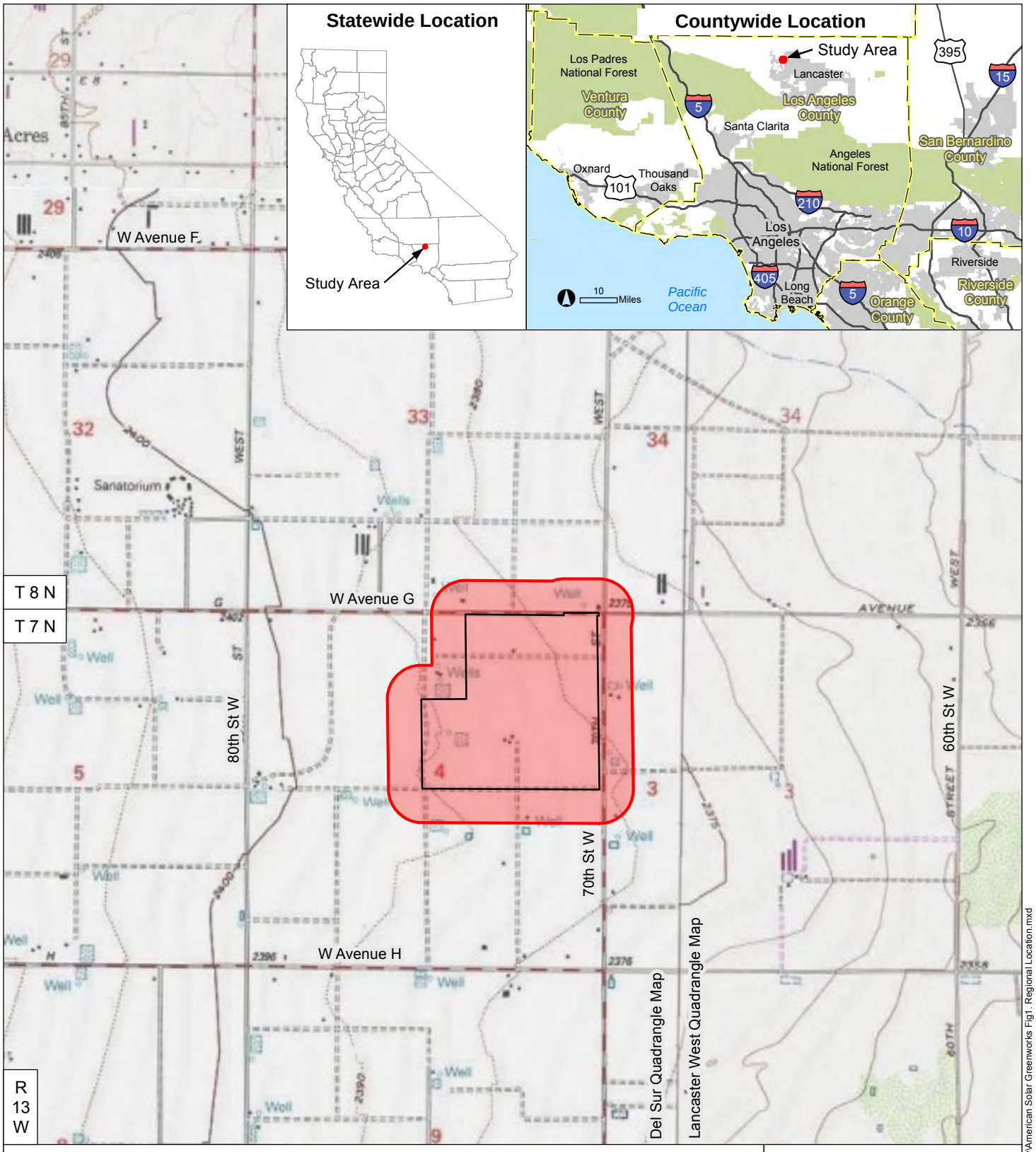
1.0 INTRODUCTION

This report provides the methods, assumptions, and results of focused surveys for Burrowing Owl (*Athene cunicularia*) conducted within the limits of the proposed American Solar Greenworks Project (here after referred to as the Project). The surveys were performed by NOREAS Inc., on behalf of Silverado Power, LLC. The Project is located within Los Angeles County, California (Figure 1). The Project can be found on the Del Sur United States Geological Survey (USGS 1982) 7.5-minute quadrangle map; San Bernardino Base and Meridian, Township 7 North, Range 13 West, Sections 3 and 4, and Township 8 North, Range 13 West, Sections 33 and 34. For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint (Project Site), plus a 500-foot (ft.) buffer where practical. The Project Site is north of West Avenue H, and south of West Avenue G at an approximate elevation of 2,300 ft. above mean sea level. The study area is heavily disturbed and supports mostly ruderal vegetation with substantial inclusions of bare ground.



Study Area
Project Site
County Boundary (inset)
Urban Area (inset)
Interstate or State Highway (inset)
Water Body (inset)
Park or National Forest (inset)

Data Sources:
- BingMaps accessed Jul 2013
- ESRI StreetMap North America 2010
- ESRI US Topo Maps accessed Jul 2013

Map Prepared: 7-2-13

The Study Area is located on the Del Sur USGS 7.5-minute quadrangle map; San Bernardino Base and Meridian, Township 7 North, Range 13 West, Sections 3 and 4, and Township 8 North, Range 13 West, Sections 33 and 34.

0 1,000 2,000 Feet

1 inch = 2,000 feet

Prepared by:
NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\LA County\American Solar Greenworks Fig1. Regional Location.mxd

Figure 1. Regional Location

2.0 BURROWING OWL BACKGROUND

The Burrowing Owl has been designated by the California Department of Fish and Wildlife (CDFW) as a species of special concern. “State Species of Special Concern” status applies to animals not listed for protection under the federal Endangered Species Act or the California Endangered Species Act. The designation denotes that a species is declining at a rate that could result in State listing or that a species has historically occurred in low numbers and known threats to their persistence currently exist. In essence, the designation is intended to result in “special consideration” for these animals during the environmental review and discretionary permitting processes. In addition, the designation is also intended to focus research and management attention on poorly-known, potentially at-risk species by stimulating the collection of additional information on their biology, distribution, and status.

Burrowing Owls prefer open, dry annual or perennial grasslands, agricultural and rangelands, deserts, and scrublands characterized by low-growing vegetation. Burrowing Owls also prefer areas inhabited by small mammals as they predominately depend on mammal burrows (particularly ground squirrels) for subterranean nesting. Owls can be found at elevations ranging from 200 ft. below sea level to 9,000 ft. above (CDFG 1995). Burrowing Owls commonly perch on fence posts or on mounds outside their burrows. Northern populations of Burrowing Owls are usually migratory, while more southern populations may move short distances or not at all (Haug et al. 1993, Botelho 1996). Little is known about the winter ranges of migratory populations, although migratory Burrowing Owls are believed to mix with resident populations in California during the winter months (Coulombe 1971, Haug et al. 1993).

Burrowing Owls tend to be resident where food sources are stable and available year-round (Rosenberg et al. 1998). Typically, they disperse or migrate south in areas when food becomes seasonally scarce. Burrowing Owls tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a substantial portion of their diet (Rosenberg et al. 1998). Small mammals, especially mice, rats, gophers, and ground squirrels, are also important food items. Other prey animals include reptiles and amphibians, scorpions, young cottontail rabbits, bats, and birds such as sparrows and Horned Larks. Consumption of insects increases during the breeding season. Burrowing Owls hover while hunting; after catching their prey they return to perches on fence posts or the ground. Burrowing Owls are primarily active at dusk and dawn, but if necessary will hunt at any time of day (CBOC 1993, CDFG 1995; Rosenberg et al. 1998).

The breeding season for Burrowing Owls is March to late August; the season tends to last later in the northern part of the range (CBOC 1993, CDFG 1995, Klute et al. 2003). Clutch size (number of birds hatched at the same time) ranges from 1 to 12 and averages about 7 (Ehrlich 1988). The incubation period is 28–30 days (Ehrlich 1988). The female performs all the incubation and brooding (sitting on eggs to hatch them by the warmth of the body) and is believed to remain continually in the burrow while the male does all the hunting (Rosenberg et al. 1998). The young fledge (take their first flight out of the nest) at 44 days but remain near the burrow and join the adults in foraging flights at dusk (Ehrlich 1988). The maximum life span recorded for a banded bird in the wild is approximately 8.5 years (Rosenberg et al. 1998).

In resident populations, nest site fidelity is common, with many adults nesting each year in their previous year’s burrow; young from the previous year often establish nest sites near (<900 ft) their natal sites (Trulio 1997,Rosenberg et al. 1998). Burrowing Owls in migratory populations

also often nest in the same burrow, particularly if the previous year's breeding was successful (Belthoff and King 1997). Other birds in the same population may move to burrows near their previous year's burrow. The species is threatened primarily by loss, degradation, and fragmentation of habitat, although they do readily inhabit anthropogenic landscapes such as agricultural fields, golf courses, and airport grasslands (Korfanta et al. 2005).

3.0 METHODS

Prior to field surveys, natural resource databases, local resource management plans, aerial photos, and other readily available commercial data associated with the Project were reviewed to determine the locations and types of avian species that have the potential to exist within the study area. Primary data sources included, but were not limited to, the following:

- U.S. Fish and Wildlife Service Critical Habitat Mapper and File Data (USFWS 2013);
- California Burrowing Owl Consortium. 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines;
- California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation; and
- 2013 California Natural Diversity Database maintained by the CDFW (CDFW 2013).

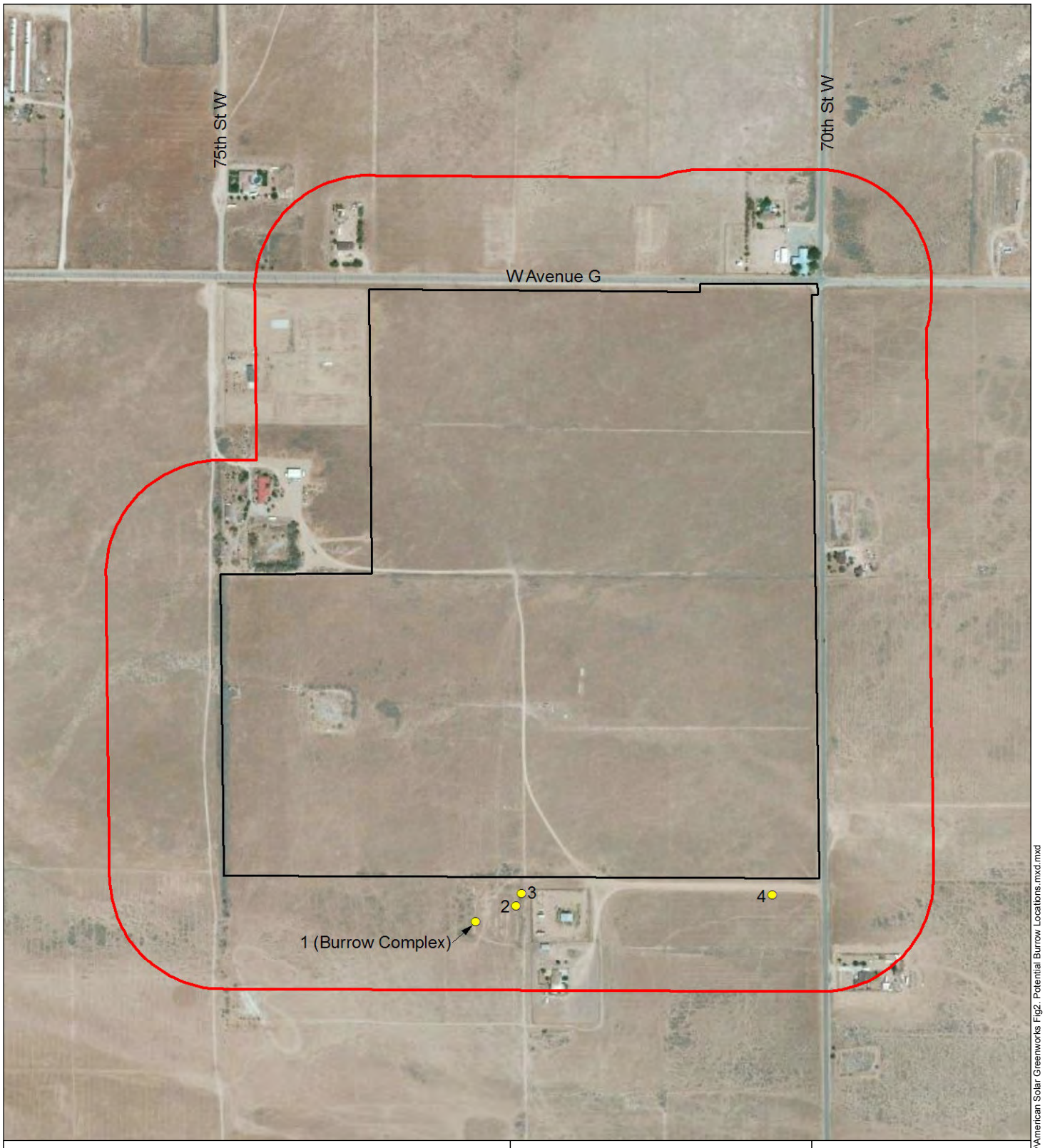
Survey methods were derived from generally accepted professional standards including the 1993 California Burrowing Owl Consortium Survey Protocol and Mitigation Guidelines (CBOC 1993), the 1995 and 2012 California Department of Fish and Game Staff Reports on Burrowing Owl Mitigation (CDFG 1995 and 2012). Accordingly, a methodical pedestrian-survey for owl burrows and sign was conducted by walking through areas of suitable habitat within study area limits (including evaluations of man-made structures, debris piles, etc.). Survey transects were spaced at approximately 100-ft intervals to allow for complete visual coverage of the study area. Where necessary, transect spacing was reduced or expanded to account for differences in terrain, vegetation density, and visibility. The presence of each observed species was based on direct observations of individual(s), sign, and/or vocalization. Avian scientific nomenclature and common names follows Sibley (2000).

Field surveys were conducted when weather conditions were conducive to observing birds. Surveys were not performed during rain, extreme temperatures, high winds (> 25 miles per hour), or dense fog. Where access was limited, observations were made from the nearest appropriate vantage points with the use of binoculars and spotting scopes. Surveys were conducted from approximately 1 hour before sunrise to 2 hours after sunset, when weather conditions were conducive to observing owls outside of burrows.

4.0 RESULTS

Field surveys were performed on 11 April, 07 May, 07 June, and 01 July 2013. Weather conditions during the surveys were sunny and clear, ambient temperature ranged from 55 to 85 degrees Fahrenheit, with wind speeds between 0-15 miles per hour. The study area is heavily disturbed and supports mostly ruderal vegetation dominated by non-native annual grass species including filaree (*Erodium cicutarium*), foxtail chess (*Bromus madtritensis* ssp. *rubens*), tumble mustard (*Sisymbrium altissimum*), Russian thistle (*Salsola tragus*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*). There is also evidence of historical agricultural practices. The study area lacks a perennial water and robust food source (i.e., insects, small mammals, etc.) for Burrowing Owls, and a population of predators (e.g., coyote sign and other raptors) was documented during survey events.

Several potential burrows and one complex – albeit extremely low quality and located outside the Project Site, were observed within the southern portions of the study area (Figure 2). Nonetheless, no sign or Burrowing Owls were observed nesting, foraging, dispersing, or utilizing refuge habitats during field surveys. Appendix A includes a list of all avian species observed. Appendix B includes representative photographs of the study area.



Study Area (271-acres which includes a 500-ft buffer and the Project Site)

Project Site (135 acres)

Potential Burrow Locations

Potential Burrow

0 300 600 Feet

1 inch = 600 feet

Data Sources:
- BingMaps accessed Jul 2013
- Silverado Power 2013

Map Prepared: 7-8-13

Prepared by:
NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\LA County\American Solar Greenworks Fig2. Potential Burrow Locations.mxd

Figure 2. Potential Burrow Locations

5.0 CONCLUSIONS

No sign or Burrowing Owls were observed within the study area. The majority of the Project Site consists of disturbed and developed lands. Additionally, the study area seems unlikely to support Burrowing Owls because it lacks perennial water and food sources, and predators were observed. The survey data suggests that no Burrow Owls would be adversely affected by the Project.

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APPENDIX A

AVIAN COMPENDIUM

APPENDIX A

AVIAN COMPENDIUM

Scientific name	Common name
Accipiter cooperii	Cooper's Hawk
Carpodacus mexicanus	House Finch
Columba livia	Rock Pigeon
Corvus brachyrhynchos	American Crow
Eremophila alpestris	Horned Lark
Mimus polyglottos	Northern Mockingbird
Passer domesticus	House Sparrow
Sturnella neglecta	Meadowlark
Tyrannus verticalis	Western Kingbird
Zenaida macroura	Mourning Dove

APPENDIX B

PHOTOGRAPHIC LOG

APPENDIX B

PHOTOGRAPHIC LOG

	Photograph: 1 **Facing East**
	Photograph: 2 **Facing West**

Photograph: 3

Potential Burrow

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APPENDIX B.3-5 PROJECT 4 ANTELOPE SOLAR GREENWORKS

2013 BURROWING OWL SURVEY BIOLOGICAL TECHNICAL REPORT

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BIOLOGICAL TECHNICAL REPORT
FOR THE ANTELOPE SOLAR GREENWORKS PROJECT SITE (CUP 10)
CITY OF LANCASTER
LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

TETRATECH

17855 Von Karman Avenue, Suite 500
Irvine, CA 92614
(949) 809-5000

Prepared by:

CHAMBERS GROUP, INC.
5 Hutton Centre Drive, Suite 750
Santa Ana, California 92707-8720
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September 2011

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SECTION 1.0 – INTRODUCTION

Silverado Power, LLC (Silverado Power) is an independent solar power producer and developer of distributed solar power assets for utilities that are for both municipally and investor owned. Silverado Power strives to be a leader in wholesale solar power generation and the process of developing, building, and operating solar generation facilities (SGFs).

Chambers Group, Inc. (Chambers Group) was retained by Tetratech (for Silverado Power) to conduct a literature review and biological technical report (BTR) on the proposed Antelope Solar Greenworks project site located in Los Angeles County. The purpose of this document is to report the results of the reconnaissance-level biological survey.

1.1. PROJECT DESCRIPTION

Silverado Power plans to develop the Antelope Solar Greenworks SGF (the Project). Project facilities would operate year-round, producing electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the fourth quarter of 2014.

The proposed Project would have a generating capacity of 6 megawatts alternating current (MW-AC). The Project will employ photovoltaic (PV) modules to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system.

The Project would meet the increasing demand for electricity generated from clean, renewable technology. The recent legislation enacted in California recognizes the multiple benefits associated with the development of renewable energy resources. These benefits include a reduced reliance on foreign sources of fuel, promotion of national security, diversification of energy portfolios, reductions in greenhouse gas emissions, and the creation of “green” jobs within the state of California.

1.2. PROJECT LOCATION

The proposed Project site (APN: 3203-002-014) encompasses approximately 38 acres of previously disturbed, fallow agricultural land in northeastern Los Angeles County. Antelope Solar Greenworks is located in the Antelope Valley, CA, approximately a half mile northwest of the Antelope Valley electrical substation. The Project site is on the southwest corner of the intersection of Lancaster BLVD and 90th Street West. The site is located within the *Del Sur* California USGS 7.5 minute quadrangle. The Project site is surrounded by agricultural fields, a few small areas of development to the north and southeast intermixed with non-native grasslands. The Project Regional and Project Vicinity maps are provided in Figure 1 and Figure 2.

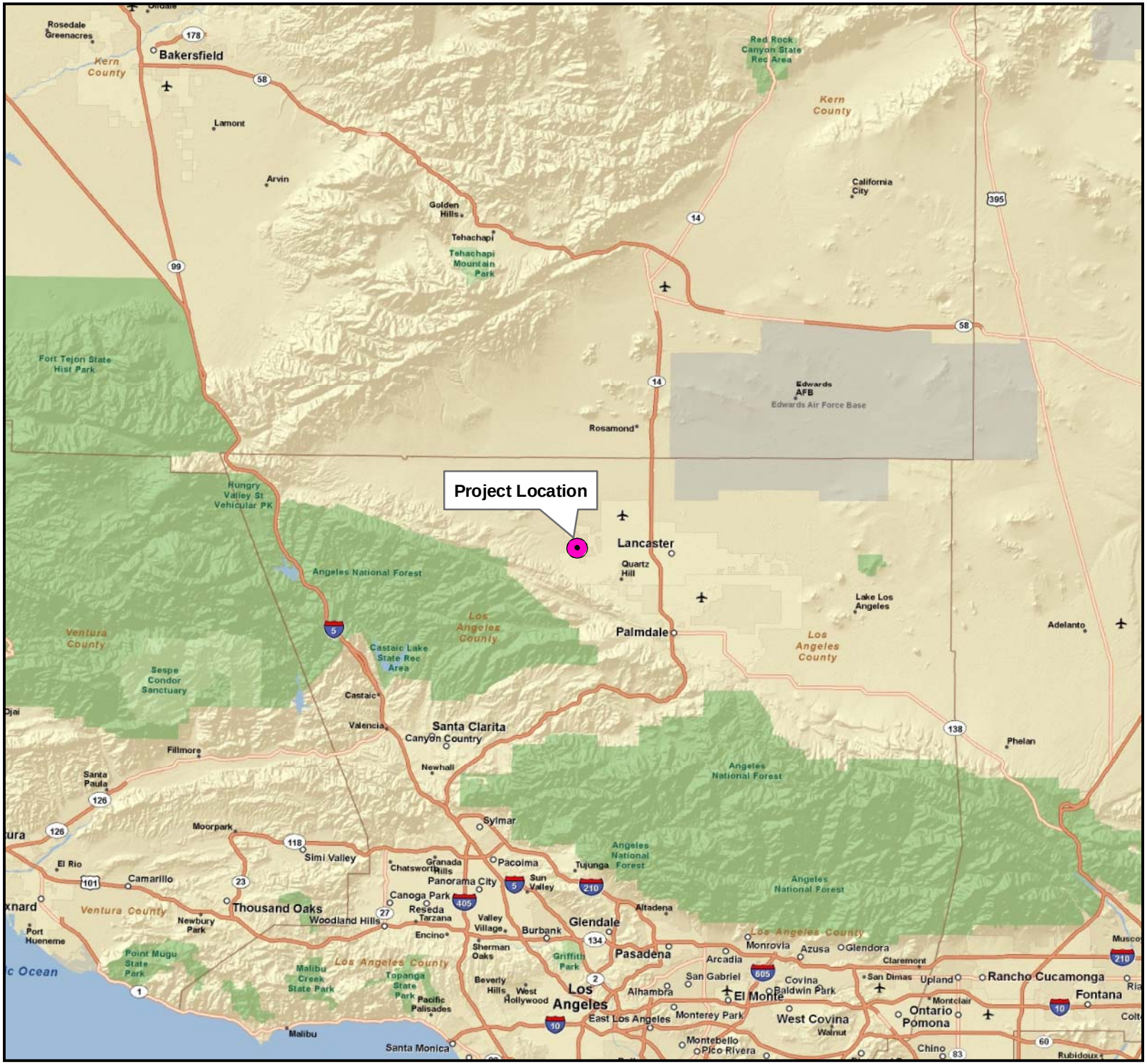

Figure 1
Regional Map
Antelope Solar Greenworks

Legend

Project Location

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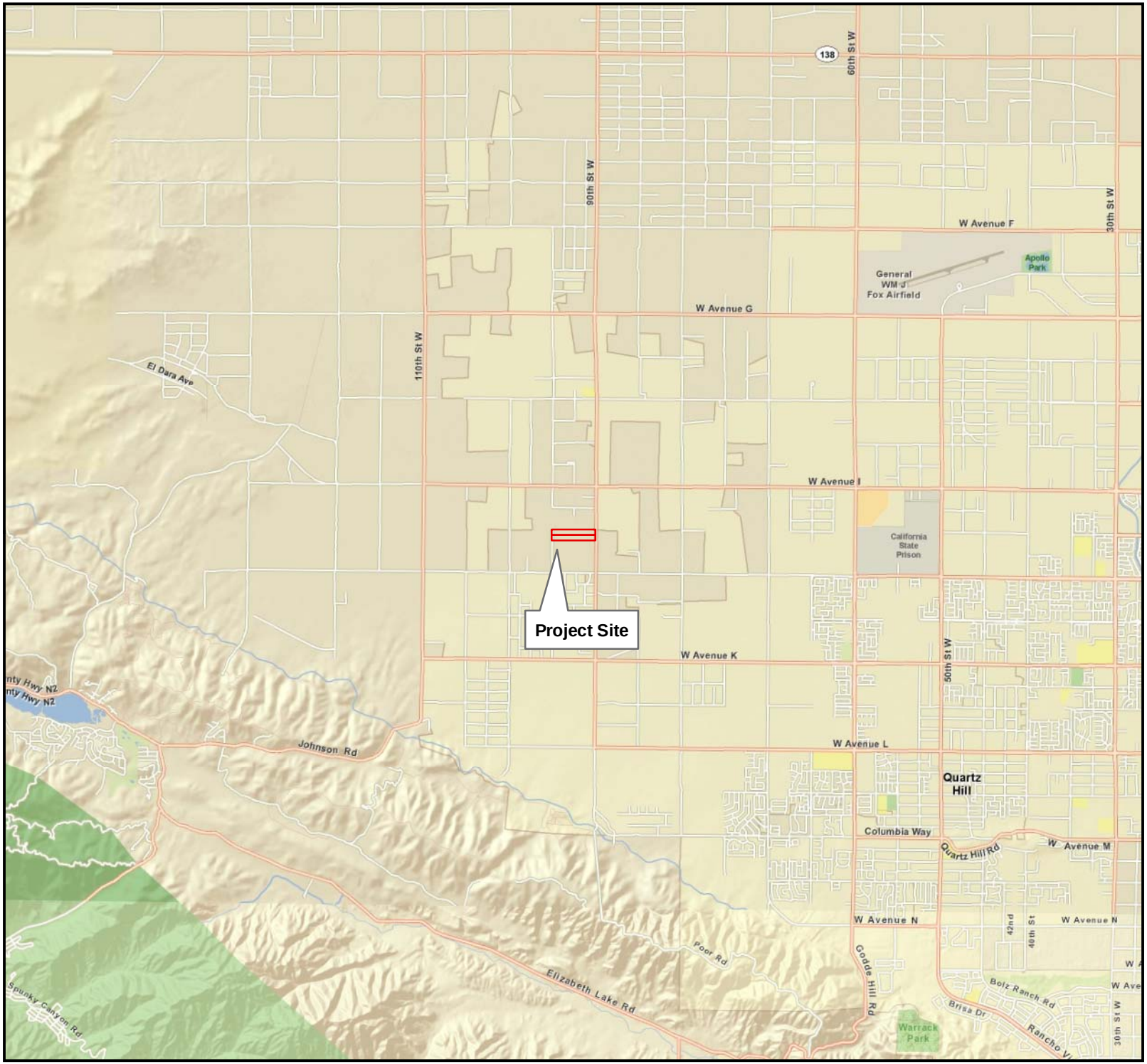
6-9-11
20327

Chambers Group Inc.

Figure 2
Vicinity Map
Antelope Solar Greenworks



Legend

Project Site

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Chambers Group Inc.

SECTION 2.0 – METHODS

2.1. LITERATURE REVIEW

Prior to conducting the field surveys, existing documentation relevant to the Project site was reviewed. The most recent records of the California Department of Fish and Game California Natural Diversity Database (CNDDB 2011) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2011) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Fairmont Butte, Little Butte, Rosamond, Rosamond Lake, Redman, Alpine Butte, Lancaster East, Lancaster West, Del Sur, Lake Hughes, Burnt Peak, Little Rock, Lovejoy Buttes, El Mirage*, California USGS 7.5 minute quadrangles). The database contains records of reported occurrences of federal- or state-listed as endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Special Concern (CSC), or otherwise sensitive species or habitats that may occur within or in the vicinity of the Project site.

2.2. BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

The field survey was conducted on the Project site in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support special status wildlife species and to identify any potential jurisdictional waters of the United States. Chambers Group biologists Heather Clayton and Tracey Valentovich the general reconnaissance survey on May 17, 2011. Weather conditions during the survey included temperatures averaging approximately 64 degrees Fahrenheit with 80 percent cloud cover and no precipitation. During the survey the biologists walked the Project site documenting the native vegetation communities and took notes regarding the potential for special status species and jurisdictional waters to occur onsite. Photographs of the Project site were also taken to document existing conditions.

2.3. VEGETATION

All plant species and soil types observed onsite were noted. Plant communities on the Project site were identified, qualitatively described, and mapped onto an aerial photograph. Plant communities were determined in accordance with the categories set forth in Holland (1986) or Gray and Bramlet (1992). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California* (Hickman 1993).

2.4. WILDLIFE

All wildlife and wildlife sign observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support state- and/or federal-listed or proposed listed species. Notes were made on the general habitat types, species observed, and the conditions of the site. Photographs of the site are provided in Appendix B.

SECTION 3.0 – RESULTS

3.1. LITERATURE REVIEW

According to the literature review, 19 special status plant and 31 special status wildlife species were documented to occur within the vicinity of the Project site. This list included ten wildlife species that are federal- and/or state-listed endangered or threatened. Of the 19 special status plant species listed in the literature review, none are federal- and/or state-listed endangered or threatened.

3.2. VEGETATION COMMUNITIES

The Project site is classified as Non-Native Annual Grassland and Rubber Rabbitbrush Scrub (See Appendix A). Antelope Solar Greenworks is surrounded by agriculture fields and scattered areas of small development.

3.2.1 Non-native Annual Grasslands

Non-Native Annual Grassland consists of a dense to sparse cover of annual grasses such as oats (*Avena* sp.), bromes (*Bromus* sp.), and ryegrass (*Lolium* sp.) with flowering culms up to 3 feet in height. This community is often associated with numerous species of showy-flowered, native annual forbs "wildflowers" such as California poppy (*Eschscholzia californica*), lupines (*Lupinus* sp.), and goldfields (*Lasthenia* sp.) especially in years of favorable rainfall (Holland 1986). Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from winter through spring. Typically plants are dead through the summer-fall dry season persisting as seeds. Non-native grasslands can be found on fine-textured usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall.

The Project site is primarily composed of this community, and many non-native annual grasslands are adjacent to the Project site. Plant species found on the project site typical of this vegetation community include: cheat grass (*Bromus tectorum*), foxtail chess (*Bromus madritensis* ssp. *rubens*) and Mediterranean schismus (*Schismus barbatus*).

3.2.2 Rubber Rabbitbrush Scrub

Rubber Rabbitbrush Scrub is dominated by rubber rabbitbrush (*Chrysothamnus nauseosus*), usually approximately 3 feet in height with regularly-spaced gray-green shrubs that bloom in late summer or early fall (Holland 1986). Rabbitbrush Scrub is a disturbance-maintained community in which fire, grazing, or soil tilling perpetuate the same species within the herb and shrub layers and the disturbance occurs with regular (less than 10 years) frequency.

A small amount of Rubber Rabbitbrush Scrub is present throughout the eastern portion of the Project site. Plant species found within this site typical of this vegetation community include: rattlesnake weed (*Chamaesyce albomarginata*), fescue (*Vulpia myuros*) and rubber rabbitbrush.

3.3. JURISDICTIONAL FEATURES

Chambers Group conducted a preliminary assessment for jurisdictional features found on the Project site. A formal delineation was not conducted.

3.3.1 Swale Features

A swale is a low-lying area or depression that can become innundated with water for periods of time. The Project site contains swale features. These features did not contain plant species indicative of riparian vegetation.

3.4. SPECIAL STATUS SPECIES

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Project site.

CNPS

List 1A	=	Plants presumed extinct in California.
List 1B	=	Plants rare and endangered in California and throughout their range.
List 2	=	Plants rare, threatened, or endangered in California but more common elsewhere in their range.
List 3	=	Plants about which we need more information; a review list.
List 4	=	Plants of limited distribution; a watch list.

CNPS Extensions

0.1	=	Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2	=	Fairly endangered in California (20 to 80 percent occurrences threatened).
0.3	=	Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE	=	Federally listed; Endangered
FT	=	Federally listed; Threatened
FC	=	Federal Candidate for listing
FPT	=	Federal Proposed listing as Threatened

State

ST	=	State listed; Threatened
SE	=	State listed; Endangered
RARE	=	State-listed; Rare (Listed “Rare” animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC	=	State Species of Special Concern
WL	=	California Department of Fish and Game (CDFG) Watch List

3.5. SENSITIVE SPECIES DESCRIPTIONS

3.5.1 Sensitive Plants in the Los Angeles County Area

3.5.1.1 Alkali Mariposa Lily (*Calochortus striatus*) CNPS List 1B.1

Alkali mariposa lily is a CNPS List 1B.2 species. This perennial, bulbiferous herb flowers between April and June. This species occurs on alkaline and mesic soils within Chaparral, Chenopod Scrub, Mojavean Desert Scrub, and Meadows and Seeps habitats at elevations between 230 and 5,233 feet above mean sea level (amsl). Known range for this species includes: Kern, Los Angeles, San Bernardino, and Tulare Counties. Threats to alkali mariposa lily include groundwater pumping urbanization, grazing, trampling, road construction, water diversion resulting in lowering the water table, and possibly horticultural collecting.

3.5.1.2 Barstow Woolly Sunflower (*Eriophyllum mohavense*) CNPS List 1B.2

Barstow woolly sunflower is a CNPS List 1B.2 species. This annual herb flowers between March and May. Barstow woolly sunflower occurs within Chenopod Scrub, Mojavean Desert Scrub, and Playas habitats at elevations between 1,640 and 3,150 feet amsl. Known range for this species includes: Fresno, Kern, Los Angeles, and San Bernardino Counties. Threats to this species include vehicles, grazing, energy development, and road improvements.

3.5.1.3 Clokey's Cryptantha (*Cryptantha clokeyi*) CNPS List 1B.2

Clokey's cryptantha is a CNPS List 1B.2 species. This annual herb flowers in April. Clokey's cryptantha occurs within Mojavean Desert Scrub habitat at elevations between 2,379 and 4,478 feet amsl. Known range for this species includes: Inyo, Los Angeles, and San Bernardino Counties. Major threats to this species include military activities and alteration of fire regimes.

3.5.1.4 Darwin Rock Cress (*Arabis pulchra* var. *munciensis*) CNPS List 2.3

Darwin rock cress is a CNPS List 2.3 species. This perennial herb flowers in April. Darwin rock cress occurs in carbonate soils of Chenopod Scrub and Mojavean Desert Scrub habitats at elevations between 3,608 and 6,807 feet amsl. Known range includes Inyo, Los Angeles, and San Bernardino Counties.

3.5.1.5 Davidson's Bush Mallow (*Malacothamnus davidsonii*) CNPS List 1B.2

Davidson's bush mallow is a CNPS List 1B.2 species. This perennial deciduous shrub flowers between June and January. Davidson's bush mallow occurs within chaparral, Coastal Scrub, Cismontane Woodland, and riparian woodland habitats at elevations between 607 and 2,805 feet amsl. Known ranges include: Los Angeles, Monterey, Santa Clara, San Mateo, and San Luis Obispo Counties. Urbanization, maintenance activities, and erosion are the main threats to this species.

3.5.1.6 Desert Cymopterus (*Cymopterus deserticola*) CNPS List 1B.1

Desert cymopterus is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs on sandy soils within Mojavean Desert Scrub and Joshua Tree Woodland habitats at elevations between 2,066 and 4,921 feet amsl. Known range for this species includes: Kern, Los Angeles,

and San Bernardino Counties. Threats to desert cymopterus include military activities, sheep grazing, vehicles, utility construction, and urbanization.

3.5.1.7 Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*) CNPS List 1B.1

Horn's milk-vetch is a CNPS List 1B.1 species. This annual herb flowers between May and October. This species occurs along lake margins in poorly drained, alkaline soils of meadows and seeps and Playas habitats at elevations between 195 to 2,790 feet amsl. Known ranges include Inyo, Kern, and San Bernardino Counties and Nevada. Poisonous to sheep, it was subject to eradication by farmers in the early 1900s; current threats to Horn's milk-vetch are habitat alterations.

3.5.1.8 Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*) CNPS List 1B.1

Lancaster milk-vetch is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs within Chenopod Scrub habitat. Known ranges include Kern, Los Angeles, and San Bernardino Counties and Nevada. Limited range, including areas only near Lancaster and Edwards Air Force Base, is the major threat to Lancaster milk-vetch.

3.5.1.9 Pale-Yellow Layia (*Layia heterotricha*) CNPS List 1B.1

Pale-yellow layia is a CNPS List 1B.1 species. This annual herb flowers between March and June. This species occurs in alkaline or clay soils within Cismontane Woodland, Coastal Scrub, Pinyon-Juniper Woodland, and Valley and Foothill Grassland habitats at elevations between 984 and 5,594 feet amsl. Known ranges include Fresno, Kern, Kings, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, San Benito, and Ventura Counties. Threats to pale-yellow layia include vehicle use, competition from non-native plants, agricultural conversion, and grazing.

3.5.1.10 Parish's Popcorn-Flower (*Plagiobothrys parishii*) CNPS List 1B.1

Parish's popcorn-flower is a CNPS List 1B.1 species. This annual herb flowers between March and November. This species occurs on alkaline and mesic soils within Great Basin Scrub and Joshua tree Woodland habitats at elevations between 2,460 and 4,595 feet amsl. Known range for this species includes: Inyo, Los Angeles, Mono, and San Bernardino Counties. Threats to Parish's popcorn-flower include groundwater pumping.

3.5.1.11 Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) CNPS List 1B.1

Parry's spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and June. This species occurs in sandy or rocky soils and openings within Cismontane Woodland, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 902 and 4,002 feet amsl. Known ranges include Los Angeles, Riverside and San Bernardino Counties. Threats to this species include development, altered flood regime, mining, vehicles, and competition from non-native plants.

3.5.1.12 Peirson's Morning-Glory (*Calystegia peirsonii*) CNPS List 4.2

Peirson's morning-glory is a CNPS List 4.2 species. This perennial, rhizomatous herb flowers between April and June. This species occurs within chaparral, Chenopod Scrub, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, and Valley and Foothill Grassland habitats at elevations

between 98 and 5,085 feet amsl. Known ranges include Los Angeles County. Major threats to Peirson's morning-glory include grazing and development; possible threats include power line construction.

3.5.1.13 Recurved Larkspur (*Delphinium recurvatum*) CNPS List 1B.2

Recurved larkspur is a CNPS List 1B.2 species. This perennial herb flowers between March and June. This species occurs on alkaline soils within Chenopod Scrub, Cismontane Woodland, and Valley and Foothill Grassland habitats at elevations between 10 and 2,460 feet amsl. Known ranges of the recurved larkspur include: Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solana, Sutter, and Tulare Counties. Conversion of habitat, grazing, and trampling are threats to the recurved larkspur.

3.5.1.14 Round-Leaved Filaree (*California macrophylla*) CNPS List 1B.1

Round-leaved filaree is a CNPS List 1B.1 species. This annual herb flowers between March and May. Round-leaved filaree occurs in clay soils within Cismontane Woodland and Valley and Foothill Grassland habitats at elevations between 50 and 3,937 feet amsl. Known ranges include Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, Santa Barbara, San Benito, Santa Clara, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Ventura, and Yolo Counties and Santa Cruz Island. Threats to this species include urbanization, feral pigs, habitat alteration, pipeline construction, urbanization and competition from non-native plants.

3.5.1.15 Sagebrush Loeflingia (*Loeflingia squarrosa*) CNPS List 2.2

Sagebrush loeflingia is a CNPS List 2.2 species. This annual herb flowers between April and May. This species occurs in sandy soils of Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub habitats at elevations between 2,295 and 5,300 feet amsl. Known range includes Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino Counties and Nevada, Oregon, and Wyoming. Possible threats to sagebrush loeflingia include off-highway vehicles and grazing.

3.5.1.16 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*) CNPS List 1B.1

San Fernando Valley spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and July. This species occurs in sandy soils of Coastal Scrub and Valley and Foothill Grassland habitats at elevations between 492 and 4,002 feet amsl. Known range includes Los Angeles, Orange, and Ventura Counties. Possible threats to this species include competition from non-native plants and development.

3.5.1.17 Short-Joint Beavertail (*Opuntia basilaris brachyclada*) CNPS List 1B.2

Short-joint beavertail is a CNPS List 1B.2 species. This perennial stem succulent flowers between April and June. This species occurs within chaparral, Mojavean Desert Scrub, Joshua Tree Woodland, and Pinyon-Juniper Woodland habitats at elevations between 394 and 5,905 feet amsl. Known range for this species includes Los Angeles and San Bernardino Counties. Major threats to short-joint beavertail include vehicles, grazing, urbanization, mining, and horticultural collecting; possible threats include power line construction.

3.5.1.18 Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*) CNPS List 1B.1

Slender mariposa lily is a CNPS List 1B.1 species. This perennial, bulbiferous herb flowers between March and June. This species occurs within chaparral, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 1,050 and 3,280 feet amsl. Known ranges include Los Angeles and Ventura Counties. Threats to slender mariposa lily include vehicles, development, mining, and competition from non-native plants.

3.5.1.19 White Pygmy-Poppy (*Canbya candida*) CNPS List 4.2

White pygmy-poppy is a CNPS List 4.2 species. This annual herb flowers between March and June. This species occurs on gravelly, sandy, or granitic soils within Joshua Tree Woodland, Mojave Desert Scrub, and Pinyon-Juniper Woodland habitats at elevations between 600 and 4,800 feet amsl. Known ranges include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino Counties. This species is threatened by development, off-highway vehicles, grazing, mining, and competition from non-native plants.

3.5.2 Sensitive Wildlife Species in the Los Angeles County Area

3.5.2.1 American Badger (*Taxidea taxus*) CSC

The American badger is a California Species of Concern (CSC). This carnivorous species ranges over most of the western U.S and upper midwestern U.S. south into central Mexico. In California, the badger may occupy a variety of habitats, especially grasslands, savannas, montane meadows, sparse scrublands, and deserts. It prefers friable soils for burrowing, and relatively open, uncultivated ground. Prey items include gophers, ground squirrels, marmots, kangaroo rats, other rodents, and the occasional reptile or amphibian. The American badger may weigh up to 25 pounds and is easily recognized by its overall yellowish gray coloration, the white stripe on top of its head, white cheeks, and black feet with noticeably long front claws. It is a heavy-bodied animal with short legs and a characteristic pigeon-toed gait. It is chiefly nocturnal, but it is often seen by day as well. It gives birth to two to five young anywhere from February to May, depending on its altitude and latitude. Threats to this species include habitat loss to agriculture, housing, and other land conversions, and illegal hunting.

3.5.2.2 Arroyo Toad (*Anaxyrus californicus*) FE, CSC

The arroyo toad is a federally endangered species and a CSC. The range of this species is within coastal California from Monterey County into northwestern Baja California, Mexico. It is found in washes, streams, and arroyos; and preferred habitats include sandy banks within riparian woodlands such as willow, cottonwood, sycamore, mulefat, and/or coast live oak. It breeds in shallow, sandy/gravelly riverine pools with low silt content and normally disperses onto adjacent uplands after breeding. Individuals have been observed up to 2 kilometers (km) from the streams in which they breed, but most often they are within 0.5 km of those streams (USFWS 1992a). During the breeding season, males call nocturnally from open areas on banks at the edges of streams. Males typically precede females at breeding sites. Females lay their eggs among gravel, leaves, or sticks, on mud or clean sand within low to moderately flowing sections of streams in areas with little or no emergent vegetation and little woody marginal growth. Newly metamorphosed individuals remain near pools for up to several weeks until the areas dry. Juveniles begin feeding primarily on ants and shift to small beetles as they grow (Sweet 1991) before moving into adjacent wintering grounds. Many spend the next 6 to 8 months overwintering in burrows up to 20 centimeters deep in sandy substrates of these habitats. Adults obtain shelter primarily by burrowing into fine, sandy soils in both adjacent and upland habitats (Sweet 1991).

This small to moderately-sized species is distinguished from other toads by its chevron-shaped marking between the eyes and by the lack of a mid-dorsal stripe. Coloration may vary from light olive gray to tannish brown above, and the unmarked undersurfaces are creamy to dirty white. The iris is dark brown with scattered gold iridophores on the upper and lower portions of the iris. The primary threat to this species is habitat loss.

3.5.2.3 Bell's Sage Sparrow (*Amphispiza belli belli*) WL

The Bell's sage sparrow is a subspecies of sage sparrow and a CDFG Watch List (WL) species. It breeds primarily in chamise chaparral along the coastal side of California from the western foothills of the Sierra Nevada to San Diego County and northwest Mexico. It also breeds less commonly in coastal sage, mixed chaparral, and big sagebrush communities. Wintering birds of this subspecies may migrate to desert floors or remain in their breeding habitats. This species is distinguished from other sparrows by its gray head and back, thin white eye-ring, single dark breast spot, and heavy whisker-like pattern about the face. Populations are in decline due to habitat loss and fragmentation, frequent wildfires, grazing, invasive plants, and brood parasitism caused by the brown-headed cowbird (*Molothrus ater*).

3.5.2.4 Burrowing Owl (*Athene cunicularia*) CSC

The burrowing owl, a CSC, is broadly distributed across the western United States with populations in Florida and Central and South America. Burrowing owls use a variety of natural and modified habitats for nesting and foraging, typically characterized by low-growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrublands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. Burrowing owls typically use burrows made by mammals, such as California ground squirrels (*Spermophilus beecheyi*), foxes, or badgers. They sometimes dig their own burrows and will often utilize man-made structures such as earthen berms; cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls often are found within, under, or in close proximity to man-made structures. Prey sources for this species include small rodents; arthropods such as spiders, crickets, centipedes, and grasshoppers; smaller birds; amphibians; reptiles; and carrion. Threats to the burrowing owl include loss of nesting burrows, habitat loss, and mortality from motor vehicles.

3.5.2.5 California Red-Legged Frog (*Rana aurora draytonii*) FT, CSC

The California red-legged frog is a federally threatened species and a CSC. It is found from Mendocino County in California south to northwestern Baja, Mexico. It may occur in a variety of habitats from near sea level to 8,000 feet in elevation and is strongly associated with permanent sources of water, including cattail and tule marshes, reservoirs, ponds, and stream sides. It prefers deep, still, or slow moving water with low salinity levels and shallow margins or riffle zones. This species may disperse far from water (up to one mile) during and after significant rain events, and other habitats may include moist woodlands and grasslands from the lowlands through the foothills. It may make seasonal movements into riparian thickets and upland habitats for foraging, where it may seek small mammal burrows, leaf litter, or other moist areas of refuge for shelter or hibernation. The metamorphosis of this species is slower than most large frog species, requiring 11 to 20 weeks of permanent water for larval development. Most individuals have a dark mask bordered by a whitish jaw stripe; a reddish-orange venter; and coarse red, yellow, black, and/or gray mottling in the groin. This subspecies of the red-legged frog has experienced dramatic population declines since the late nineteenth century; some estimates claim a 75 percent rate

of disappearance from its former range. Threats to this species include habitat loss and predation by non-native species such as bullfrogs and non-native fishes. In addition, this species was historically exploited as a source of frog legs for human consumption.

3.5.2.6 Coast Horned Lizard (*Phrynosoma blainvillii*) CSC

The coast horned lizard is a CSC found along the Pacific coast of California on the western side of the Sierra Mountains to the Baja peninsular area in Mexico. This species is found in many habitats including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet amsl. It inhabits sandy washes or areas with loose, fine, sandy soils for burying and having low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native species of ants. Populations of this species have been reduced due to development, agriculture, and the introduction of Argentine ants that heavily compete with native ant species (Stebbins 2003). This species is approximately 2 to 4 inches in snout to vent length (adult) with numerous elongated and pointed scales (spines) on the dorsal side and two rows of enlarged scales along the flank. This species is brown, yellowish, reddish, or gray with several dark bands that cross the back with highlighted white areas along the rear of the bands (Sherbrooke 2003).

3.5.2.7 Cooper's Hawk (*Accipiter cooperii*) WL

The Cooper's hawk (nesting) is a CDFG WL species. This species occurs as a migrant and/or resident over most of the U.S. from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known to breed in suburban and urban areas with similar tree structure to native habitats. This medium-sized (14 to 20 inches) hawk is well-adapted for hunting birds as prey with its long tail and short, rounded wings; these features allow maneuverability in pursuit and on the ambush. It is similar in appearance to the sharp-shinned hawk (*Accipiter striatus*) but is distinguished by its larger size, more rounded tail, and darker crown. In addition to birds, it may also take amphibians, reptiles, and small mammals as supplemental prey items. Historic population losses resulted from the widespread use of DDT. Other threats include habitat loss and illegal hunting (Remsen 1978).

3.5.2.8 Desert Tortoise (*Gopherus agassizzi*) FT, ST

The desert tortoise is a federal- and state-listed threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo Counties, as well as most of San Bernardino, Riverside, and Imperial Counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. It is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark gray-brown. Besides range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are

declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

3.5.2.9 Ferruginous Hawk (*Buteo regalis*) WL

The ferruginous hawk (wintering) is a CDFG WL species. This species nests from the Canadian prairie provinces south to Oregon, Nevada, Arizona, and Oklahoma and winters in the southern half of its breeding range as well as the southwestern states from California to west Texas, then south into Mexico. It requires large, open areas of grassland, sparse shrub, or desert habitats interspersed with trees. It roosts in open areas, usually on lone trees, cliff ledge, or hill scarps. It winters in open terrain from grasslands to deserts where pocket gophers, ground squirrels, or rabbits are abundant, and it nests in either natural or human-made structures or on cliffs, buttes, cut banks, shrubs, or trees. In addition to pocket gophers, ground squirrels, and rabbits, it also eats prairie dogs, snakes, lizards, birds, large insects, and other rodents. The ferruginous hawk has distinct light and dark morphs. Light morphs are reddish or light brown above and whitish below, with rusty leg feathers and a pale tail. Dark morphs are uncommon in about less than 10 percent of the population and are a deep rufous to brown above and below with very bright white on the underside of the flight feathers and a narrow, white crescent on the underside of the wrist (Sibley 2003). This species is the largest of the buteos. The biggest threat to the ferruginous hawk is habitat loss, fragmentation, or degradation resulting from land use practices including conversion of native habitat to agriculture, urbanization, improper grazing practices, and conversion of shrubland to grassland (Collins and Reynolds 2005). Other threats include illegal shooting and collisions with cars.

3.5.2.10 Least Bell's Vireo (*Vireo bellii pusillus*) FE, SE

The least Bell's vireo was state-listed as an endangered subspecies of Bell's vireo by the CDFG in 1980 and federally listed as endangered by the U.S. Fish and Wildlife Service (USFWS) in 1986. Critical habitat for the least Bell's vireo was designated in 1994 (USFWS 1986). The least Bell's vireo subspecies is restricted to coastal and inland southern California and Baja California, Mexico. Its winter range extends along the Pacific coast from northern Mexico south to northern Nicaragua. The two major factors in the decline of least Bell's vireo populations are loss of habitat and nest parasitism by the brown headed-cowbird. Habitat loss, fragmentation, and degradation, especially along streams and rivers, due to development, agriculture, flood control projects, logging operations, and intensive cattle grazing practices, are the greatest threats to the continued existence of the least Bell's vireo. The least Bell's vireo is a small, gray songbird with pale yellow wash on its sides, two faint wing bars, and a faint eye ring. Preferred nesting habitat is low, dense, scrubby vegetation in early successional areas that are particularly dependent on riparian areas. Habitats may include willow woodlands and dense mule fat, scrub oak, coastal chaparral, and mesquite patches with dense early successional understories.

3.5.2.11 Le Conte's Thrasher (*Toxostoma lecontei*) CSC

The Le Conte's thrasher is a CSC in the San Joaquin Valley area. It occurs in deserts of the southwest U.S., southwestern Utah, southern Arizona, and northwestern Mexico (Weigand and Fitton 2008). Habitat includes open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; and in Joshua tree habitat with scattered shrubs. Le Conte's thrasher is a medium-sized songbird with a long dark tail, black decurved bill, and a plain grayish or sandy-colored body. It is distinguished from other thrashers by its unspotted breast, deep buff crissum, dark eye, and dark tail that contrasts sharply with its body. Le Conte's thrashers forage as generalists on bare ground and in vegetation litter under shrubs by

scratching the soil and overturning objects (Weigand and Fitton 2008). In some parts of its range, this thrasher has lost extensive habitat to development; irrigated lawns, groves, and fields have been created over valuable xeric habitat. Development, wild burros, off-road vehicle recreation, and invasive plant species threaten this species (Weigand and Fitton 2008).

3.5.2.12 Loggerhead Shrike (*Lanius ludovicianus*) CSC

The loggerhead shrike (nesting) is a CSC. Its range includes most of the U.S. from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua tree woodlands, and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other structures that serve as lookout posts for potential prey. They prefer dense, thorny shrubs and trees, brush piles, and tumbleweeds for nesting (Seattle Audubon 2008). Both adults gather nesting materials, including twigs, grass, hair, feathers, and green vegetation; but only females build the cup-shaped nests. They lay between 5 and 6 eggs, which are incubated for 15 to 17 days; and nestlings will leave the nest after 17 to 20 days but won't fly for another week (Seattle Audubon 2008). The loggerhead shrike is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. This bird has a habit of caching its food for later consumption by impaling its prey on thorns, sharp twigs, or barbed wire; hence the term "butcher bird." It is recognized by its black facial mask; overall gray, black, and white color pattern; relatively big head; and hook-tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988, Scott and Morrison 1990).

3.5.2.13 Merlin (*Falco columbarius*) WL

The merlin (wintering) is a CDFG WL species. This species breeds in the northern parts of the Northern Hemisphere and winters in northern South America and northern Africa. In California, it occurs as a winter resident. Breeding habitats include open woodlands, savannas, cliffs near grasslands, and tundra. Migratory habitats include foothills, marshes, and open coastlines. Wintering habitats include open grasslands, semi-open forests, and coastal areas (i.e. beach dunes, marshes, and tidal flats). The merlin is a small falcon, slightly larger than the American kestrel (*Falco sparverius*), and appears heavier and bulkier in flight than the kestrel. The adult male merlin has a gray-blue back and crown and rufous washes on the sides of the breast. The adult female may be up to 30 percent larger than the male and has a brown back. The merlin mainly feeds on other birds, especially migrating and over-wintering waterfowl and shorebirds. Threats to its populations include habitat loss, pesticide use, and heavy metal poisoning.

3.5.2.14 Mohave Ground Squirrel (*Spermophilus mohavensis*) ST

The Mohave ground squirrel is a state-listed threatened species. The Mohave ground squirrel is specific to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Johnson 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 1998). They inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils. They will also feed in annual grasslands (Johnson 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study showed that most of their diet includes seeds from winter fat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and saltbush (Laabs 1998). Mohave ground squirrels are active in spring and

early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (Johnson 1990).

3.5.2.15 Mountain Plover (*Charadrius montanus*) CSC, FPT

The mountain plover (wintering) is a CSC and a federally Proposed Threatened Species. This species breeds from the prairie and sagebrush country of north-central Montana, eastern Wyoming, and the area around southeastern Colorado. It winters from central California along the southern border states southward to northern Mexico (Udvardy 1977). Breeding habitats include semi-arid plains, grasslands, and plateaus. Common wintering habitats consist of dry, barren ground, smooth dirt fields, agricultural fields, and shortgrass prairies. This species tends to form small flocks in the winter. It is one of the few shorebird species that prefers habitats away from water. It is an insectivore that eats flies, beetles, grasshoppers, crickets, and other insects. The mountain plover is a relatively non-descript shorebird with a short tail, long legs, plain brown plumage above, and whiter plumage below. Males develop a black patch on the forehead during the breeding season. This species is sometimes confused with the American golden plover; but unlike that species, the belly and under-wing is a clean, white color and the legs are pale. Populations are in decline due to overgrazing practices and are also linked to declining prairie dog populations; mountain plovers often use prairie dog mounds as nest sites. The continued loss and alteration of habitats on breeding and wintering grounds are the primary threats to the mountain plover.

3.5.2.16 Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*) ST

The Nelson's antelope squirrel is a state threatened species. Nelson's antelope squirrels are restricted to the central and western areas of the San Joaquin Valley and inner coast ranges from 165 to 3,608 feet amsl. This species is found in alkali desert scrub and annual grasslands habitats on a variety of soil types including alluvial, loamy, sandy, gravely, or fine-textured sands. This species rarely digs its own burrows, preferring instead to use burrows made by other small mammals. Nelson's antelope squirrels are diurnally active, with most activity occurring in the early morning or late afternoon. This species is buff and yellow-brown above with a white stripe on each side and white under its tail. It can reach up to 10 inches in length. Nelson's ground squirrels feed primarily on grass and forb seeds, insects, and other green vegetation. The primary threats to this species include loss of habitat due to agriculture, urbanization, petroleum extraction, and rodent control poisons (Whitaker et al. 2008).

3.5.2.17 Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*) CSC

The pallid San Diego pocket mouse is a CSC. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican border. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus; and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or course gravel (Grinnell 1933, Miller and Stebbins 1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and pinyon-juniper woodlands. Pallid San Diego pocket mouse densities have been recorded as high as 39

per hectare (Lackey 1996). This species is similar in appearance to *C.f. fallax* but is lighter in overall coloration. Population declines may be due to urban and agricultural development.

3.5.2.18 San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE, CSC

The San Bernardino kangaroo rat is a federally endangered species and a CSC. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside Counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about 7 distinct populations. It prefers gravelly and sandy soils in alluvial habitats where it constructs underground burrows, and it rarely occurs in dense vegetation. This species is a small, nocturnally active rodent with pale yellow and dusky brown fur, and dark brown tail stripes, footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in is burrows for later consumption. It also consumes some green vegetation and insects when available. The primary threats to the continued existence of this species include habitat loss, degradation, and fragmentation due to developments related to housing, mining, and flood control (CDPR 1998).

3.5.2.19 Sierra Madre Yellow-Legged Frog (*Rana muscosa*) FE, SCE, CSC

The Sierra Madre yellow-legged frog is a federal-listed endangered, state candidate for listing as endangered, and a CSC. This species is found in the Sierra Nevadas from Fresno County to Kern County, and isolated populations are found in the San Gabriel, San Bernardino, and San Jacinto mountains of southern California, ranging in elevation from 4,500 to 11,980 feet amsl. This species was previously known as the mountain yellow-legged frog but is now considered a separate species from those found north of the Kings River north and middle forks, known as the Sierra Nevada yellow-legged frog (*Rana sierrae).* They range in size from 1.5 to 3.5 inches snout to vent length; and coloration is highly variable with olive, yellow, or brown with black or brown speckling above and pale yellow to orange below and on the hind legs (Calherps 2011b). They can be distinguished from *Rana sierra* by having slightly longer hind legs and a different mating call; both smell like garlic when handled (Calherps 2011b). Sierra Nevada populations occur in montane riparian, lodgepole pine, subalpine conifer, and wet meadows in association with lakes, ponds, and streams; southern California populations are found in lakes, ponds, and streams of montane conifer-hardwood, montane riparian, and ponderosa pine habitats. Adults feed on aquatic and terrestrial invertebrates; tadpoles feed on algae and diatoms. Sierra Madre yellow-legged frogs are closely associated with aquatic environments and can be found in vegetation or on perching rocks within a few feet of water, diving into the water when threatened. They lay their eggs in shallow water and attach them to gravel or rocks; tadpoles can take up to two over-wintering periods to complete their aquatic development. They are diurnally active and will hibernate over the winter under the ice, and southern populations may estivate. Threats to this species include bullfrogs, non-native trout, cattle grazing, mining, off-road vehicles, public dumping, chytrid fungus, fires, and excessive flooding (Calherps 2011b).

3.5.2.20 Short-Eared Owl (*Asio flammeus*) CSC

The short-eared owl (nesting) is a CSC. The range of this species is nearly worldwide; and in North America, it breeds in northern Canada and Alaska as well as in large portions of the western U.S. and the Great Lakes area. In California, this species is an uncommon winter migrant in the Central Valley, Sierra Nevada, and southern California; and it is known to breed from the San Francisco area north. Migrants arrive in California in September to October and leave in April. Habitats include grasslands, prairies,

dunes, tundra, meadows, irrigated fields, wetlands, and fresh and saltwater marshes. Within these open habitat types, it prefers denser areas where it can seek cover along the ground. Short-eared owls nest in depressions on dry ground where vegetation provides cover; nests are built with grasses, sticks, feathers, and forbs. Clutch size ranges from 3 to 14 eggs. Eggs are laid in April and incubated for 24 to 37 days, and the young fledge after 21 to 36 days. This owl is mostly active at night, but it may forage by day in late afternoons or on cloudy days. Although it feeds mostly on voles and other small mammals, it will also eat birds, amphibians, reptiles, and arthropods. It characteristically flies in an erratic and buoyant manner, low over open areas, before plunging feet first to catch prey. The short-eared owl is a relatively medium-sized owl with an overall tawny brown color and buffy wing patches. It has bold, yellow eyes that contrast sharply with its dark facial discs. Predators include golden eagles, great horned owls, snowy owls, and peregrine falcons. Small predatory mammals and large reptiles prey on eggs. Competitors include gulls, northern harriers, barn owls, and other owls. Overgrazing, destruction, and fragmentation of grasslands and wetland habitats, increased nest predation, and illegal shooting are all factors in the decline of this species.

3.5.2.21 Silvery Legless Lizard (*Anniella pulchra pulchra*) CSC

The silvery legless lizard is a CSC. Its range extends from the San Francisco Bay in California to northwestern Baja California, Mexico; and it can also be found on a few offshore islands of California. This species is found in chaparral, pine-oak woodlands, riparian woodlands, and also on beaches from sea level to around 5,100 feet. It occurs less commonly in desert scrub. Within these habitats, it prefers loose soils or sand for burrowing, moisture, warmth, and plant cover (Stebbins 2003). It forages in leaf litter during the day for insects such as termites, spiders, beetles, and larvae. On warm evenings, it may emerge to forage during the night. This legless lizard has a silver, gray, or beige dorsal coloration with a dark mid-dorsal line and is yellow below. The primary threats to the continued existence of this species include habitat loss due to agriculture and urban sprawl, overabundant non-native vegetation (i.e. iceplant on sand dunes), sand mining operations, off-road vehicle use, and other anthropogenic disturbances, including trampling and over-collecting for the pet trade.

3.5.2.22 Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) WL

The southern California rufous-crowned sparrow is a CDFG WL species. It is one of 17 recognized subspecies of the rufous–crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico; however, this sub-species is a resident of southwest California on the slopes of the Transverse and Coast ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martin Island. Habitats include broken sage scrub and chaparral; native grasslands with sparse shrubs; and rocky, brush-laden hillsides and canyons with open patches. It is a small non-descript sparrow with a rusty crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

3.5.2.23 Southern Grasshopper Mouse (*Onychomys torridus ramona*) CSC

The southern grasshopper mouse is a CSC. It occurs throughout desert and semi-arid habitats in the southwestern United States and much of Mexico, including western Nevada; the southern portions of California, Arizona, and New Mexico; northern Baja California; western Texas; and south to central Mexico (Hall 1981). The subspecies *ramona* is restricted to coastal southern California, with marginal

records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley (Hall 1981). The grasshopper mouse rangewide is often found in low, arid scrub and semi-scrub vegetation; but this subspecies is found in grasslands and sparse sage scrub habitats. It nests in burrows often dug by kangaroo rats and pocket gophers, but it may dig its own burrows in sandy or other friable substrates (Baily and Sperry 1929, Stapp 1997). Specific habitat requirements of the southern grasshopper mouse generally are unknown, but Stapp (1997) found that grasshopper mice use open areas and microhabitats dominated by gopher mounds and burrows. Stapp suggests that grasshopper mice selected these microhabitats because of greater prey availability (i.e., arthropods using burrows for refuge), greater mobility in open areas, and dust bathing sites. It prefers low to moderate shrub cover and is active year-round. Unlike most other mice, this species is primarily carnivorous. It feeds nocturnally on a variety of arthropods, including grasshoppers, beetles, and scorpions. It will also feed on frogs, salamanders, lizards, small mammals, and, occasionally, seeds. It has been known to kill species larger than itself, such as kangaroo rats. Prey items are stalked, rushed, seized, and typically killed with a bite in the head. Curiously, it emits a howl on occasion, perhaps in defense of its territory. Home ranges can be as large as four hectares; and, consistent with its carnivorous nature, population densities are normally low. It breeds from May to June; and after about 30 days, it gives birth to an average of 4 young. Predators include snakes, raptors, and a variety of mammals, including coyotes, owls, and foxes. Habitat loss and degradation are the primary threats to this species.

3.5.2.24 Swainson's Hawk (*Buteo swainsoni*) ST

The Swainson's hawk (nesting) is a state-listed threatened species. This species breeds from southwest Canada through the western U.S. into northern Mexico, with isolated breeding populations also observed in northern Illinois and the Sacramento and San Joaquin valleys of California. This species winters to South America. The Swainson's hawk forages in open stands of grass-dominated vegetation; sparse shrublands; and small, open woodlands. It typically nests in scattered trees within these grassland, shrubland, or agricultural landscapes. The Swainson's hawk feeds largely on insects, and thus is affected by pesticide use, particularly DDT and organophosphate pesticides currently used in South America (England et al. 1997).

3.5.2.25 Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*) CSC

The Tehachapi pocket mouse is a CSC. This species occurs in the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos, and east to the lower San Gabriel Mountains to Lake Elizabeth (Laabs 1998). The Tehachapi pocket mouse is one of two subspecies of *Perognathus alticola*; the second subspecies, *P. a. alticola,* occurs in the San Bernardino Mountains and has not been observed in over 50 years. Male Tehachapi pocket mice can reach up to 6.5 inches in length; while females are significantly smaller, reaching only 5.9 inches. Both sexes are yellowish-brown with a heavy overlay of black dorsally and white ventrally; facial markings are fainter, and the inside of the ears are white; its tail is bicolored and is slightly longer than head to body length (Laabs 1998). This species occurs in native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland, oak savanna, chaparral, coastal sage scrub, fallow grain fields, and rangeland at elevations ranging from 3,500 to 6,000 feet amsl, preferring loose, sandy soils for burrowing (Laabs 1998). They are nocturnal, feeding on seeds of grasses and forbs but will eat green vegetation and insects. Threats to this species include surface disturbance like mineral extraction and conversion of habitat to urban development.

3.5.2.26 Tricolored Blackbird (*Agelaius tricolor*) CSC

The tricolored blackbird (nesting colony) is a CSC that occurs primarily in California, with smaller populations in northern Mexico. This species is locally common in parts of the Central Valley and along the coast in Sonoma County but is not found commonly over most parts of its range. This species breeds near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds. Breeding season usually takes place from mid-April into late July, but Orians (1960) also reported active breeding in October and November in Sacramento Valley. Over the past few decades, numbers have been declining in California (DeHaven 1975). Reasons for the decline include the conversion of marshland habitats and agricultural poisoning.

3.5.2.27 Two-Striped Garter Snake (*Thamnophis hammondii*) CSC

The two-striped garter snake is a CSC. It is found in disjunct populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. The historic range of this species has been lost to housing, urban development, and other human impacts by an estimated 40 percent (Stebbins 2003).

3.5.2.28 Western Pond Turtle (*Actinemys marmorata pallida*) CSC

The western pond turtle is a CSC. This species occurs along the coast of North America from Baja California up to San Francisco Bay and occurs from sea level to 5,900 feet in elevation (Calherps 2011a). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (Calherps 2011a). The western pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Basking sites are necessary for thermoregulation. Reptile body temperature is dependent upon the environment the air, the substratum, and solar radiation. Basking is absorption of the sun's radiation and/or through the substratum. This species occurs in a variety of habitat types including woodland, grassland, and open forest (Calherps 2011a). Although this species is considered aquatic, this species usually leaves the aquatic site to reproduce, to estivate, and to overwinter. Pond turtles hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (Calherps 2011a). The species is highly sensitive to disturbance and will quickly slide into water when they feel threatened. Pond turtles are diurnal and are most active from February to November; however, if water temperatures remain warm, this species may be active year long (Bury 2008). Mating takes place in April or May, and females will deposit eggs in a vegetated upland location that may be a considerable distance (400 m or more) from the aquatic habitat to the nest. Eggs are generally deposited in grassy, upland areas adjacent to streams during May and June, although some individuals may deposit eggs as early as April

and as late as August. Hatchlings will stay at the nest location and will emerge in the early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and occasionally frogs and fish (Calherps 2011a). Habitat destruction is the primary threat to this species. Dams also cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury 2008).

3.5.2.29 Western Mastiff Bat (*Eumops perotis*) CSC

The western mastiff bat is listed as a CSC. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown (TPWD 2008).

3.5.2.30 Western Snowy Plover (*Charadruis alexandrinus nivosus*) FT, CSC

The western snowy plover (nesting, coastal populations) is federally listed as threatened and is also a CSC. The Pacific coastal population breeds primarily on beaches from southern Washington to southern Baja California, Mexico. Interior populations can be found in the Central Valley of California, Oregon, Nevada, and other western states. The western snowy plover nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitats, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds, and infrequently on bluff-backed beaches (USFWS 2001). This small plover has a pale tan back, rump, and tail; white underparts; and dark patches on the sides of its neck that reach around onto the top of its chest. Habitat alteration and recreational beach use have led to a serious decline in nesting habitat and populations over the last 40 years (USFWS 2001, Page et al. 1995).

3.5.2.31 White-Faced Ibis (*Plegadis chihi*) WL

The white-faced ibis (nesting colony) is a CDFG WL species. It breeds across the western United States northward to Montana, eastward to western Louisiana, and southward to South America. It winters from southern California and Louisiana southward. The white-faced ibis usually nests in low trees and shrubs over shallow water. It inhabits primarily freshwater wetlands, especially cattail and bulrush marshes. It feeds in flooded hay meadows, agricultural fields, and estuarine wetlands. The white-faced ibis is a dark bronze-colored wader with a long, decurved bill. During the breeding season, adults have distinctive white feathers along the edges of their bare facial skin. Erosion and flood-control measures and irrigation projects have eliminated or degraded traditional nesting colony sites, leading to nest abandonment. Other losses of wetland habitat can also negatively affect populations (Ryder and Manry 1994).

3.6. SPECIES OBSERVED

The following plant species were observed while habitat assessments were conducted on the Project site: pineapple weed (*Chamomilla suaveolens*), rubber rabbitbrush (*Chrysothamnus nauseosus*), coast

goldfields (*Lasthenia californica*), cudweed aster (*Lessingia filaginifolia*), wreathplant (*Stephanomeria* sp.), silver puff (*Uropappus lindleyi*), common fiddleneck (*Amsinckia menziesii*), Arizona popcorn flower (*Plagiobothrys arizonicus*), shortpod mustard (*Hirschfeldia incana*), calabazilla (*Cucurbita foetidissima*), rattlesnake weed, miniature lupine (*Lupinus bicolor*), red-stemmed filaree (*Erodium cicutarium*), vinegar weed (*Trichostema lanceolatum*), desert mallow (*Sphaeralcea ambigua*), annual buckwheat (*Eriogonum* sp.), red willow (*Salix laevigata*), Siberian elm (*Ulmus pumila*), foxtail chess, cheat grass, big squirreltail (*Elymus multisetus*), purple needlegrass (*Nassella pulchra*), Mediterranean schismus and fescue.

The following wildlife species were observed while habitat assessments were conducted on the Project site: Gopher (mounds; *Thomomys* sp.), mule deer (scat; *Odocoileus* sp.), common raven (nest; *Corvus corax*), black-tailed jackrabbit (*Lepus californicus*), domestic horse (scat; *Equus* sp.), domestic sheep (scat; *Ovis aries*), coyote (scat; *Canis latrans*) and vole (burrows; *Microtus* sp.).

The following 19 special status plant species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- alkali mariposa lily
- Barstow woolly sunflower
- Clokey's cryptantha
- Davidson's bush mallow
- Darwin rock cress
- desert cymopterus
- Horn's milk-vetch
- Lancaster milk-vetch
- pale-yellow layia Parish's popcorn-flower
- Parry's spineflower
- Peirson's morning-glory
- recurved larkspur
- round-leaved filaree
- sagebrush loeflingia
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa lily
- white pygmy-poppy

The following 28 special status wildlife species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- American badger
- arroyo toad
- Bell's sage sparrow
- California red-legged frog
- Cooper's hawk
- desert tortoise
- least Bell's vireo
- Le Conte's thrasher
- loggerhead shrike

- merlin
- Mohave ground squirrel
- mountain plover
- Nelson's antelope squirrel
- pallid San Diego pocket mouse
- San Bernardino kangaroo rat
- Sierra Madre yellow-legged frog
- short-eared owl
- silvery legless lizard
- southern California rufous-crowned sparrow
- southern grasshopper mouse
- Swainson's hawk
- Tehachapi pocket mouse
- tricolored blackbird
- two-striped garter snake
- western pond turtle
- western mastiff bat
- western snowy plover
- white-faced ibis

The following special status wildlife species has a **low** potential to occur on the Project site due to the presence of low quality suitable habitat on the Project site, the quality of adjacent habitat, and historical records of these species occurring within five miles of the Project site:

- Burrowing owl. The Project site consists primarily of non-native annual grasslands and several small mammal burrows were observed onsite which could act as a prey source for the owls In addition, burrowing owls have been recorded to occur within five miles of the Project site. However, no burrows large enough to provide suitable habitat were observed onsite. Therefore, there is a low potential for the burrowing owl to occur on the Project site.

The following two special status wildlife species have a **moderate** potential to occur on the Project site due to the presence of low quality suitable habitat and historical records of these species occurring within three miles of the Project site:

- Coast horned lizard. The Project site consists of a swale, rubber rabbitbrush scrub and non-native grasslands that may provide areas for basking and cover for the coast horned lizard. Additionally, coast horned lizards have been recorded to occur within three miles of the Project site. Therefore, the coast horned lizard has a moderate potential for occurrence on the project site.

- Ferruginous hawk. The ferruginous hawk is present in southern California during the winter season. This species winters in open terrain from grasslands to deserts where small mammals are abundant. Several small mammal burrows were observed on the Project site. In addition, ferruginous hawks have been recorded to occur within three miles of the site; therefore, the ferruginous hawk has a moderate potential for occurrence (foraging) on the Project site.

SECTION 4.0 – CONCLUSIONS

4.1. SPECIAL STATUS SPECIES

The Project site is an old agricultural site. All Of the 19 special status plant species known to occur within the vicinity of the Project site are considered absent due to lack of suitable habitat. No further surveys for sensitive plant species are recommended at this time.

Of the 31 special status wildlife species known to occur within the vicinity of the Project site, 28 are considered absent due to lack of suitable habitat. No further surveys for the special status wildlife species are recommended at this time. The remaining special status wildlife species have a low to moderate potential to occur on the Project site.

4.1.1 Burrowing owl

The burrowing owl has a low potential to occur on the Project site. Although burrowing owls are not federal- and/or state-listed as endangered or threatened, this species is listed as a CSC. While the majority of CSC listed species do not typically require focused surveys, specific focused survey protocol for the burrowing owl has been developed by the California Burrowing Owl Consortium and adopted by the CDFG.

4.1.2 Coast Horned Lizard

There is a moderate potential for coast horned lizard to occur on the Project site. Although this species is not federal- and/or state-listed as endangered or threatened, it is listed as a CSC. No further surveys are recommended for this species at this time.

4.1.3 Ferruginous Hawk

The ferruginous hawk has a moderate potential to occur on the Project site; however, this species is not federal- and/or state-listed threatened or endangered. No further surveys are recommended for this species at this time.

4.2. JURISDICTIONAL FEATURES

A formal delineation of the Project site was not conducted. Based on the observation of the biologists, the natural swales located onsite do not support riparian vegetation or riparian habitats. However, these features may fall subject to state jurisdiction.

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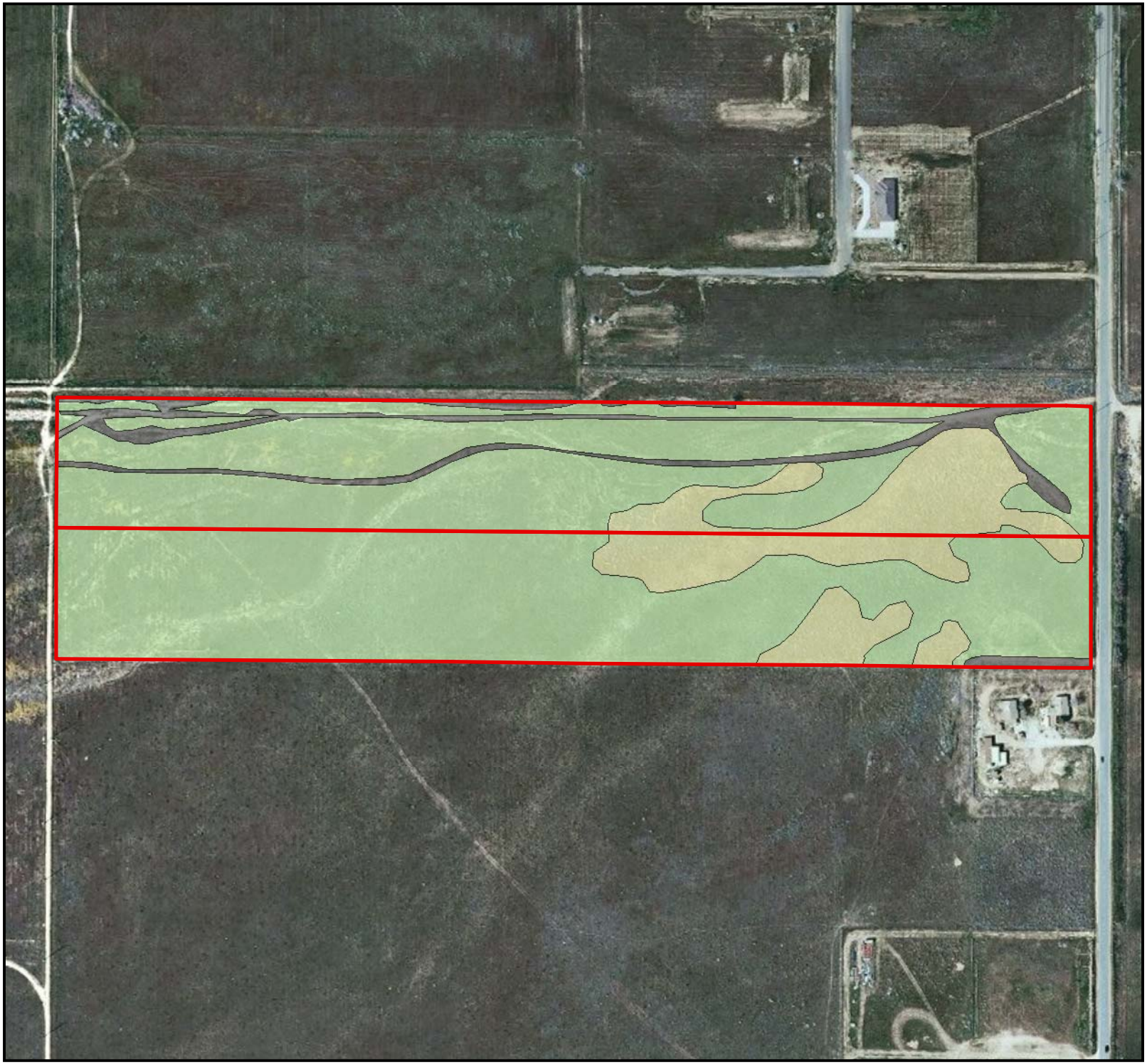
APPENDIX A – VEGETATION COMMUNITIES MAP



Vegetation Map
Antelope Solar Greenworks

Legend

- Project Site
- Access Road
- Non-Native Annual Grassland
- Rubber Rabbitbrush Scrub

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APPENDIX B – SITE PHOTOGRAPHS

APPENDIX B – SITE PHOTOGRAPHS

	Photo 1-Antelope Solar Greenworks. Photo is taken looking south across the Project site from the northeast corner of the site.
	Photo 2- Antelope Solar Greenworks. Photo is taken looking southwest across the Project site from the northeastern corner of the site.
	Photo 3- Antelope Solar Greenworks. Photo is taken looking east across the Project site from the northwest end of the site.

BIOLOGICAL TECHNICAL REPORT FOR THE ANTELOPE VALLEY GREENWORKS SOLAR PROJECT SITE (CUP 10) CITY OF LANCASTER LOS ANGELES COUNTY, CALIFORNIA

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SECTION 1.0 – INTRODUCTION

Silverado Power, LLC (Silverado Power) is an independent solar power producer and developer of distributed solar power assets for utilities that are for both municipally and investor owned. Silverado Power strives to be a leader in wholesale solar power generation and the process of developing, building, and operating solar generation facilities (SGFs).

Chambers Group, Inc. (Chambers Group) was retained by Tetratech (for Silverado Power) to conduct a literature review and biological technical report (BTR) on the proposed Antelope Valley Greenworks Solar project site located in Los Angeles County. The purpose of this document is to report the results of the reconnaissance-level biological survey.

1.1. PROJECT DESCRIPTION

Silverado Power plans to develop the Antelope Valley Greenworks Solar SGF (the Project). The Project facilities would operate year-round, producing electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the fourth quarter of 2014.

The proposed Project would have a generating capacity of 3 megawatts alternating current (MW-AC). The Project will employ photovoltaic (PV) modules to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system.

The Project would meet the increasing demand for electricity generated from clean, renewable technology. The recent legislation enacted in California recognizes the multiple benefits associated with the development of renewable energy resources. These benefits include a reduced reliance on foreign sources of fuel, promotion of national security, diversification of energy portfolios, reductions in greenhouse gas emissions, and the creation of “green” jobs within the state of California.

1.2. PROJECT LOCATION

The Project (APN: 3218-002-007) is located in the Antelope Valley area in unincorporated northeastern Los Angeles County, encompassing approximately 20 acres of previously disturbed, fallow agricultural land. Antelope Valley Greenworks Solar is located within the city of Lancaster, CA, on the north side of West Avenue J and approximately .13 miles west of 90th Street West, approximately .35 miles northeast of the Antelope Valley electrical substation. The project would include the development of approximately 20 acres (100 percent) of the designated location. The site is located within the *Del Sur* California USGS 7.5 minute quadrangle. Fallow agricultural fields surround the Project site. Project Regional and Vicinity maps are located in Figure 1 and Figure 2.

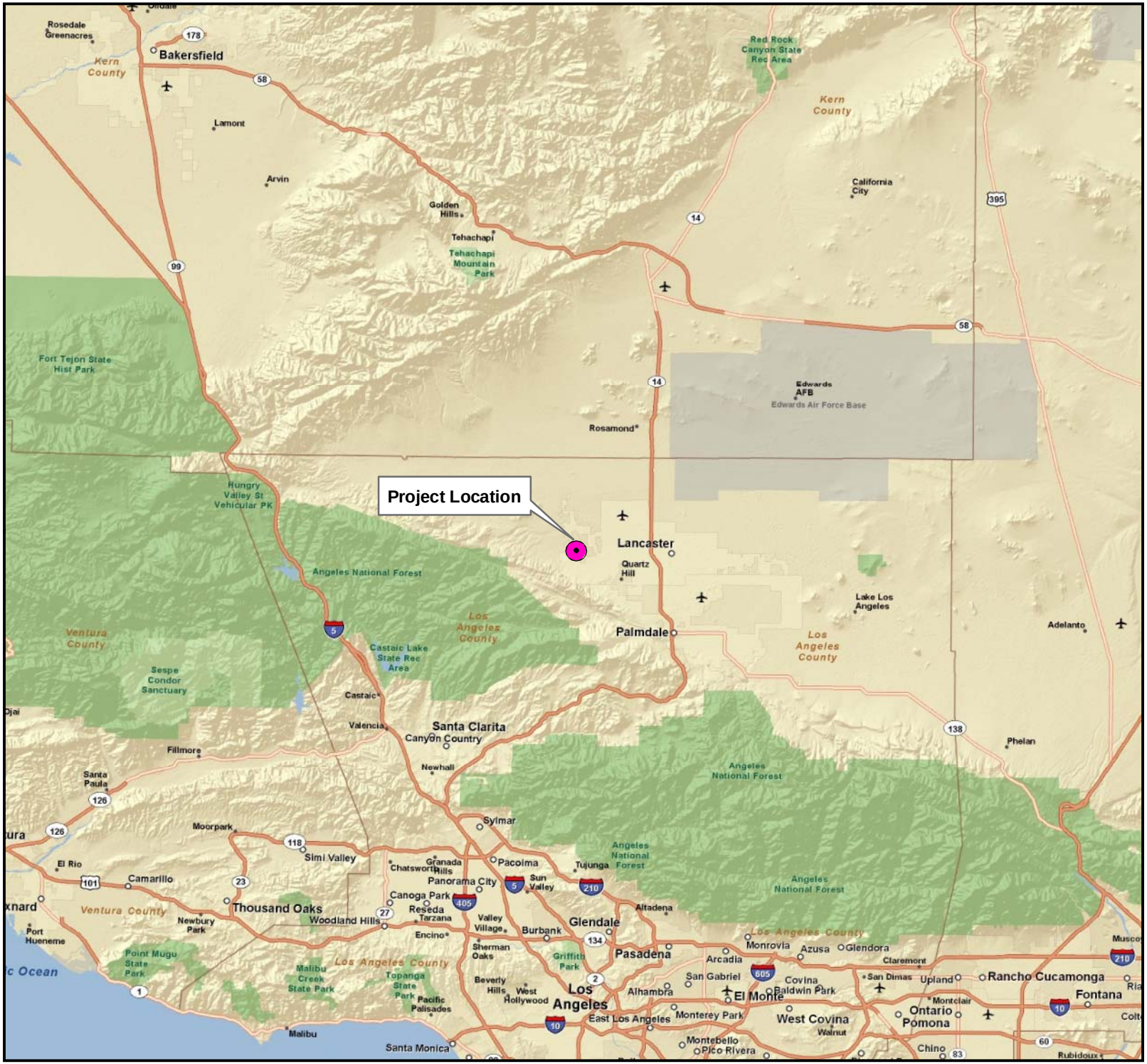

Figure 1
Regional Map
Antelope Valley Greenworks

Legend

Project Location

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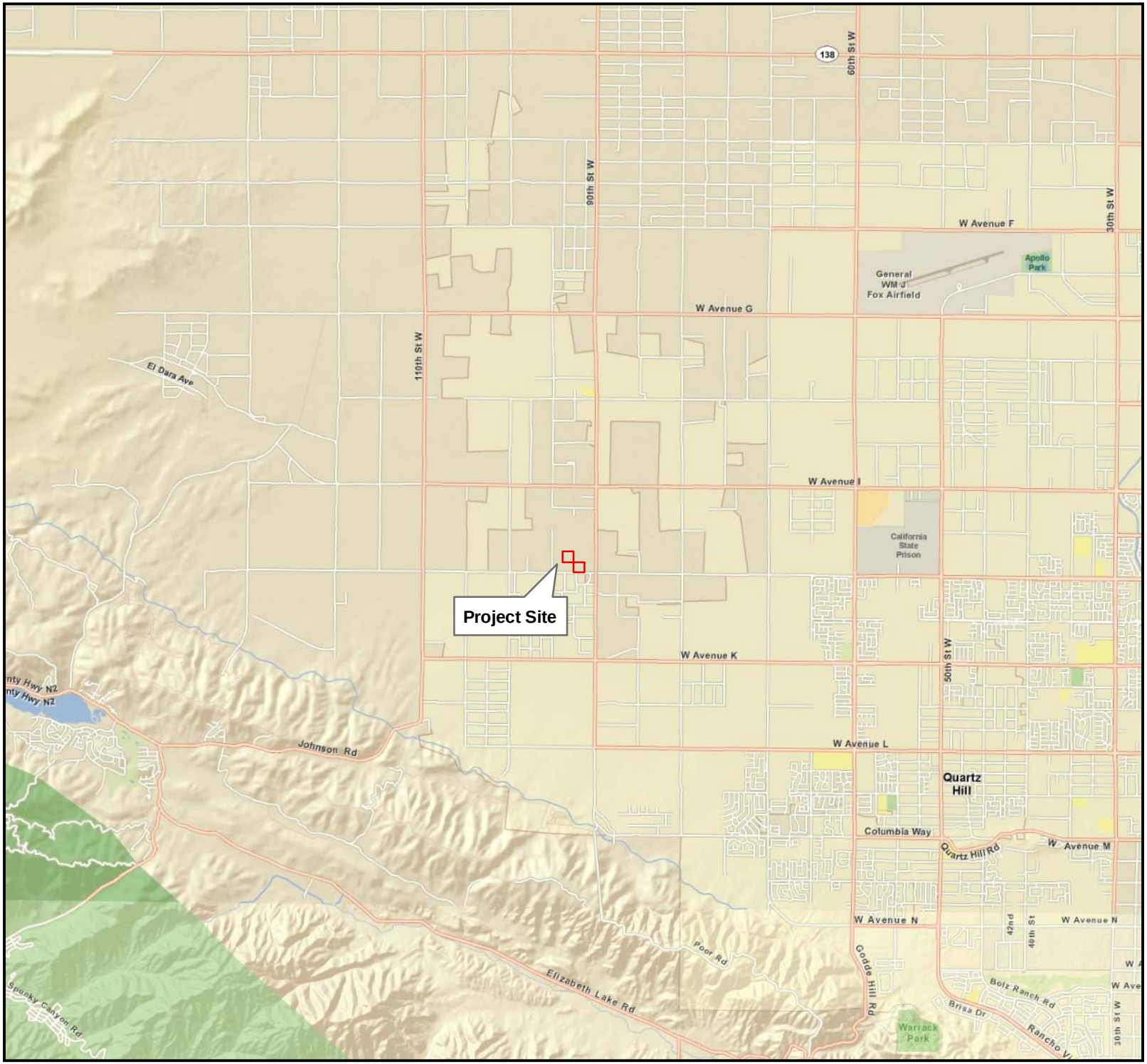
Figure 2
Vicinity Map
Antelope Valley Greenworks



Legend

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SECTION 2.0 – METHODS

2.1. LITERATURE REVIEW

Prior to conducting the field surveys, existing documentation relevant to the Project site was reviewed. The most recent records of the California Department of Fish and Game California Natural Diversity Database (CNDDB 2011) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2011) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Fairmont Butte, Little Butte, Rosamond, Rosamond Lake, Redman, Alpine Butte, Lancaster East, Lancaster West, Del Sur, Lake Hughes, Burnt Peak, Little Rock, Lovejoy Buttes, El Mirage*, California USGS 7.5 minute quadrangles). The database contains records of reported occurrences of federal- or state-listed as endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Special Concern (CSC), or otherwise sensitive species or habitats that may occur within or in the vicinity of the Project site.

2.2. BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

The field survey was conducted on the Project site in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support special status wildlife species and to identify any potential jurisdictional waters of the United States. Chambers Group biologists Linette Lina, Maya Mazon, Heather Clayton, Ana Hernandez, Rebecca Alvidrez, Tracy Valentovich, Kun Liu and Nicole Cervin conducted the general reconnaissance survey on May 17, 2011. Weather conditions during the survey included temperatures ranging from approximately 63 to 65.8 degrees Fahrenheit with 80 percent cloud cover and no precipitation. During the survey the biologists walked the Project site documenting the native vegetation communities and took notes regarding the potential for special status species and jurisdictional waters to occur onsite. Photographs of the Project site were also taken to document existing conditions.

2.3. VEGETATION

All plant species and soil types observed onsite were noted. Plant communities on the Project site were identified, qualitatively described, and mapped onto an aerial photograph. Plant communities were determined in accordance with the categories set forth in Holland (1986) or Gray and Bramlet (1992). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California* (Hickman 1993).

2.4. WILDLIFE

All wildlife and wildlife sign observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support state- and/or federal-listed or proposed listed species. Notes were made on the general habitat types, species observed, and the conditions of the site. Photographs of the site are provided in Appendix B.

SECTION 3.0 – RESULTS

3.1. LITERATURE REVIEW

According to the literature review, 19 special status plant and 31 special status wildlife species were documented to occur within the vicinity of the Project site. This list included ten wildlife species that are federal- and/or state-listed endangered or threatened. Of the 19 special status plant species listed in the literature review, none are federal- and/or state-listed endangered or threatened.

3.2. VEGETATION COMMUNITIES

The Project site is classified as Non-Native Annual Grassland and Rubber Rabbitbrush Scrub (See Appendix A).

3.2.1 Rubber Rabbitbrush Scrub

Rubber Rabbitbrush Scrub is dominated by rubber rabbitbrush (*Chrysothamnus nauseosus*), usually approximately 3 feet in height with regularly-spaced gray-green shrubs that bloom in late summer or early fall (Holland 1986). Rabbitbrush Scrub is a disturbance-maintained community in which fire, grazing, or soil tilling perpetuate the same species within the herb and shrub layers and the disturbance occurs with regular (less than 10 years) frequency.

Rubber Rabbitbrush Scrub is present within the Project site. Plant species found within this site typical of this vegetation community include: rubber rabbitbush, cheatgrass (*Bromus tectorum*) and cudweed aster (*Lessingia filaginifolia*).

3.2.2 Non-native Annual Grassland

Non-Native Grassland consists of a dense to sparse cover of annual grasses such as oats (*Avena* sp.), bromes (*Bromus* sp.), and ryegrass (*Lolium* sp.) with flowering culms up to 3 feet in height. This community is often associated with numerous species of showy-flowered, native annual forbs "wildflowers" such as California poppy (*Eschscholzia californica*), lupines (*Lupinus* sp.), and goldfields (*Lasthenia* sp.) especially in years of favorable rainfall (Holland 1986). Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from winter through spring. Typically plants are dead through the summer-fall dry season persisting as seeds. Non-native grasslands can be found on fine-textured usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall.

Non-native grasslands are present within the Project site. Plant species found on the Project site typical of this vegetation community include: cheatgrass, redstem filaree (*Erodium cicutarium*) and foxtail chess (*Bromus madritensis* ssp. *rubens*).

3.3. JURISDICTIONAL FEATURES

Chambers Group conducted a preliminary assessment for jurisdictional features found on the Project site. No drainage features were observed during the survey. A formal delineation was not conducted.

3.4. SPECIAL STATUS SPECIES

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Project site.

CNPS

List 1A	=	Plants presumed extinct in California.
List 1B	=	Plants rare and endangered in California and throughout their range.
List 2	=	Plants rare, threatened, or endangered in California but more common elsewhere in their range.
List 3	=	Plants about which we need more information; a review list.
List 4	=	Plants of limited distribution; a watch list.

CNPS Extensions

0.1	=	Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2	=	Fairly endangered in California (20 to 80 percent occurrences threatened).
0.3	=	Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE	=	Federally listed; Endangered
FT	=	Federally listed; Threatened
FC	=	Federal Candidate for listing
FPT	=	Federal Proposed listing as Threatened

State

ST	=	State listed; Threatened
SE	=	State listed; Endangered
RARE	=	State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC	=	State Species of Special Concern
WL	=	California Department of Fish and Game (CDFG) Watch List

3.5. SENSITIVE SPECIES DESCRIPTIONS

3.5.1 Sensitive Plants in the Los Angeles County Area

3.5.1.1 Alkali Mariposa Lily (*Calochortus striatus*) CNPS List 1B.1

Alkali mariposa lily is a CNPS List 1B.2 species. This perennial, bulbiferous herb flowers between April and June. This species occurs on alkaline and mesic soils within Chaparral, Chenopod Scrub, Mojavean Desert Scrub, and Meadows and Seeps habitats at elevations between 230 and 5,233 feet above mean sea level (amsl). Known range for this species includes: Kern, Los Angeles, San Bernardino, and Tulare Counties. Threats to alkali mariposa lily include groundwater pumping urbanization, grazing, trampling,

road construction, water diversion resulting in lowering the water table, and possibly horticultural collecting.

3.5.1.2 Barstow Woolly Sunflower (*Eriophyllum mohavense*) CNPS List 1B.2

Barstow woolly sunflower is a CNPS List 1B.2 species. This annual herb flowers between March and May. Barstow woolly sunflower occurs within Chenopod Scrub, Mojavean Desert Scrub, and Playas habitats at elevations between 1,640 and 3,150 feet amsl. Known range for this species includes: Fresno, Kern, Los Angeles, and San Bernardino Counties. Threats to this species include vehicles, grazing, energy development, and road improvements.

3.5.1.3 Clokey's Cryptantha (*Cryptantha clokeyi*) CNPS List 1B.2

Clokey's cryptantha is a CNPS List 1B.2 species. This annual herb flowers in April. Clokey's cryptantha occurs within Mojavean Desert Scrub habitat at elevations between 2,379 and 4,478 feet amsl. Known range for this species includes: Inyo, Los Angeles, and San Bernardino Counties. Major threats to this species include military activities and alteration of fire regimes.

3.5.1.4 Darwin Rock Cress (*Arabis pulchra* var. *munciensis*) CNPS List 2.3

Darwin rock cress is a CNPS List 2.3 species. This perennial herb flowers in April. Darwin rock cress occurs in carbonate soils of Chenopod Scrub and Mojavean Desert Scrub habitats at elevations between 3,608 and 6,807 feet amsl. Known range includes Inyo, Los Angeles, and San Bernardino Counties.

3.5.1.5 Davidson's Bush Mallow (*Malacothamnus davidsonii*) CNPS List 1B.2

Davidson's bush mallow is a CNPS List 1B.2 species. This perennial deciduous shrub flowers between June and January. Davidson's bush mallow occurs within chaparral, Coastal Scrub, Cismontane Woodland, and riparian woodland habitats at elevations between 607 and 2,805 feet amsl. Known ranges include: Los Angeles, Monterey, Santa Clara, San Mateo, and San Luis Obispo Counties. Urbanization, maintenance activities, and erosion are the main threats to this species.

3.5.1.6 Desert Cymopterus (*Cymopterus deserticola*) CNPS List 1B.1

Desert cymopterus is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs on sandy soils within Mojavean Desert Scrub and Joshua Tree Woodland habitats at elevations between 2,066 and 4,921 feet amsl. Known range for this species includes: Kern, Los Angeles, and San Bernardino Counties. Threats to desert cymopterus include military activities, sheep grazing, vehicles, utility construction, and urbanization.

3.5.1.7 Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*) CNPS List 1B.1

Horn's milk-vetch is a CNPS List 1B.1 species. This annual herb flowers between May and October. This species occurs along lake margins in poorly drained, alkaline soils of meadows and seeps and Playas habitats at elevations between 195 to 2,790 feet amsl. Known ranges include Inyo, Kern, and San Bernardino Counties and Nevada. Poisonous to sheep, it was subject to eradication by farmers in the early 1900s; current threats to Horn's milk-vetch are habitat alterations.

3.5.1.8 Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*) CNPS List 1B.1

Lancaster milk-vetch is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs within Chenopod Scrub habitat. Known ranges include Kern, Los Angeles, and San Bernardino Counties and Nevada. Limited range, including areas only near Lancaster and Edwards Air Force Base, is the major threat to Lancaster milk-vetch.

3.5.1.9 Pale-Yellow Layia (*Layia heterotricha*) CNPS List 1B.1

Pale-yellow layia is a CNPS List 1B.1 species. This annual herb flowers between March and June. This species occurs in alkaline or clay soils within Cismontane Woodland, Coastal Scrub, Pinyon-Juniper Woodland, and Valley and Foothill Grassland habitats at elevations between 984 and 5,594 feet amsl. Known ranges include Fresno, Kern, Kings, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, San Benito, and Ventura Counties. Threats to pale-yellow layia include vehicle use, competition from non-native plants, agricultural conversion, and grazing.

3.5.1.10 Parish's Popcorn-Flower (*Plagiobothrys parishii*) CNPS List 1B.1

Parish's popcorn-flower is a CNPS List 1B.1 species. This annual herb flowers between March and November. This species occurs on alkaline and mesic soils within Great Basin Scrub and Joshua tree Woodland habitats at elevations between 2,460 and 4,595 feet amsl. Known range for this species includes: Inyo, Los Angeles, Mono, and San Bernardino Counties. Threats to Parish's popcorn-flower include groundwater pumping.

3.5.1.11 Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) CNPS List 1B.1

Parry's spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and June. This species occurs in sandy or rocky soils and openings within Cismontane Woodland, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 902 and 4,002 feet amsl. Known ranges include Los Angeles, Riverside and San Bernardino Counties. Threats to this species include development, altered flood regime, mining, vehicles, and competition from non-native plants.

3.5.1.12 Peirson's Morning-Glory (*Calystegia peirsonii*) CNPS List 4.2

Peirson's morning-glory is a CNPS List 4.2 species. This perennial, rhizomatous herb flowers between April and June. This species occurs within chaparral, Chenopod Scrub, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, and Valley and Foothill Grassland habitats at elevations between 98 and 5,085 feet amsl. Known ranges include Los Angeles County. Major threats to Peirson's morning-glory include grazing and development; possible threats include power line construction.

3.5.1.13 Recurved Larkspur (*Delphinium recurvatum*) CNPS List 1B.2

Recurved larkspur is a CNPS List 1B.2 species. This perennial herb flowers between March and June. This species occurs on alkaline soils within Chenopod Scrub, Cismontane Woodland, and Valley and Foothill Grassland habitats at elevations between 10 and 2,460 feet amsl. Known ranges of the recurved larkspur include: Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solana, Sutter, and Tulare Counties. Conversion of habitat, grazing, and trampling are threats to the recurved larkspur.

3.5.1.14 Round-Leaved Filaree (*California macrophylla*) CNPS List 1B.1

Round-leaved filaree is a CNPS List 1B.1 species. This annual herb flowers between March and May. Round-leaved filaree occurs in clay soils within Cismontane Woodland and Valley and Foothill Grassland habitats at elevations between 50 and 3,937 feet amsl. Known ranges include Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, Santa Barbara, San Benito, Santa Clara, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Ventura, and Yolo Counties and Santa Cruz Island. Threats to this species include urbanization, feral pigs, habitat alteration, pipeline construction, urbanization and competition from non-native plants.

3.5.1.15 Sagebrush Loeflingia (*Loeflingia squarrosa*) CNPS List 2.2

Sagebrush loeflingia is a CNPS List 2.2 species. This annual herb flowers between April and May. This species occurs in sandy soils of Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub habitats at elevations between 2,295 and 5,300 feet amsl. Known range includes Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino Counties and Nevada, Oregon, and Wyoming. Possible threats to sagebrush loeflingia include off-highway vehicles and grazing.

3.5.1.16 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*) CNPS List 1B.1

San Fernando Valley spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and July. This species occurs in sandy soils of Coastal Scrub and Valley and Foothill Grassland habitats at elevations between 492 and 4,002 feet amsl. Known range includes Los Angeles, Orange, and Ventura Counties. Possible threats to this species include competition from non-native plants and development.

3.5.1.17 Short-Joint Beavertail (*Opuntia basilaris brachyclada*) CNPS List 1B.2

Short-joint beavertail is a CNPS List 1B.2 species. This perennial stem succulent flowers between April and June. This species occurs within chaparral, Mojavean Desert Scrub, Joshua Tree Woodland, and Pinyon-Juniper Woodland habitats at elevations between 394 and 5,905 feet amsl. Known range for this species includes Los Angeles and San Bernardino Counties. Major threats to short-joint beavertail include vehicles, grazing, urbanization, mining, and horticultural collecting; possible threats include power line construction.

3.5.1.18 Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*) CNPS List 1B.1

Slender mariposa lily is a CNPS List 1B.1 species. This perennial, bulbiferous herb flowers between March and June. This species occurs within chaparral, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 1,050 and 3,280 feet amsl. Known ranges include Los Angeles and Ventura Counties. Threats to slender mariposa lily include vehicles, development, mining, and competition from non-native plants.

3.5.1.19 White Pygmy-Poppy (*Canbya candida*) CNPS List 4.2

White pygmy-poppy is a CNPS List 4.2 species. This annual herb flowers between March and June. This species occurs on gravelly, sandy, or granitic soils within Joshua Tree Woodland, Mojave Desert Scrub, and Pinyon-Juniper Woodland habitats at elevations between 600 and 4,800 feet amsl. Known ranges

include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino Counties. This species is threatened by development, off-highway vehicles, grazing, mining, and competition from non-native plants.

3.5.2 Sensitive Wildlife Species in the Los Angeles County Area

3.5.2.1 American Badger (*Taxidea taxus*) CSC

The American badger is a California Species of Concern (CSC). This carnivorous species ranges over most of the western U.S and upper midwestern U.S. south into central Mexico. In California, the badger may occupy a variety of habitats, especially grasslands, savannas, montane meadows, sparse scrublands, and deserts. It prefers friable soils for burrowing, and relatively open, uncultivated ground. Prey items include gophers, ground squirrels, marmots, kangaroo rats, other rodents, and the occasional reptile or amphibian. The American badger may weigh up to 25 pounds and is easily recognized by its overall yellowish gray coloration, the white stripe on top of its head, white cheeks, and black feet with noticeably long front claws. It is a heavy-bodied animal with short legs and a characteristic pigeon-toed gait. It is chiefly nocturnal, but it is often seen by day as well. It gives birth to two to five young anywhere from February to May, depending on its altitude and latitude. Threats to this species include habitat loss to agriculture, housing, and other land conversions, and illegal hunting.

3.5.2.2 Arroyo Toad (*Anaxyrus californicus*) FE, CSC

The arroyo toad is a federally endangered species and a CSC. The range of this species is within coastal California from Monterey County into northwestern Baja California, Mexico. It is found in washes, streams, and arroyos; and preferred habitats include sandy banks within riparian woodlands such as willow, cottonwood, sycamore, mulefat, and/or coast live oak. It breeds in shallow, sandy/gravelly riverine pools with low silt content and normally disperses onto adjacent uplands after breeding. Individuals have been observed up to 2 kilometers (km) from the streams in which they breed, but most often they are within 0.5 km of those streams (USFWS 1992a). During the breeding season, males call nocturnally from open areas on banks at the edges of streams. Males typically precede females at breeding sites. Females lay their eggs among gravel, leaves, or sticks, on mud or clean sand within low to moderately flowing sections of streams in areas with little or no emergent vegetation and little woody marginal growth. Newly metamorphosed individuals remain near pools for up to several weeks until the areas dry. Juveniles begin feeding primarily on ants and shift to small beetles as they grow (Sweet 1991) before moving into adjacent wintering grounds. Many spend the next 6 to 8 months overwintering in burrows up to 20 centimeters deep in sandy substrates of these habitats. Adults obtain shelter primarily by burrowing into fine, sandy soils in both adjacent and upland habitats (Sweet 1991). This small to moderately-sized species is distinguished from other toads by its chevron-shaped marking between the eyes and by the lack of a mid-dorsal stripe. Coloration may vary from light olive gray to tannish brown above, and the unmarked undersurfaces are creamy to dirty white. The iris is dark brown with scattered gold iridophores on the upper and lower portions of the iris. The primary threat to this species is habitat loss.

3.5.2.3 Bell's Sage Sparrow (*Amphispiza belli belli*) WL

The Bell's sage sparrow is a subspecies of sage sparrow and a CDFG Watch List (WL) species. It breeds primarily in chamise chaparral along the coastal side of California from the western foothills of the Sierra Nevada to San Diego County and northwest Mexico. It also breeds less commonly in coastal sage, mixed chaparral, and big sagebrush communities. Wintering birds of this subspecies may migrate to desert

floors or remain in their breeding habitats. This species is distinguished from other sparrows by its gray head and back, thin white eye-ring, single dark breast spot, and heavy whisker-like pattern about the face. Populations are in decline due to habitat loss and fragmentation, frequent wildfires, grazing, invasive plants, and brood parasitism caused by the brown-headed cowbird (*Molothrus ater*).

3.5.2.4 Burrowing Owl (*Athene cunicularia*) CSC

The burrowing owl, a CSC, is broadly distributed across the western United States with populations in Florida and Central and South America. Burrowing owls use a variety of natural and modified habitats for nesting and foraging, typically characterized by low-growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrublands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. Burrowing owls typically use burrows made by mammals, such as California ground squirrels (*Spermophilus beecheyi*), foxes, or badgers. They sometimes dig their own burrows and will often utilize man-made structures such as earthen berms; cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls often are found within, under, or in close proximity to man-made structures. Prey sources for this species include small rodents; arthropods such as spiders, crickets, centipedes, and grasshoppers; smaller birds; amphibians; reptiles; and carrion. Threats to the burrowing owl include loss of nesting burrows, habitat loss, and mortality from motor vehicles.

3.5.2.5 California Red-Legged Frog (*Rana aurora draytonii*) FT, CSC

The California red-legged frog is a federally threatened species and a CSC. It is found from Mendocino County in California south to northwestern Baja, Mexico. It may occur in a variety of habitats from near sea level to 8,000 feet in elevation and is strongly associated with permanent sources of water, including cattail and tule marshes, reservoirs, ponds, and stream sides. It prefers deep, still, or slow moving water with low salinity levels and shallow margins or riffle zones. This species may disperse far from water (up to one mile) during and after significant rain events, and other habitats may include moist woodlands and grasslands from the lowlands through the foothills. It may make seasonal movements into riparian thickets and upland habitats for foraging, where it may seek small mammal burrows, leaf litter, or other moist areas of refuge for shelter or hibernation. The metamorphosis of this species is slower than most large frog species, requiring 11 to 20 weeks of permanent water for larval development. Most individuals have a dark mask bordered by a whitish jaw stripe; a reddish-orange venter; and coarse red, yellow, black, and/or gray mottling in the groin. This subspecies of the red-legged frog has experienced dramatic population declines since the late nineteenth century; some estimates claim a 75 percent rate of disappearance from its former range. Threats to this species include habitat loss and predation by non-native species such as bullfrogs and non-native fishes. In addition, this species was historically exploited as a source of frog legs for human consumption.

3.5.2.6 Coast Horned Lizard (*Phrynosoma blainvillii*) CSC

The coast horned lizard is a CSC found along the Pacific coast of California on the western side of the Sierra Mountains to the Baja peninsular area in Mexico. This species is found in many habitats including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet amsl. It inhabits sandy washes or areas with loose, fine, sandy soils for burying and having low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native species of ants. Populations of this species have been

reduced due to development, agriculture, and the introduction of Argentine ants that heavily compete with native ant species (Stebbins 2003). This species is approximately 2 to 4 inches in snout to vent length (adult) with numerous elongated and pointed scales (spines) on the dorsal side and two rows of enlarged scales along the flank. This species is brown, yellowish, reddish, or gray with several dark bands that cross the back with highlighted white areas along the rear of the bands (Sherbrooke 2003).

3.5.2.7 Cooper's Hawk (*Accipiter cooperii*) WL

The Cooper's hawk (nesting) is a CDFG WL species. This species occurs as a migrant and/or resident over most of the U.S. from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known to breed in suburban and urban areas with similar tree structure to native habitats. This medium-sized (14 to 20 inches) hawk is well-adapted for hunting birds as prey with its long tail and short, rounded wings; these features allow maneuverability in pursuit and on the ambush. It is similar in appearance to the sharp-shinned hawk (*Accipiter striatus*) but is distinguished by its larger size, more rounded tail, and darker crown. In addition to birds, it may also take amphibians, reptiles, and small mammals as supplemental prey items. Historic population losses resulted from the widespread use of DDT. Other threats include habitat loss and illegal hunting (Remsen 1978).

3.5.2.8 Desert Tortoise (*Gopherus agassizzi*) FT, ST

The desert tortoise is a federal- and state-listed threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo Counties, as well as most of San Bernardino, Riverside, and Imperial Counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. It is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark gray-brown. Besides range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

3.5.2.9 Ferruginous Hawk (*Buteo regalis*) WL

The ferruginous hawk (wintering) is a CDFG WL species. This species nests from the Canadian prairie provinces south to Oregon, Nevada, Arizona, and Oklahoma and winters in the southern half of its breeding range as well as the southwestern states from California to west Texas, then south into Mexico. It requires large, open areas of grassland, sparse shrub, or desert habitats interspersed with trees. It roosts in open areas, usually on lone trees, cliff ledge, or hill scarps. It winters in open terrain from grasslands to deserts where pocket gophers, ground squirrels, or rabbits are abundant, and it nests in either natural or human-made structures or on cliffs, buttes, cut banks, shrubs, or trees. In addition

to pocket gophers, ground squirrels, and rabbits, it also eats prairie dogs, snakes, lizards, birds, large insects, and other rodents. The ferruginous hawk has distinct light and dark morphs. Light morphs are reddish or light brown above and whitish below, with rusty leg feathers and a pale tail. Dark morphs are uncommon in about less than 10 percent of the population and are a deep rufous to brown above and below with very bright white on the underside of the flight feathers and a narrow, white crescent on the underside of the wrist (Sibley 2003). This species is the largest of the buteos. The biggest threat to the ferruginous hawk is habitat loss, fragmentation, or degradation resulting from land use practices including conversion of native habitat to agriculture, urbanization, improper grazing practices, and conversion of shrubland to grassland (Collins and Reynolds 2005). Other threats include illegal shooting and collisions with cars.

3.5.2.10 Least Bell's Vireo (*Vireo bellii pusillus*) FE, SE

The least Bell's vireo was state-listed as an endangered subspecies of Bell's vireo by the CDFG in 1980 and federally listed as endangered by the U.S. Fish and Wildlife Service (USFWS) in 1986. Critical habitat for the least Bell's vireo was designated in 1994 (USFWS 1986). The least Bell's vireo subspecies is restricted to coastal and inland southern California and Baja California, Mexico. Its winter range extends along the Pacific coast from northern Mexico south to northern Nicaragua. The two major factors in the decline of least Bell's vireo populations are loss of habitat and nest parasitism by the brown headed-cowbird. Habitat loss, fragmentation, and degradation, especially along streams and rivers, due to development, agriculture, flood control projects, logging operations, and intensive cattle grazing practices, are the greatest threats to the continued existence of the least Bell's vireo. The least Bell's vireo is a small, gray songbird with pale yellow wash on its sides, two faint wing bars, and a faint eye ring. Preferred nesting habitat is low, dense, scrubby vegetation in early successional areas that are particularly dependent on riparian areas. Habitats may include willow woodlands and dense mule fat, scrub oak, coastal chaparral, and mesquite patches with dense early successional understories.

3.5.2.11 Le Conte's Thrasher (*Toxostoma lecontei*) CSC

The Le Conte's thrasher is a CSC in the San Joaquin Valley area. It occurs in deserts of the southwest U.S., southwestern Utah, southern Arizona, and northwestern Mexico (Weigand and Fitton 2008). Habitat includes open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; and in Joshua tree habitat with scattered shrubs. Le Conte's thrasher is a medium-sized songbird with a long dark tail, black decurved bill, and a plain grayish or sandy-colored body. It is distinguished from other thrashers by its unspotted breast, deep buff crissum, dark eye, and dark tail that contrasts sharply with its body. Le Conte's thrashers forage as generalists on bare ground and in vegetation litter under shrubs by scratching the soil and overturning objects (Weigand and Fitton 2008). In some parts of its range, this thrasher has lost extensive habitat to development; irrigated lawns, groves, and fields have been created over valuable xeric habitat. Development, wild burros, off-road vehicle recreation, and invasive plant species threaten this species (Weigand and Fitton 2008).

3.5.2.12 Loggerhead Shrike (*Lanius ludovicianus*) CSC

The loggerhead shrike (nesting) is a CSC. Its range includes most of the U.S. from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua tree woodlands, and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other

structures that serve as lookout posts for potential prey. They prefer dense, thorny shrubs and trees, brush piles, and tumbleweeds for nesting (Seattle Audubon 2008). Both adults gather nesting materials, including twigs, grass, hair, feathers, and green vegetation; but only females build the cup-shaped nests. They lay between 5 and 6 eggs, which are incubated for 15 to 17 days; and nestlings will leave the nest after 17 to 20 days but won't fly for another week (Seattle Audubon 2008). The loggerhead shrike is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. This bird has a habit of caching its food for later consumption by impaling its prey on thorns, sharp twigs, or barbed wire; hence the term "butcher bird." It is recognized by its black facial mask; overall gray, black, and white color pattern; relatively big head; and hook-tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988, Scott and Morrison 1990).

3.5.2.13 Merlin (*Falco columbarius*) WL

The merlin (wintering) is a CDFG WL species. This species breeds in the northern parts of the Northern Hemisphere and winters in northern South America and northern Africa. In California, it occurs as a winter resident. Breeding habitats include open woodlands, savannas, cliffs near grasslands, and tundra. Migratory habitats include foothills, marshes, and open coastlines. Wintering habitats include open grasslands, semi-open forests, and coastal areas (i.e. beach dunes, marshes, and tidal flats). The merlin is a small falcon, slightly larger than the American kestrel (*Falco sparverius*), and appears heavier and bulkier in flight than the kestrel. The adult male merlin has a gray-blue back and crown and rufous washes on the sides of the breast. The adult female may be up to 30 percent larger than the male and has a brown back. The merlin mainly feeds on other birds, especially migrating and over-wintering waterfowl and shorebirds. Threats to its populations include habitat loss, pesticide use, and heavy metal poisoning.

3.5.2.14 Mohave Ground Squirrel (*Spermophilus mohavensis*) ST

The Mohave ground squirrel is a state-listed threatened species. The Mohave ground squirrel is specific to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Johnson 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 1998). They inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils. They will also feed in annual grasslands (Johnson 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study showed that most of their diet includes seeds from winter fat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and saltbush (Laabs 1998). Mohave ground squirrels are active in spring and early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (Johnson 1990).

3.5.2.15 Mountain Plover (*Charadrius montanus*) CSC, FPT

The mountain plover (wintering) is a CSC and a federally Proposed Threatened Species. This species breeds from the prairie and sagebrush country of north-central Montana, eastern Wyoming, and the area around southeastern Colorado. It winters from central California along the southern border states southward to northern Mexico (Udvardy 1977). Breeding habitats include semi-arid plains, grasslands, and plateaus. Common wintering habitats consist of dry, barren ground, smooth dirt fields, agricultural fields, and shortgrass prairies. This species tends to form small flocks in the winter. It is one of the few shorebird species that prefers habitats away from water. It is an insectivore that eats flies, beetles,

grasshoppers, crickets, and other insects. The mountain plover is a relatively non-descript shorebird with a short tail, long legs, plain brown plumage above, and whiter plumage below. Males develop a black patch on the forehead during the breeding season. This species is sometimes confused with the American golden plover; but unlike that species, the belly and under-wing is a clean, white color and the legs are pale. Populations are in decline due to overgrazing practices and are also linked to declining prairie dog populations; mountain plovers often use prairie dog mounds as nest sites. The continued loss and alteration of habitats on breeding and wintering grounds are the primary threats to the mountain plover.

3.5.2.16 Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*) ST

The Nelson's antelope squirrel is a state threatened species. Nelson's antelope squirrels are restricted to the central and western areas of the San Joaquin Valley and inner coast ranges from 165 to 3,608 feet amsl. This species is found in alkali desert scrub and annual grasslands habitats on a variety of soil types including alluvial, loamy, sandy, gravely, or fine-textured sands. This species rarely digs its own burrows, preferring instead to use burrows made by other small mammals. Nelson's antelope squirrels are diurnally active, with most activity occurring in the early morning or late afternoon. This species is buff and yellow-brown above with a white stripe on each side and white under its tail. It can reach up to 10 inches in length. Nelson's ground squirrels feed primarily on grass and forb seeds, insects, and other green vegetation. The primary threats to this species include loss of habitat due to agriculture, urbanization, petroleum extraction, and rodent control poisons (Whitaker et al. 2008).

3.5.2.17 Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*) CSC

The pallid San Diego pocket mouse is a CSC. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican border. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus; and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or course gravel (Grinnell 1933, Miller and Stebbins 1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and pinyon-juniper woodlands. Pallid San Diego pocket mouse densities have been recorded as high as 39 per hectare (Lackey 1996). This species is similar in appearance to *C.f. fallax* but is lighter in overall coloration. Population declines may be due to urban and agricultural development.

3.5.2.18 San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE, CSC

The San Bernardino kangaroo rat is a federally endangered species and a CSC. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside Counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about 7 distinct populations. It prefers gravelly and sandy soils in alluvial habitats where it constructs underground burrows, and it rarely occurs in dense vegetation. This species is a small, nocturnally active rodent with pale yellow and dusky brown fur, and dark brown tail stripes, footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in is burrows for later consumption. It also consumes some green vegetation and insects

when available. The primary threats to the continued existence of this species include habitat loss, degradation, and fragmentation due to developments related to housing, mining, and flood control (CDPR 1998).

3.5.2.19 Sierra Madre Yellow-Legged Frog (*Rana muscosa*) FE, SCE, CSC

The Sierra Madre yellow-legged frog is a federal-listed endangered, state candidate for listing as endangered, and a CSC. This species is found in the Sierra Nevadas from Fresno County to Kern County, and isolated populations are found in the San Gabriel, San Bernardino, and San Jacinto mountains of southern California, ranging in elevation from 4,500 to 11,980 feet amsl. This species was previously known as the mountain yellow-legged frog but is now considered a separate species from those found north of the Kings River north and middle forks, known as the Sierra Nevada yellow-legged frog (*Rana sierrae).* They range in size from 1.5 to 3.5 inches snout to vent length; and coloration is highly variable with olive, yellow, or brown with black or brown speckling above and pale yellow to orange below and on the hind legs (Calherps 2011b). They can be distinguished from *Rana sierra* by having slightly longer hind legs and a different mating call; both smell like garlic when handled (Calherps 2011b). Sierra Nevada populations occur in montane riparian, lodgepole pine, subalpine conifer, and wet meadows in association with lakes, ponds, and streams; southern California populations are found in lakes, ponds, and streams of montane conifer-hardwood, montane riparian, and ponderosa pine habitats. Adults feed on aquatic and terrestrial invertebrates; tadpoles feed on algae and diatoms. Sierra Madre yellow-legged frogs are closely associated with aquatic environments and can be found in vegetation or on perching rocks within a few feet of water, diving into the water when threatened. They lay their eggs in shallow water and attach them to gravel or rocks; tadpoles can take up to two over-wintering periods to complete their aquatic development. They are diurnally active and will hibernate over the winter under the ice, and southern populations may estivate. Threats to this species include bullfrogs, non-native trout, cattle grazing, mining, off-road vehicles, public dumping, chytrid fungus, fires, and excessive flooding (Calherps 2011b).

3.5.2.20 Short-Eared Owl (*Asio flammeus*) CSC

The short-eared owl (nesting) is a CSC. The range of this species is nearly worldwide; and in North America, it breeds in northern Canada and Alaska as well as in large portions of the western U.S. and the Great Lakes area. In California, this species is an uncommon winter migrant in the Central Valley, Sierra Nevada, and southern California; and it is known to breed from the San Francisco area north. Migrants arrive in California in September to October and leave in April. Habitats include grasslands, prairies, dunes, tundra, meadows, irrigated fields, wetlands, and fresh and saltwater marshes. Within these open habitat types, it prefers denser areas where it can seek cover along the ground. Short-eared owls nest in depressions on dry ground where vegetation provides cover; nests are built with grasses, sticks, feathers, and forbs. Clutch size ranges from 3 to 14 eggs. Eggs are laid in April and incubated for 24 to 37 days, and the young fledge after 21 to 36 days. This owl is mostly active at night, but it may forage by day in late afternoons or on cloudy days. Although it feeds mostly on voles and other small mammals, it will also eat birds, amphibians, reptiles, and arthropods. It characteristically flies in an erratic and buoyant manner, low over open areas, before plunging feet first to catch prey. The short-eared owl is a relatively medium-sized owl with an overall tawny brown color and buffy wing patches. It has bold, yellow eyes that contrast sharply with its dark facial discs. Predators include golden eagles, great horned owls, snowy owls, and peregrine falcons. Small predatory mammals and large reptiles prey on eggs. Competitors include gulls, northern harriers, barn owls, and other owls. Overgrazing, destruction,

and fragmentation of grasslands and wetland habitats, increased nest predation, and illegal shooting are all factors in the decline of this species.

3.5.2.21 Silvery Legless Lizard (*Anniella pulchra pulchra*) CSC

The silvery legless lizard is a CSC. Its range extends from the San Francisco Bay in California to northwestern Baja California, Mexico; and it can also be found on a few offshore islands of California. This species is found in chaparral, pine-oak woodlands, riparian woodlands, and also on beaches from sea level to around 5,100 feet. It occurs less commonly in desert scrub. Within these habitats, it prefers loose soils or sand for burrowing, moisture, warmth, and plant cover (Stebbins 2003). It forages in leaf litter during the day for insects such as termites, spiders, beetles, and larvae. On warm evenings, it may emerge to forage during the night. This legless lizard has a silver, gray, or beige dorsal coloration with a dark mid-dorsal line and is yellow below. The primary threats to the continued existence of this species include habitat loss due to agriculture and urban sprawl, overabundant non-native vegetation (i.e. iceplant on sand dunes), sand mining operations, off-road vehicle use, and other anthropogenic disturbances, including trampling and over-collecting for the pet trade.

3.5.2.22 Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) WL

The southern California rufous-crowned sparrow is a CDFG WL species. It is one of 17 recognized subspecies of the rufous–crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico; however, this sub-species is a resident of southwest California on the slopes of the Transverse and Coast ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martin Island. Habitats include broken sage scrub and chaparral; native grasslands with sparse shrubs; and rocky, brush-laden hillsides and canyons with open patches. It is a small non-descript sparrow with a rusty crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

3.5.2.23 Southern Grasshopper Mouse (*Onychomys torridus ramona*) CSC

The southern grasshopper mouse is a CSC. It occurs throughout desert and semi-arid habitats in the southwestern United States and much of Mexico, including western Nevada; the southern portions of California, Arizona, and New Mexico; northern Baja California; western Texas; and south to central Mexico (Hall 1981). The subspecies *ramona* is restricted to coastal southern California, with marginal records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley (Hall 1981). The grasshopper mouse rangewide is often found in low, arid scrub and semi-scrub vegetation; but this subspecies is found in grasslands and sparse sage scrub habitats. It nests in burrows often dug by kangaroo rats and pocket gophers, but it may dig its own burrows in sandy or other friable substrates (Baily and Sperry 1929, Stapp 1997). Specific habitat requirements of the southern grasshopper mouse generally are unknown, but Stapp (1997) found that grasshopper mice use open areas and microhabitats dominated by gopher mounds and burrows. Stapp suggests that grasshopper mice selected these microhabitats because of greater prey availability (i.e., arthropods using burrows for refuge), greater mobility in open areas, and dust bathing sites. It prefers low to moderate shrub cover and is active year-round. Unlike most other mice, this species is primarily carnivorous. It feeds nocturnally on a variety of arthropods, including grasshoppers, beetles, and scorpions. It will also feed on frogs, salamanders,

lizards, small mammals, and, occasionally, seeds. It has been known to kill species larger than itself, such as kangaroo rats. Prey items are stalked, rushed, seized, and typically killed with a bite in the head. Curiously, it emits a howl on occasion, perhaps in defense of its territory. Home ranges can be as large as four hectares; and, consistent with its carnivorous nature, population densities are normally low. It breeds from May to June; and after about 30 days, it gives birth to an average of 4 young. Predators include snakes, raptors, and a variety of mammals, including coyotes, owls, and foxes. Habitat loss and degradation are the primary threats to this species.

3.5.2.24 Swainson's Hawk (*Buteo swainsoni*) ST

The Swainson's hawk (nesting) is a state-listed threatened species. This species breeds from southwest Canada through the western U.S. into northern Mexico, with isolated breeding populations also observed in northern Illinois and the Sacramento and San Joaquin valleys of California. This species winters to South America. The Swainson's hawk forages in open stands of grass-dominated vegetation; sparse shrublands; and small, open woodlands. It typically nests in scattered trees within these grassland, shrubland, or agricultural landscapes. The Swainson's hawk feeds largely on insects, and thus is affected by pesticide use, particularly DDT and organophosphate pesticides currently used in South America (England et al. 1997).

3.5.2.25 Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*) CSC

The Tehachapi pocket mouse is a CSC. This species occurs in the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos, and east to the lower San Gabriel Mountains to Lake Elizabeth (Laabs 1998). The Tehachapi pocket mouse is one of two subspecies of *Perognathus alticola*; the second subspecies, *P. a. alticola,* occurs in the San Bernardino Mountains and has not been observed in over 50 years. Male Tehachapi pocket mice can reach up to 6.5 inches in length; while females are significantly smaller, reaching only 5.9 inches. Both sexes are yellowish-brown with a heavy overlay of black dorsally and white ventrally; facial markings are fainter, and the inside of the ears are white; its tail is bicolored and is slightly longer than head to body length (Laabs 1998). This species occurs in native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland, oak savanna, chaparral, coastal sage scrub, fallow grain fields, and rangeland at elevations ranging from 3,500 to 6,000 feet amsl, preferring loose, sandy soils for burrowing (Laabs 1998). They are nocturnal, feeding on seeds of grasses and forbs but will eat green vegetation and insects. Threats to this species include surface disturbance like mineral extraction and conversion of habitat to urban development.

3.5.2.26 Tricolored Blackbird (*Agelaius tricolor*) CSC

The tricolored blackbird (nesting colony) is a CSC that occurs primarily in California, with smaller populations in northern Mexico. This species is locally common in parts of the Central Valley and along the coast in Sonoma County but is not found commonly over most parts of its range. This species breeds near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds. Breeding season usually takes place from mid-April into late July, but Orians (1960) also reported active breeding in October and November in Sacramento Valley. Over the past few decades, numbers have been declining in California (DeHaven 1975). Reasons for the decline include the conversion of marshland habitats and agricultural poisoning.

3.5.2.27 Two-Striped Garter Snake (*Thamnophis hammondii*) CSC

The two-striped garter snake is a CSC. It is found in disjunct populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. The historic range of this species has been lost to housing, urban development, and other human impacts by an estimated 40 percent (Stebbins 2003).

3.5.2.28 Western Pond Turtle (*Actinemys marmorata pallida*) CSC

The western pond turtle is a CSC. This species occurs along the coast of North America from Baja California up to San Francisco Bay and occurs from sea level to 5,900 feet in elevation (Calherps 2011a). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (Calherps 2011a). The western pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Basking sites are necessary for thermoregulation. Reptile body temperature is dependent upon the environment the air, the substratum, and solar radiation. Basking is absorption of the sun's radiation and/or through the substratum. This species occurs in a variety of habitat types including woodland, grassland, and open forest (Calherps 2011a). Although this species is considered aquatic, this species usually leaves the aquatic site to reproduce, to estivate, and to overwinter. Pond turtles hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (Calherps 2011a). The species is highly sensitive to disturbance and will quickly slide into water when they feel threatened. Pond turtles are diurnal and are most active from February to November; however, if water temperatures remain warm, this species may be active year long (Bury 2008). Mating takes place in April or May, and females will deposit eggs in a vegetated upland location that may be a considerable distance (400 m or more) from the aquatic habitat to the nest. Eggs are generally deposited in grassy, upland areas adjacent to streams during May and June, although some individuals may deposit eggs as early as April and as late as August. Hatchlings will stay at the nest location and will emerge in the early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and occasionally frogs and fish (Calherps 2011a). Habitat destruction is the primary threat to this species. Dams also cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury 2008).

3.5.2.29 Western Mastiff Bat (*Eumops perotis*) CSC

The western mastiff bat is listed as a CSC. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural

substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown (TPWD 2008).

3.5.2.30 Western Snowy Plover (*Charadruis alexandrinus nivosus*) FT, CSC

The western snowy plover (nesting, coastal populations) is federally listed as threatened and is also a CSC. The Pacific coastal population breeds primarily on beaches from southern Washington to southern Baja California, Mexico. Interior populations can be found in the Central Valley of California, Oregon, Nevada, and other western states. The western snowy plover nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitats, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds, and infrequently on bluff-backed beaches (USFWS 2001). This small plover has a pale tan back, rump, and tail; white underparts; and dark patches on the sides of its neck that reach around onto the top of its chest. Habitat alteration and recreational beach use have led to a serious decline in nesting habitat and populations over the last 40 years (USFWS 2001, Page et al. 1995).

3.5.2.31 White-Faced Ibis (*Plegadis chihi*) WL

The white-faced ibis (nesting colony) is a CDFG WL species. It breeds across the western United States northward to Montana, eastward to western Louisiana, and southward to South America. It winters from southern California and Louisiana southward. The white-faced ibis usually nests in low trees and shrubs over shallow water. It inhabits primarily freshwater wetlands, especially cattail and bulrush marshes. It feeds in flooded hay meadows, agricultural fields, and estuarine wetlands. The white-faced ibis is a dark bronze-colored wader with a long, decurved bill. During the breeding season, adults have distinctive white feathers along the edges of their bare facial skin. Erosion and flood-control measures and irrigation projects have eliminated or degraded traditional nesting colony sites, leading to nest abandonment. Other losses of wetland habitat can also negatively affect populations (Ryder and Manry 1994).

3.6. SPECIES OBSERVED

The following plant species were observed while habitat assessments were conducted on the Project site: pineapple weed (*Chamomilla suaveolens*), rubber rabbitbrush, coast goldfields, cudweed aster, wreathplant (*Stephanomeria* sp.), silver puff (*Uropappus lindleyi*), common fiddleneck (*Amsinckia menziesii*), Arizona popcorn flower (*Plagiobothrys arizonicus*), shortpod mustard (*Hirschfeldia incana*), calabazilla (*Cucurbita foetidissima*), rattlesnake weed (*Chamaesyce albomarginata*), miniature lupine (*Lupinus bicolor*), redstemmed filaree, vinegar weed (*Trichostema lanceolatum*), desert mallow (*Sphaeralcea ambigua*), annual buckwheat (*Eriogonum* sp.), red willow (*Salix laevigata*), Siberian elm (*Ulmus pumila*), foxtail chess, cheat grass, big squirreltail (*Elymus multisetus*), purple needlegrass (*Nassella pulchra*), Mediterranean schismus (*Schismus barbatus*) and fescue (*Vulpia myuros*).

The following wildlife species were observed while habitat assessments were conducted on the Project site: Say's phoebe (*Sayornis saya*), Cassin's kingbird (*Tyrannus vociferans*), common raven (*Corvus corax*), western meadowlark (*Sturnella neglecta*), red-tail hawk (*Buteo jamaicensis*), American crow (*Corvus brachyrhynchos*), horned lark (*Eremophila alepestris*), domestic sheep (scat and bones; *Ovis*

aries), ground squirrel (burrows; *Spermophillus* sp.), gopher (burrows; *Thomomys* sp.) and red eared slider turtle (bones; *Trachemys scripta elegans*).

3.7. SENSITIVE SPECIES

The following 19 special status plant species are considered **absent** from the Project site due to a lack of suitable habitat or the species was not observed during protocol level focused plant surveys conducted during the appropriate blooming period:

- alkali mariposa lily
- Barstow woolly sunflower
- Clokey's cryptantha
- Davidson's bush mallow
- Darwin rock cress
- desert cymopterus
- Horn's milk-vetch
- Lancaster milk-vetch
- pale-yellow layia Parish's popcorn-flower
- Parry's spineflower
- Peirson's morning-glory
- recurved larkspur
- round-leaved filaree
- sagebrush loeflingia
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa lily
- white pygmy-poppy

The following 27 special status wildlife species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- American badger
- arroyo toad
- Bell's sage sparrow
- California red-legged frog
- Cooper's hawk
- desert tortoise
- least Bell's vireo
- Le Conte's thrasher
- loggerhead shrike
- Merlin
- Mohave ground squirrel
- mountain plover
- Nelson's antelope squirrel
- pallid San Diego pocket mouse
- San Bernardino kangaroo rat
- Sierra Madre yellow-legged frog

- short-eared owl
- southern California rufous-crowned sparrow
- southern grasshopper mouse
- Swainson's hawk
- Tehachapi pocket mouse
- tricolored blackbird
- two-striped garter snake
- western pond turtle
- western mastiff bat
- western snowy plover
- white-faced ibis

The following special status wildlife species has a **low** potential to occur on the Project site due to the presence of low quality suitable habitat on the Project site, the quality of adjacent habitat, and historical records of these species occurring within five miles of the Project site:

- silvery legless lizard

The following two special status wildlife species have a **moderate** potential to occur on the Project site due to the presence of low quality suitable habitat and historical records of these species occurring within three miles of the Project site:

- Burrowing owl. The Project site is primarily a fallow agricultural field and several small mammal burrows where observed on the site, which could provide a prey source and nesting habitat for the burrowing owl. In addition, burrowing owls have been recorded to occur within three miles of the Project site. Therefore, the burrowing owl has a moderate potential for occurrence on the Project site.

- Coast horned lizard. The project site consists primarily of non-native annual grasslands which may provide suitable habitat for the coast horned lizard. In addition, there are historical records of this species occurring within three miles of the Project site. Therefore, the coast horned lizard has a moderate potential to occur on the Project site

The following special status wildlife species has a **high** potential to occur on the Project site due to the presence of high quality suitable habitat and historical records of these species occurring within one mile of the Project site:

- Ferruginous hawk. The ferruginous hawk is present in southern California during the winter season. This species winters in open terrain from grasslands to deserts where small mammals are abundant. Several small mammal burrows were observed on the Project site. In addition, Ferruginous hawks have been recorded to occur within one mile of the site. Therefore, the ferruginous hawk has a high potential for occurrence (foraging) on the Project site.

SECTION 4.0 – CONCLUSIONS

4.1. SPECIAL STATUS SPECIES

The Project site is primarily a fallow agricultural site. All of the special status plant species known to occur within the vicinity of the Project site are considered absent due to lack of suitable habitat and were not identified during the focused sensitive plant survey conducted in May during the appropriate blooming period. No additional surveys for these species are recommended at this time.

Of the 31 special status wildlife species known to occur within the vicinity of the Project site, 28 are considered absent or have a low potential to occur due to lack of suitable habitat. No additional surveys are recommended for these species at this time.

4.1.1 Burrowing Owl

The burrowing owl has a high potential to occur on the Project site. Although burrowing owls are not federal- and/or state-listed as endangered or threatened, this species is listed as a CSC. While the majority of CSC listed species do not typically require focused surveys, specific focused survey protocol for the burrowing owl has been developed by the California Burrowing Owl Consortium and adopted by the CDFG.

4.1.2 Coast Horned Lizard

There is a moderate potential for coast horned lizard to occur on the Project site. Although this species is not federal- and/or state-listed as endangered or threatened, it is listed as a CSC. Therefore, no additional surveys for this species are recommended for this species at this time.

4.1.3 Ferruginous Hawk

The ferruginous hawk has a high potential to forage on the Project site. This species is on the CDFG watch list and is not federal- and/or state-listed threatened or endangered. Therefore, no additional surveys for this species are recommended at this time.

4.2. JURISDICTIONAL FEATURES

No drainage features were identified within the Project site at the time of the survey. Therefore, no additional delineation surveys are recommended at this time.

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APPENDIX A – VEGETATION COMMUNITIES MAP

Vegetation Map
Antelope Valley Greenworks

Legend

- Project Site
- Disturbed Rubber Rabbitbrush Scrub
- Non-Native Annual Grassland

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APPENDIX B – SITE PHOTOGRAPHS

APPENDIX B – SITE PHOTOGRAPHS

	Photo 1- Antelope Valley Greenworks. Photo is taken looking south across the Project site from the southwest corner.
	Photo 2- Antelope Valley Greenworks. Photo is taken looking south across the Project site from the southern boundary.
	Photo 3- Antelope Valley Greenworks. Photo is taken looking south.

BIOLOGICAL TECHNICAL REPORT
FOR THE APEX GREENWORKS SOLAR PROJECT SITE (CUP 10)
CITY OF LANCASTER
LOS ANGELES COUNTY, CALIFORNIA

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SECTION 1.0 – INTRODUCTION

Silverado Power, LLC (Silverado Power) is an independent solar power producer and developer of distributed solar power assets for utilities that are for both municipally and investor owned. Silverado Power strives to be a leader in wholesale solar power generation and the process of developing, building, and operating solar generation facilities (SGFs).

Chambers Group, Inc. (Chambers Group) was retained by Tetratech (for Silverado Power) to conduct a literature review and biological technical report (BTR) on the proposed Apex Greenworks Solar project site located in Los Angeles County. The purpose of this document is to report the results of the reconnaissance-level biological survey.

1.1. PROJECT DESCRIPTION

Silverado Power plans to develop the Apex Greenworks SGF (the Project). The Project facilities would operate year-round, producing electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the fourth quarter of 2014.

The proposed Project would have a generating capacity of 15 megawatts alternating current (MW-AC). The Project will employ photovoltaic (PV) modules to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system.

The Project would meet the increasing demand for electricity generated from clean, renewable technology. The recent legislation enacted in California recognizes the multiple benefits associated with the development of renewable energy resources. These benefits include a reduced reliance on foreign sources of fuel, promotion of national security, diversification of energy portfolios, reductions in greenhouse gas emissions, and the creation of “green” jobs within the state of California.

1.2. PROJECT LOCATION

The proposed Project site (APN: 3203-002-015) encompases 60 acres of previously disturbed, fallow agricultural fields in the Antelope Valley area of Los Angeles County and would produce 15 MW of renewable power. Apex Greenworks Solar is located within the city of Lancaster, CA, on the northeast corner of the intersection of 90th Street West and West Avenue J, approximately 0.60 miles northeast of the Antelope Valley electrical substation. The Project site is located within the *Del Sur* California USGS 7.5 minute quadrangle. Fallow agricultural fields surround the Project site. Project Regional and Vicinity maps are located in Figure 1 and Figure 2.

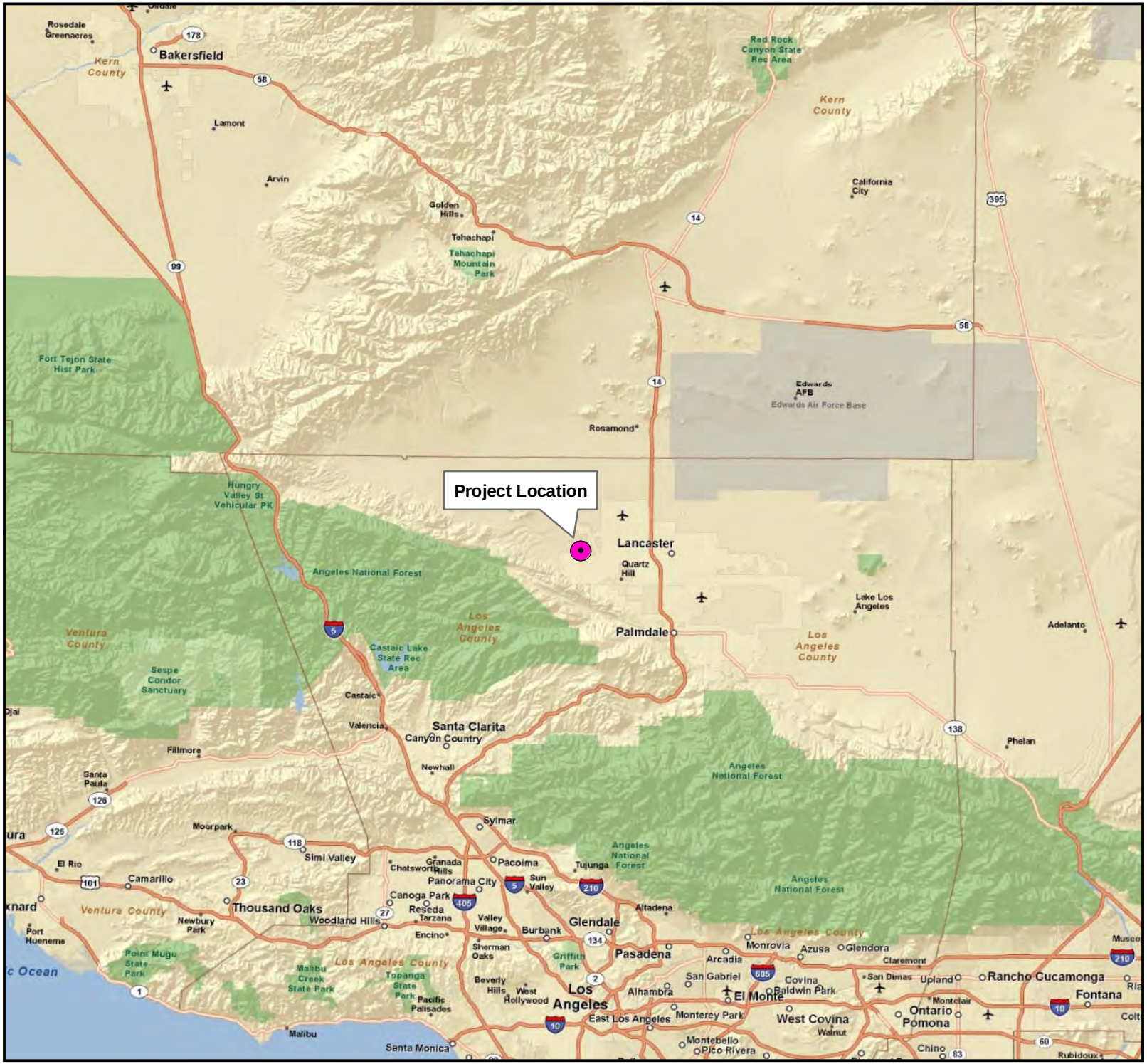

Figure 1
Regional Map
Apex Greenworks

Legend

Project Location

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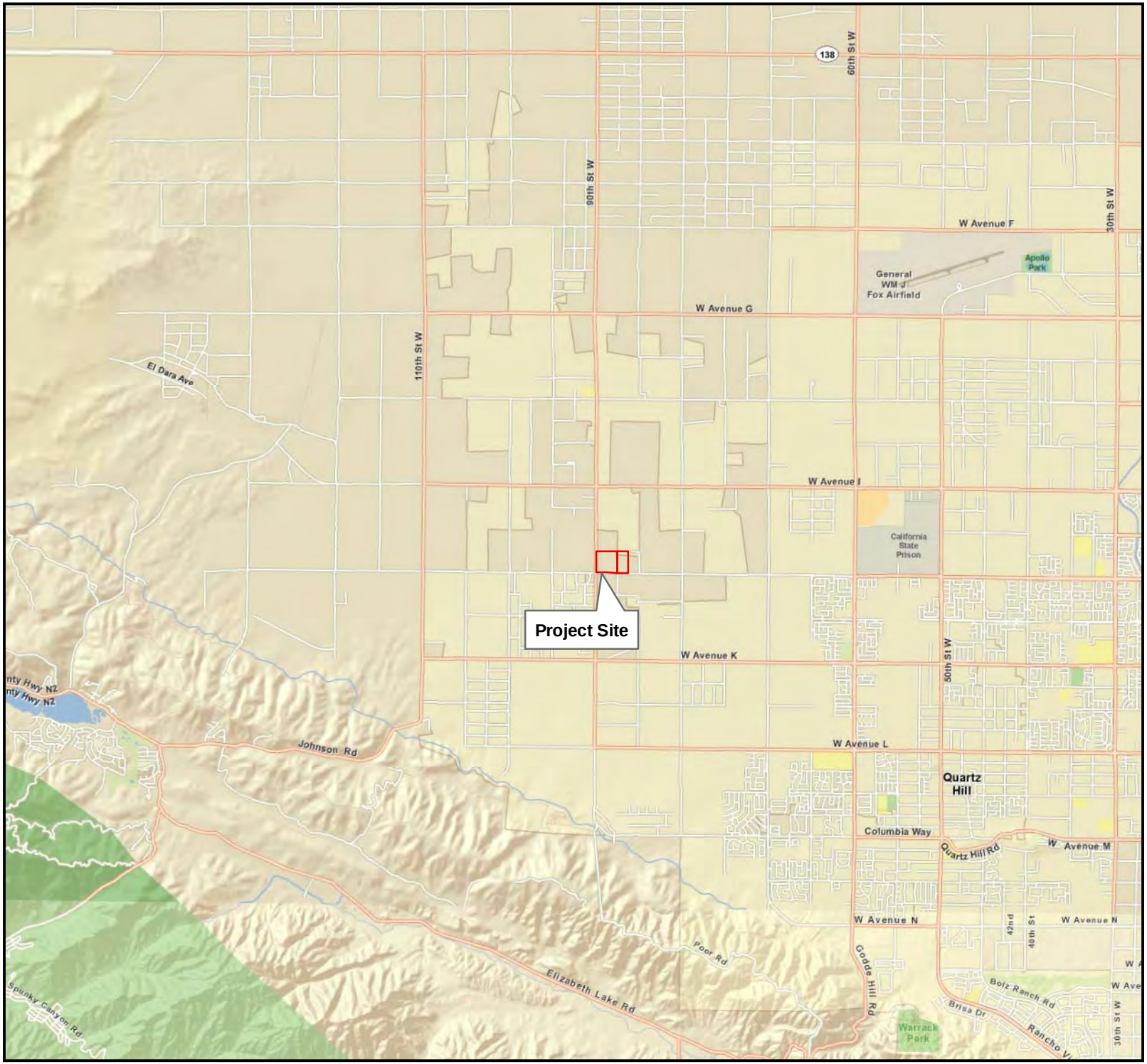

Figure 2
Vicinity Map
Apex Greenworks

Legend

Project Site

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SECTION 2.0 – METHODS

2.1. LITERATURE REVIEW

Prior to conducting the field surveys, existing documentation relevant to the Project site was reviewed. The most recent records of the California Department of Fish and Game California Natural Diversity Database (CNDDB 2011) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2011) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Fairmont Butte, Little Butte, Rosamond, Rosamond Lake, Redman, Alpine Butte, Lancaster East, Lancaster West, Del Sur, Lake Hughes, Burnt Peak, Little Rock, Lovejoy Buttes, El Mirage*, California USGS 7.5 minute quadrangles). The database contains records of reported occurrences of federal- or state-listed as endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Special Concern (CSC), or otherwise sensitive species or habitats that may occur within or in the vicinity of the Project site.

2.2. BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

The field survey was conducted on the Project site in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support special status wildlife species and to identify any potential jurisdictional waters of the United States. Chambers Group biologists Nicole Cervin and Kun Liu conducted the general reconnaissance survey on May 23, 2011. Weather conditions during the survey included temperatures ranging from approximately 62 to 68 degrees Fahrenheit with 20 percent cloud cover and no precipitation. During the survey the biologists walked the Project site documenting the native vegetation communities and took notes regarding the potential for special status species and jurisdictional waters to occur onsite. Photographs of the Project site were also taken to document existing conditions.

2.3. VEGETATION

All plant species and soil types observed onsite were noted. Plant communities on the Project site were identified, qualitatively described, and mapped onto an aerial photograph. Plant communities were determined in accordance with the categories set forth in Holland (1986) or Gray and Bramlet (1992). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California* (Hickman 1993).

2.4. WILDLIFE

All wildlife and wildlife sign observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support state- and/or federal-listed or proposed listed species. Notes were made on the general habitat types, species observed, and the conditions of the site. Photographs of the site are provided in Appendix B.

SECTION 3.0 – RESULTS

3.1. LITERATURE REVIEW

According to the literature review, 19 special status plant and 31 special status wildlife species were documented to occur within the vicinity of the Project site. This list included ten wildlife species that are federal- and/or state-listed endangered or threatened. Of the 19 special status plant species listed in the literature review, none are federal- and/or state-listed endangered or threatened.

3.2. VEGETATION COMMUNITIES

The Project site is classified as Tamarisk Scrub and Developed. A map displaying the vegetation community on the Project site is included in Appendix A.

3.2.1 Tamarisk Scrub

Tamarisk Scrub is composed of weedy mainly monoculture of any of several tamarisk species (*Tamarix* sp.) usually supplanting native vegetation following a major disturbance. Soil is usually sandy or gravelly in braided washes or intermittent streams, often in areas where high evaporation increases the stream's saltiness. Because tamarisk is a strong phreatophyte and prolific seeder, this species is predisposed to aggressively compete in disturbed riparian corridors (Holland 1986).

Tamarisk Scrub is present within the Project site. Plant species found onsite typical of this vegetation community include: saltcedar (*Tamarix ramosissima*), Russian thistle (*Salsola tragus*) and prickly lettuce (*Lactuca serriola*).

3.2.2 Developed

Developed areas are areas that have been altered by humans and now display man-made structures such as houses, paved roads, buildings, parks, and other maintained areas.

Developed areas are present within the Project site.

3.3. JURISDICTIONAL FEATURES

No drainage or canal features were identified within the Project site at the time of the survey.

3.4. SPECIAL STATUS SPECIES

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Project site.

CNPS

List 1A = Plants presumed extinct in California.
List 1B = Plants rare and endangered in California and throughout their range.
List 2 = Plants rare, threatened, or endangered in California but more common elsewhere in their range.
List 3 = Plants about which we need more information; a review list.

List 4 = Plants of limited distribution; a watch list.

CNPS Extensions

0.1 = Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2 = Fairly endangered in California (20 to 80 percent occurrences threatened).
0.3 = Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE = Federally listed; Endangered
FT = Federally listed; Threatened
FC = Federal Candidate for listing
FPT = Federal Proposed listing as Threatened

State

ST = State listed; Threatened
SE = State listed; Endangered
RARE = State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC = State Species of Special Concern
WL = California Department of Fish and Game (CDFG) Watch List

3.5. SENSITIVE SPECIES DESCRIPTIONS

3.5.1 Sensitive Plants in the Los Angeles County Area

3.5.1.1 Alkali Mariposa Lily (*Calochortus striatus*) CNPS List 1B.1

Alkali mariposa lily is a CNPS List 1B.2 species. This perennial, bulbiferous herb flowers between April and June. This species occurs on alkaline and mesic soils within Chaparral, Chenopod Scrub, Mojavean Desert Scrub, and Meadows and Seeps habitats at elevations between 230 and 5,233 feet above mean sea level (amsl). Known range for this species includes: Kern, Los Angeles, San Bernardino, and Tulare Counties. Threats to alkali mariposa lily include groundwater pumping urbanization, grazing, trampling, road construction, water diversion resulting in lowering the water table, and possibly horticultural collecting.

3.5.1.2 Barstow Woolly Sunflower (*Eriophyllum mohavense*) CNPS List 1B.2

Barstow woolly sunflower is a CNPS List 1B.2 species. This annual herb flowers between March and May. Barstow woolly sunflower occurs within Chenopod Scrub, Mojavean Desert Scrub, and Playas habitats at elevations between 1,640 and 3,150 feet amsl. Known range for this species includes: Fresno, Kern, Los Angeles, and San Bernardino Counties. Threats to this species include vehicles, grazing, energy development, and road improvements.

3.5.1.3 Clokey's Cryptantha (*Cryptantha clokeyi*) CNPS List 1B.2

Clokey's cryptantha is a CNPS List 1B.2 species. This annual herb flowers in April. Clokey's cryptantha occurs within Mojavean Desert Scrub habitat at elevations between 2,379 and 4,478 feet amsl. Known range for this species includes: Inyo, Los Angeles, and San Bernardino Counties. Major threats to this species include military activities and alteration of fire regimes.

3.5.1.4 Darwin Rock Cress (*Arabis pulchra* var. *munciensis*) CNPS List 2.3

Darwin rock cress is a CNPS List 2.3 species. This perennial herb flowers in April. Darwin rock cress occurs in carbonate soils of Chenopod Scrub and Mojavean Desert Scrub habitats at elevations between 3,608 and 6,807 feet amsl. Known range includes Inyo, Los Angeles, and San Bernardino Counties.

3.5.1.5 Davidson's Bush Mallow (*Malacothamnus davidsonii*) CNPS List 1B.2

Davidson's bush mallow is a CNPS List 1B.2 species. This perennial deciduous shrub flowers between June and January. Davidson's bush mallow occurs within chaparral, Coastal Scrub, Cismontane Woodland, and riparian woodland habitats at elevations between 607 and 2,805 feet amsl. Known ranges include: Los Angeles, Monterey, Santa Clara, San Mateo, and San Luis Obispo Counties. Urbanization, maintenance activities, and erosion are the main threats to this species.

3.5.1.6 Desert Cymopterus (*Cymopterus deserticola*) CNPS List 1B.1

Desert cymopterus is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs on sandy soils within Mojavean Desert Scrub and Joshua Tree Woodland habitats at elevations between 2,066 and 4,921 feet amsl. Known range for this species includes: Kern, Los Angeles, and San Bernardino Counties. Threats to desert cymopterus include military activities, sheep grazing, vehicles, utility construction, and urbanization.

3.5.1.7 Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*) CNPS List 1B.1

Horn's milk-vetch is a CNPS List 1B.1 species. This annual herb flowers between May and October. This species occurs along lake margins in poorly drained, alkaline soils of meadows and seeps and Playas habitats at elevations between 195 to 2,790 feet amsl. Known ranges include Inyo, Kern, and San Bernardino Counties and Nevada. Poisonous to sheep, it was subject to eradication by farmers in the early 1900s; current threats to Horn's milk-vetch are habitat alterations.

3.5.1.8 Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*) CNPS List 1B.1

Lancaster milk-vetch is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs within Chenopod Scrub habitat. Known ranges include Kern, Los Angeles, and San Bernardino Counties and Nevada. Limited range, including areas only near Lancaster and Edwards Air Force Base, is the major threat to Lancaster milk-vetch.

3.5.1.9 Pale-Yellow Layia (*Layia heterotricha*) CNPS List 1B.1

Pale-yellow layia is a CNPS List 1B.1 species. This annual herb flowers between March and June. This species occurs in alkaline or clay soils within Cismontane Woodland, Coastal Scrub, Pinyon-Juniper Woodland, and Valley and Foothill Grassland habitats at elevations between 984 and 5,594 feet amsl.

Known ranges include Fresno, Kern, Kings, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, San Benito, and Ventura Counties. Threats to pale-yellow layia include vehicle use, competition from non-native plants, agricultural conversion, and grazing.

3.5.1.10 Parish's Popcorn-Flower (*Plagiobothrys parishii*) CNPS List 1B.1

Parish's popcorn-flower is a CNPS List 1B.1 species. This annual herb flowers between March and November. This species occurs on alkaline and mesic soils within Great Basin Scrub and Joshua tree Woodland habitats at elevations between 2,460 and 4,595 feet amsl. Known range for this species includes: Inyo, Los Angeles, Mono, and San Bernardino Counties. Threats to Parish's popcorn-flower include groundwater pumping.

3.5.1.11 Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) CNPS List 1B.1

Parry's spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and June. This species occurs in sandy or rocky soils and openings within Cismontane Woodland, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 902 and 4,002 feet amsl. Known ranges include Los Angeles, Riverside and San Bernardino Counties. Threats to this species include development, altered flood regime, mining, vehicles, and competition from non-native plants.

3.5.1.12 Peirson's Morning-Glory (*Calystegia peirsonii*) CNPS List 4.2

Peirson's morning-glory is a CNPS List 4.2 species. This perennial, rhizomatous herb flowers between April and June. This species occurs within chaparral, Chenopod Scrub, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, and Valley and Foothill Grassland habitats at elevations between 98 and 5,085 feet amsl. Known ranges include Los Angeles County. Major threats to Peirson's morning-glory include grazing and development; possible threats include power line construction.

3.5.1.13 Recurved Larkspur (*Delphinium recurvatum*) CNPS List 1B.2

Recurved larkspur is a CNPS List 1B.2 species. This perennial herb flowers between March and June. This species occurs on alkaline soils within Chenopod Scrub, Cismontane Woodland, and Valley and Foothill Grassland habitats at elevations between 10 and 2,460 feet amsl. Known ranges of the recurved larkspur include: Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solana, Sutter, and Tulare Counties. Conversion of habitat, grazing, and trampling are threats to the recurved larkspur.

3.5.1.14 Round-Leaved Filaree (*California macrophylla*) CNPS List 1B.1

Round-leaved filaree is a CNPS List 1B.1 species. This annual herb flowers between March and May. Round-leaved filaree occurs in clay soils within Cismontane Woodland and Valley and Foothill Grassland habitats at elevations between 50 and 3,937 feet amsl. Known ranges include Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, Santa Barbara, San Benito, Santa Clara, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Ventura, and Yolo Counties and Santa Cruz Island. Threats to this species include urbanization, feral pigs, habitat alteration, pipeline construction, urbanization and competition from non-native plants.

3.5.1.15 Sagebrush Loeflingia (*Loeflingia squarrosa*) CNPS List 2.2

Sagebrush loeflingia is a CNPS List 2.2 species. This annual herb flowers between April and May. This species occurs in sandy soils of Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub habitats at elevations between 2,295 and 5,300 feet amsl. Known range includes Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino Counties and Nevada, Oregon, and Wyoming. Possible threats to sagebrush loeflingia include off-highway vehicles and grazing.

3.5.1.16 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*) CNPS List 1B.1

San Fernando Valley spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and July. This species occurs in sandy soils of Coastal Scrub and Valley and Foothill Grassland habitats at elevations between 492 and 4,002 feet amsl. Known range includes Los Angeles, Orange, and Ventura Counties. Possible threats to this species include competition from non-native plants and development.

3.5.1.17 Short-Joint Beavertail (*Opuntia basilaris brachyclada*) CNPS List 1B.2

Short-joint beavertail is a CNPS List 1B.2 species. This perennial stem succulent flowers between April and June. This species occurs within chaparral, Mojavean Desert Scrub, Joshua Tree Woodland, and Pinyon-Juniper Woodland habitats at elevations between 394 and 5,905 feet amsl. Known range for this species includes Los Angeles and San Bernardino Counties. Major threats to short-joint beavertail include vehicles, grazing, urbanization, mining, and horticultural collecting; possible threats include power line construction.

3.5.1.18 Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*) CNPS List 1B.1

Slender mariposa lily is a CNPS List 1B.1 species. This perennial, bulbiferous herb flowers between March and June. This species occurs within chaparral, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 1,050 and 3,280 feet amsl. Known ranges include Los Angeles and Ventura Counties. Threats to slender mariposa lily include vehicles, development, mining, and competition from non-native plants.

3.5.1.19 White Pygmy-Poppy (*Canbya candida*) CNPS List 4.2

White pygmy-poppy is a CNPS List 4.2 species. This annual herb flowers between March and June. This species occurs on gravelly, sandy, or granitic soils within Joshua Tree Woodland, Mojave Desert Scrub, and Pinyon-Juniper Woodland habitats at elevations between 600 and 4,800 feet amsl. Known ranges include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino Counties. This species is threatened by development, off-highway vehicles, grazing, mining, and competition from non-native plants.

3.5.2 Sensitive Wildlife Species in the Los Angeles County Area

3.5.2.1 American Badger (*Taxidea taxus*) CSC

The American badger is a California Species of Concern (CSC). This carnivorous species ranges over most of the western U.S and upper midwestern U.S. south into central Mexico. In California, the badger may occupy a variety of habitats, especially grasslands, savannas, montane meadows, sparse scrublands, and deserts. It prefers friable soils for burrowing, and relatively open, uncultivated ground. Prey items

include gophers, ground squirrels, marmots, kangaroo rats, other rodents, and the occasional reptile or amphibian. The American badger may weigh up to 25 pounds and is easily recognized by its overall yellowish gray coloration, the white stripe on top of its head, white cheeks, and black feet with noticeably long front claws. It is a heavy-bodied animal with short legs and a characteristic pigeon-toed gait. It is chiefly nocturnal, but it is often seen by day as well. It gives birth to two to five young anywhere from February to May, depending on its altitude and latitude. Threats to this species include habitat loss to agriculture, housing, and other land conversions, and illegal hunting.

3.5.2.2 Arroyo Toad (*Anaxyrus californicus*) FE, CSC

The arroyo toad is a federally endangered species and a CSC. The range of this species is within coastal California from Monterey County into northwestern Baja California, Mexico. It is found in washes, streams, and arroyos; and preferred habitats include sandy banks within riparian woodlands such as willow, cottonwood, sycamore, mulefat, and/or coast live oak. It breeds in shallow, sandy/gravelly riverine pools with low silt content and normally disperses onto adjacent uplands after breeding. Individuals have been observed up to 2 kilometers (km) from the streams in which they breed, but most often they are within 0.5 km of those streams (USFWS 1992a). During the breeding season, males call nocturnally from open areas on banks at the edges of streams. Males typically precede females at breeding sites. Females lay their eggs among gravel, leaves, or sticks, on mud or clean sand within low to moderately flowing sections of streams in areas with little or no emergent vegetation and little woody marginal growth. Newly metamorphosed individuals remain near pools for up to several weeks until the areas dry. Juveniles begin feeding primarily on ants and shift to small beetles as they grow (Sweet 1991) before moving into adjacent wintering grounds. Many spend the next 6 to 8 months overwintering in burrows up to 20 centimeters deep in sandy substrates of these habitats. Adults obtain shelter primarily by burrowing into fine, sandy soils in both adjacent and upland habitats (Sweet 1991). This small to moderately-sized species is distinguished from other toads by its chevron-shaped marking between the eyes and by the lack of a mid-dorsal stripe. Coloration may vary from light olive gray to tannish brown above, and the unmarked undersurfaces are creamy to dirty white. The iris is dark brown with scattered gold iridophores on the upper and lower portions of the iris. The primary threat to this species is habitat loss.

3.5.2.3 Bell's Sage Sparrow (*Amphispiza belli belli*) WL

The Bell's sage sparrow is a subspecies of sage sparrow and a CDFG Watch List (WL) species. It breeds primarily in chamise chaparral along the coastal side of California from the western foothills of the Sierra Nevada to San Diego County and northwest Mexico. It also breeds less commonly in coastal sage, mixed chaparral, and big sagebrush communities. Wintering birds of this subspecies may migrate to desert floors or remain in their breeding habitats. This species is distinguished from other sparrows by its gray head and back, thin white eye-ring, single dark breast spot, and heavy whisker-like pattern about the face. Populations are in decline due to habitat loss and fragmentation, frequent wildfires, grazing, invasive plants, and brood parasitism caused by the brown-headed cowbird (*Molothrus ater*).

3.5.2.4 Burrowing Owl (*Athene cunicularia*) CSC

The burrowing owl, a CSC, is broadly distributed across the western United States with populations in Florida and Central and South America. Burrowing owls use a variety of natural and modified habitats for nesting and foraging, typically characterized by low-growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrublands

with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. Burrowing owls typically use burrows made by mammals, such as California ground squirrels (*Spermophilus beecheyi*), foxes, or badgers. They sometimes dig their own burrows and will often utilize man-made structures such as earthen berms; cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls often are found within, under, or in close proximity to man-made structures. Prey sources for this species include small rodents; arthropods such as spiders, crickets, centipedes, and grasshoppers; smaller birds; amphibians; reptiles; and carrion. Threats to the burrowing owl include loss of nesting burrows, habitat loss, and mortality from motor vehicles.

3.5.2.5 California Red-Legged Frog (*Rana aurora draytonii*) FT, CSC

The California red-legged frog is a federally threatened species and a CSC. It is found from Mendocino County in California south to northwestern Baja, Mexico. It may occur in a variety of habitats from near sea level to 8,000 feet in elevation and is strongly associated with permanent sources of water, including cattail and tule marshes, reservoirs, ponds, and stream sides. It prefers deep, still, or slow moving water with low salinity levels and shallow margins or riffle zones. This species may disperse far from water (up to one mile) during and after significant rain events, and other habitats may include moist woodlands and grasslands from the lowlands through the foothills. It may make seasonal movements into riparian thickets and upland habitats for foraging, where it may seek small mammal burrows, leaf litter, or other moist areas of refuge for shelter or hibernation. The metamorphosis of this species is slower than most large frog species, requiring 11 to 20 weeks of permanent water for larval development. Most individuals have a dark mask bordered by a whitish jaw stripe; a reddish-orange venter; and coarse red, yellow, black, and/or gray mottling in the groin. This subspecies of the red-legged frog has experienced dramatic population declines since the late nineteenth century; some estimates claim a 75 percent rate of disappearance from its former range. Threats to this species include habitat loss and predation by non-native species such as bullfrogs and non-native fishes. In addition, this species was historically exploited as a source of frog legs for human consumption.

3.5.2.6 Coast Horned Lizard (*Phrynosoma blainvillii*) CSC

The coast horned lizard is a CSC found along the Pacific coast of California on the western side of the Sierra Mountains to the Baja peninsular area in Mexico. This species is found in many habitats including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet amsl. It inhabits sandy washes or areas with loose, fine, sandy soils for burying and having low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native species of ants. Populations of this species have been reduced due to development, agriculture, and the introduction of Argentine ants that heavily compete with native ant species (Stebbins 2003). This species is approximately 2 to 4 inches in snout to vent length (adult) with numerous elongated and pointed scales (spines) on the dorsal side and two rows of enlarged scales along the flank. This species is brown, yellowish, reddish, or gray with several dark bands that cross the back with highlighted white areas along the rear of the bands (Sherbrooke 2003).

3.5.2.7 Cooper's Hawk (*Accipiter cooperii*) WL

The Cooper's hawk (nesting) is a CDFG WL species. This species occurs as a migrant and/or resident over most of the U.S. from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known

to breed in suburban and urban areas with similar tree structure to native habitats. This medium-sized (14 to 20 inches) hawk is well-adapted for hunting birds as prey with its long tail and short, rounded wings; these features allow maneuverability in pursuit and on the ambush. It is similar in appearance to the sharp-shinned hawk (*Accipiter striatus*) but is distinguished by its larger size, more rounded tail, and darker crown. In addition to birds, it may also take amphibians, reptiles, and small mammals as supplemental prey items. Historic population losses resulted from the widespread use of DDT. Other threats include habitat loss and illegal hunting (Remsen 1978).

3.5.2.8 Desert Tortoise (*Gopherus agassizzi*) FT, ST

The desert tortoise is a federal- and state-listed threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo Counties, as well as most of San Bernardino, Riverside, and Imperial Counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. It is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark gray-brown. Besides range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

3.5.2.9 Ferruginous Hawk (*Buteo regalis*) WL

The ferruginous hawk (wintering) is a CDFG WL species. This species nests from the Canadian prairie provinces south to Oregon, Nevada, Arizona, and Oklahoma and winters in the southern half of its breeding range as well as the southwestern states from California to west Texas, then south into Mexico. It requires large, open areas of grassland, sparse shrub, or desert habitats interspersed with trees. It roosts in open areas, usually on lone trees, cliff ledge, or hill scarps. It winters in open terrain from grasslands to deserts where pocket gophers, ground squirrels, or rabbits are abundant, and it nests in either natural or human-made structures or on cliffs, buttes, cut banks, shrubs, or trees. In addition to pocket gophers, ground squirrels, and rabbits, it also eats prairie dogs, snakes, lizards, birds, large insects, and other rodents. The ferruginous hawk has distinct light and dark morphs. Light morphs are reddish or light brown above and whitish below, with rusty leg feathers and a pale tail. Dark morphs are uncommon in about less than 10 percent of the population and are a deep rufous to brown above and below with very bright white on the underside of the flight feathers and a narrow, white crescent on the underside of the wrist (Sibley 2003). This species is the largest of the buteos. The biggest threat to the ferruginous hawk is habitat loss, fragmentation, or degradation resulting from land use practices including conversion of native habitat to agriculture, urbanization, improper grazing practices, and conversion of shrubland to grassland (Collins and Reynolds 2005). Other threats include illegal shooting and collisions with cars.

3.5.2.10 Least Bell's Vireo (*Vireo bellii pusillus*) FE, SE

The least Bell's vireo was state-listed as an endangered subspecies of Bell's vireo by the CDFG in 1980 and federally listed as endangered by the U.S. Fish and Wildlife Service (USFWS) in 1986. Critical habitat for the least Bell's vireo was designated in 1994 (USFWS 1986). The least Bell's vireo subspecies is restricted to coastal and inland southern California and Baja California, Mexico. Its winter range extends along the Pacific coast from northern Mexico south to northern Nicaragua. The two major factors in the decline of least Bell's vireo populations are loss of habitat and nest parasitism by the brown headed-cowbird. Habitat loss, fragmentation, and degradation, especially along streams and rivers, due to development, agriculture, flood control projects, logging operations, and intensive cattle grazing practices, are the greatest threats to the continued existence of the least Bell's vireo. The least Bell's vireo is a small, gray songbird with pale yellow wash on its sides, two faint wing bars, and a faint eye ring. Preferred nesting habitat is low, dense, scrubby vegetation in early successional areas that are particularly dependent on riparian areas. Habitats may include willow woodlands and dense mule fat, scrub oak, coastal chaparral, and mesquite patches with dense early successional understories.

3.5.2.11 Le Conte's Thrasher (*Toxostoma lecontei*) CSC

The Le Conte's thrasher is a CSC in the San Joaquin Valley area. It occurs in deserts of the southwest U.S., southwestern Utah, southern Arizona, and northwestern Mexico (Weigand and Fitton 2008). Habitat includes open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; and in Joshua tree habitat with scattered shrubs. Le Conte's thrasher is a medium-sized songbird with a long dark tail, black decurved bill, and a plain grayish or sandy-colored body. It is distinguished from other thrashers by its unspotted breast, deep buff crissum, dark eye, and dark tail that contrasts sharply with its body. Le Conte's thrashers forage as generalists on bare ground and in vegetation litter under shrubs by scratching the soil and overturning objects (Weigand and Fitton 2008). In some parts of its range, this thrasher has lost extensive habitat to development; irrigated lawns, groves, and fields have been created over valuable xeric habitat. Development, wild burros, off-road vehicle recreation, and invasive plant species threaten this species (Weigand and Fitton 2008).

3.5.2.12 Loggerhead Shrike (*Lanius ludovicianus*) CSC

The loggerhead shrike (nesting) is a CSC. Its range includes most of the U.S. from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua tree woodlands, and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other structures that serve as lookout posts for potential prey. They prefer dense, thorny shrubs and trees, brush piles, and tumbleweeds for nesting (Seattle Audubon 2008). Both adults gather nesting materials, including twigs, grass, hair, feathers, and green vegetation; but only females build the cup-shaped nests. They lay between 5 and 6 eggs, which are incubated for 15 to 17 days; and nestlings will leave the nest after 17 to 20 days but won't fly for another week (Seattle Audubon 2008). The loggerhead shrike is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. This bird has a habit of caching its food for later consumption by impaling its prey on thorns, sharp twigs, or barbed wire; hence the term "butcher bird." It is recognized by its black facial mask; overall gray, black, and white color pattern; relatively big head; and hook-tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988, Scott and Morrison 1990).

3.5.2.13 Merlin (*Falco columbarius*) WL

The merlin (wintering) is a CDFG WL species. This species breeds in the northern parts of the Northern Hemisphere and winters in northern South America and northern Africa. In California, it occurs as a winter resident. Breeding habitats include open woodlands, savannas, cliffs near grasslands, and tundra. Migratory habitats include foothills, marshes, and open coastlines. Wintering habitats include open grasslands, semi-open forests, and coastal areas (i.e. beach dunes, marshes, and tidal flats). The merlin is a small falcon, slightly larger than the American kestrel (*Falco sparverius*), and appears heavier and bulkier in flight than the kestrel. The adult male merlin has a gray-blue back and crown and rufous washes on the sides of the breast. The adult female may be up to 30 percent larger than the male and has a brown back. The merlin mainly feeds on other birds, especially migrating and over-wintering waterfowl and shorebirds. Threats to its populations include habitat loss, pesticide use, and heavy metal poisoning.

3.5.2.14 Mohave Ground Squirrel (*Spermophilus mohavensis*) ST

The Mohave ground squirrel is a state-listed threatened species. The Mohave ground squirrel is specific to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Johnson 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 1998). They inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils. They will also feed in annual grasslands (Johnson 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study showed that most of their diet includes seeds from winter fat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and saltbush (Laabs 1998). Mohave ground squirrels are active in spring and early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (Johnson 1990).

3.5.2.15 Mountain Plover (*Charadrius montanus*) CSC, FPT

The mountain plover (wintering) is a CSC and a federally Proposed Threatened Species. This species breeds from the prairie and sagebrush country of north-central Montana, eastern Wyoming, and the area around southeastern Colorado. It winters from central California along the southern border states southward to northern Mexico (Udvardy 1977). Breeding habitats include semi-arid plains, grasslands, and plateaus. Common wintering habitats consist of dry, barren ground, smooth dirt fields, agricultural fields, and shortgrass prairies. This species tends to form small flocks in the winter. It is one of the few shorebird species that prefers habitats away from water. It is an insectivore that eats flies, beetles, grasshoppers, crickets, and other insects. The mountain plover is a relatively non-descript shorebird with a short tail, long legs, plain brown plumage above, and whiter plumage below. Males develop a black patch on the forehead during the breeding season. This species is sometimes confused with the American golden plover; but unlike that species, the belly and under-wing is a clean, white color and the legs are pale. Populations are in decline due to overgrazing practices and are also linked to declining prairie dog populations; mountain plovers often use prairie dog mounds as nest sites. The continued loss and alteration of habitats on breeding and wintering grounds are the primary threats to the mountain plover.

3.5.2.16 Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*) ST

The Nelson's antelope squirrel is a state threatened species. Nelson's antelope squirrels are restricted to the central and western areas of the San Joaquin Valley and inner coast ranges from 165 to 3,608 feet amsl. This species is found in alkali desert scrub and annual grasslands habitats on a variety of soil types including alluvial, loamy, sandy, gravely, or fine-textured sands. This species rarely digs its own burrows, preferring instead to use burrows made by other small mammals. Nelson's antelope squirrels are diurnally active, with most activity occurring in the early morning or late afternoon. This species is buff and yellow-brown above with a white stripe on each side and white under its tail. It can reach up to 10 inches in length. Nelson's ground squirrels feed primarily on grass and forb seeds, insects, and other green vegetation. The primary threats to this species include loss of habitat due to agriculture, urbanization, petroleum extraction, and rodent control poisons (Whitaker et al. 2008).

3.5.2.17 Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*) CSC

The pallid San Diego pocket mouse is a CSC. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican border. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus; and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or course gravel (Grinnell 1933, Miller and Stebbins 1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and pinyon-juniper woodlands. Pallid San Diego pocket mouse densities have been recorded as high as 39 per hectare (Lackey 1996). This species is similar in appearance to *C.f. fallax* but is lighter in overall coloration. Population declines may be due to urban and agricultural development.

3.5.2.18 San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE, CSC

The San Bernardino kangaroo rat is a federally endangered species and a CSC. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside Counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about 7 distinct populations. It prefers gravelly and sandy soils in alluvial habitats where it constructs underground burrows, and it rarely occurs in dense vegetation. This species is a small, nocturnally active rodent with pale yellow and dusky brown fur, and dark brown tail stripes, footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in is burrows for later consumption. It also consumes some green vegetation and insects when available. The primary threats to the continued existence of this species include habitat loss, degradation, and fragmentation due to developments related to housing, mining, and flood control (CDPR 1998).

3.5.2.19 Sierra Madre Yellow-Legged Frog (*Rana muscosa*) FE, SCE, CSC

The Sierra Madre yellow-legged frog is a federal-listed endangered, state candidate for listing as endangered, and a CSC. This species is found in the Sierra Nevadas from Fresno County to Kern County, and isolated populations are found in the San Gabriel, San Bernardino, and San Jacinto mountains of

southern California, ranging in elevation from 4,500 to 11,980 feet amsl. This species was previously known as the mountain yellow-legged frog but is now considered a separate species from those found north of the Kings River north and middle forks, known as the Sierra Nevada yellow-legged frog (*Rana sierrae).* They range in size from 1.5 to 3.5 inches snout to vent length; and coloration is highly variable with olive, yellow, or brown with black or brown speckling above and pale yellow to orange below and on the hind legs (Calherps 2011b). They can be distinguished from *Rana sierra* by having slightly longer hind legs and a different mating call; both smell like garlic when handled (Calherps 2011b). Sierra Nevada populations occur in montane riparian, lodgepole pine, subalpine conifer, and wet meadows in association with lakes, ponds, and streams; southern California populations are found in lakes, ponds, and streams of montane conifer-hardwood, montane riparian, and ponderosa pine habitats. Adults feed on aquatic and terrestrial invertebrates; tadpoles feed on algae and diatoms. Sierra Madre yellow-legged frogs are closely associated with aquatic environments and can be found in vegetation or on perching rocks within a few feet of water, diving into the water when threatened. They lay their eggs in shallow water and attach them to gravel or rocks; tadpoles can take up to two over-wintering periods to complete their aquatic development. They are diurnally active and will hibernate over the winter under the ice, and southern populations may estivate. Threats to this species include bullfrogs, non-native trout, cattle grazing, mining, off-road vehicles, public dumping, chytrid fungus, fires, and excessive flooding (Calherps 2011b).

3.5.2.20 Short-Eared Owl (*Asio flammeus*) CSC

The short-eared owl (nesting) is a CSC. The range of this species is nearly worldwide; and in North America, it breeds in northern Canada and Alaska as well as in large portions of the western U.S. and the Great Lakes area. In California, this species is an uncommon winter migrant in the Central Valley, Sierra Nevada, and southern California; and it is known to breed from the San Francisco area north. Migrants arrive in California in September to October and leave in April. Habitats include grasslands, prairies, dunes, tundra, meadows, irrigated fields, wetlands, and fresh and saltwater marshes. Within these open habitat types, it prefers denser areas where it can seek cover along the ground. Short-eared owls nest in depressions on dry ground where vegetation provides cover; nests are built with grasses, sticks, feathers, and forbs. Clutch size ranges from 3 to 14 eggs. Eggs are laid in April and incubated for 24 to 37 days, and the young fledge after 21 to 36 days. This owl is mostly active at night, but it may forage by day in late afternoons or on cloudy days. Although it feeds mostly on voles and other small mammals, it will also eat birds, amphibians, reptiles, and arthropods. It characteristically flies in an erratic and buoyant manner, low over open areas, before plunging feet first to catch prey. The short-eared owl is a relatively medium-sized owl with an overall tawny brown color and buffy wing patches. It has bold, yellow eyes that contrast sharply with its dark facial discs. Predators include golden eagles, great horned owls, snowy owls, and peregrine falcons. Small predatory mammals and large reptiles prey on eggs. Competitors include gulls, northern harriers, barn owls, and other owls. Overgrazing, destruction, and fragmentation of grasslands and wetland habitats, increased nest predation, and illegal shooting are all factors in the decline of this species.

3.5.2.21 Silvery Legless Lizard (*Anniella pulchra pulchra*) CSC

The silvery legless lizard is a CSC. Its range extends from the San Francisco Bay in California to northwestern Baja California, Mexico; and it can also be found on a few offshore islands of California. This species is found in chaparral, pine-oak woodlands, riparian woodlands, and also on beaches from sea level to around 5,100 feet. It occurs less commonly in desert scrub. Within these habitats, it prefers loose soils or sand for burrowing, moisture, warmth, and plant cover (Stebbins 2003). It forages in leaf

litter during the day for insects such as termites, spiders, beetles, and larvae. On warm evenings, it may emerge to forage during the night. This legless lizard has a silver, gray, or beige dorsal coloration with a dark mid-dorsal line and is yellow below. The primary threats to the continued existence of this species include habitat loss due to agriculture and urban sprawl, overabundant non-native vegetation (i.e. iceplant on sand dunes), sand mining operations, off-road vehicle use, and other anthropogenic disturbances, including trampling and over-collecting for the pet trade.

3.5.2.22 Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) WL

The southern California rufous-crowned sparrow is a CDFG WL species. It is one of 17 recognized subspecies of the rufous–crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico; however, this sub-species is a resident of southwest California on the slopes of the Transverse and Coast ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martin Island. Habitats include broken sage scrub and chaparral; native grasslands with sparse shrubs; and rocky, brush-laden hillsides and canyons with open patches. It is a small non-descript sparrow with a rusty crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

3.5.2.23 Southern Grasshopper Mouse (*Onychomys torridus ramona*) CSC

The southern grasshopper mouse is a CSC. It occurs throughout desert and semi-arid habitats in the southwestern United States and much of Mexico, including western Nevada; the southern portions of California, Arizona, and New Mexico; northern Baja California; western Texas; and south to central Mexico (Hall 1981). The subspecies *ramona* is restricted to coastal southern California, with marginal records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley (Hall 1981). The grasshopper mouse rangewide is often found in low, arid scrub and semi-scrub vegetation; but this subspecies is found in grasslands and sparse sage scrub habitats. It nests in burrows often dug by kangaroo rats and pocket gophers, but it may dig its own burrows in sandy or other friable substrates (Baily and Sperry 1929, Stapp 1997). Specific habitat requirements of the southern grasshopper mouse generally are unknown, but Stapp (1997) found that grasshopper mice use open areas and microhabitats dominated by gopher mounds and burrows. Stapp suggests that grasshopper mice selected these microhabitats because of greater prey availability (i.e., arthropods using burrows for refuge), greater mobility in open areas, and dust bathing sites. It prefers low to moderate shrub cover and is active year-round. Unlike most other mice, this species is primarily carnivorous. It feeds nocturnally on a variety of arthropods, including grasshoppers, beetles, and scorpions. It will also feed on frogs, salamanders, lizards, small mammals, and, occasionally, seeds. It has been known to kill species larger than itself, such as kangaroo rats. Prey items are stalked, rushed, seized, and typically killed with a bite in the head. Curiously, it emits a howl on occasion, perhaps in defense of its territory. Home ranges can be as large as four hectares; and, consistent with its carnivorous nature, population densities are normally low. It breeds from May to June; and after about 30 days, it gives birth to an average of 4 young. Predators include snakes, raptors, and a variety of mammals, including coyotes, owls, and foxes. Habitat loss and degradation are the primary threats to this species.

3.5.2.24 Swainson's Hawk (*Buteo swainsoni*) ST

The Swainson's hawk (nesting) is a state-listed threatened species. This species breeds from southwest Canada through the western U.S. into northern Mexico, with isolated breeding populations also observed in northern Illinois and the Sacramento and San Joaquin valleys of California. This species winters to South America. The Swainson's hawk forages in open stands of grass-dominated vegetation; sparse shrublands; and small, open woodlands. It typically nests in scattered trees within these grassland, shrubland, or agricultural landscapes. The Swainson's hawk feeds largely on insects, and thus is affected by pesticide use, particularly DDT and organophosphate pesticides currently used in South America (England et al. 1997).

3.5.2.25 Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*) CSC

The Tehachapi pocket mouse is a CSC. This species occurs in the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos, and east to the lower San Gabriel Mountains to Lake Elizabeth (Laabs 1998). The Tehachapi pocket mouse is one of two subspecies of *Perognathus alticola*; the second subspecies, *P. a. alticola,* occurs in the San Bernardino Mountains and has not been observed in over 50 years. Male Tehachapi pocket mice can reach up to 6.5 inches in length; while females are significantly smaller, reaching only 5.9 inches. Both sexes are yellowish-brown with a heavy overlay of black dorsally and white ventrally; facial markings are fainter, and the inside of the ears are white; its tail is bicolored and is slightly longer than head to body length (Laabs 1998). This species occurs in native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland, oak savanna, chaparral, coastal sage scrub, fallow grain fields, and rangeland at elevations ranging from 3,500 to 6,000 feet amsl, preferring loose, sandy soils for burrowing (Laabs 1998). They are nocturnal, feeding on seeds of grasses and forbs but will eat green vegetation and insects. Threats to this species include surface disturbance like mineral extraction and conversion of habitat to urban development.

3.5.2.26 Tricolored Blackbird (*Agelaius tricolor*) CSC

The tricolored blackbird (nesting colony) is a CSC that occurs primarily in California, with smaller populations in northern Mexico. This species is locally common in parts of the Central Valley and along the coast in Sonoma County but is not found commonly over most parts of its range. This species breeds near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds. Breeding season usually takes place from mid-April into late July, but Orians (1960) also reported active breeding in October and November in Sacramento Valley. Over the past few decades, numbers have been declining in California (DeHaven 1975). Reasons for the decline include the conversion of marshland habitats and agricultural poisoning.

3.5.2.27 Two-Striped Garter Snake (*Thamnophis hammondii*) CSC

The two-striped garter snake is a CSC. It is found in disjunct populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may

surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. The historic range of this species has been lost to housing, urban development, and other human impacts by an estimated 40 percent (Stebbins 2003).

3.5.2.28 Western Pond Turtle (*Actinemys marmorata pallida*) CSC

The western pond turtle is a CSC. This species occurs along the coast of North America from Baja California up to San Francisco Bay and occurs from sea level to 5,900 feet in elevation (Calherps 2011a). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (Calherps 2011a). The western pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Basking sites are necessary for thermoregulation. Reptile body temperature is dependent upon the environment the air, the substratum, and solar radiation. Basking is absorption of the sun's radiation and/or through the substratum. This species occurs in a variety of habitat types including woodland, grassland, and open forest (Calherps 2011a). Although this species is considered aquatic, this species usually leaves the aquatic site to reproduce, to estivate, and to overwinter. Pond turtles hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (Calherps 2011a). The species is highly sensitive to disturbance and will quickly slide into water when they feel threatened. Pond turtles are diurnal and are most active from February to November; however, if water temperatures remain warm, this species may be active year long (Bury 2008). Mating takes place in April or May, and females will deposit eggs in a vegetated upland location that may be a considerable distance (400 m or more) from the aquatic habitat to the nest. Eggs are generally deposited in grassy, upland areas adjacent to streams during May and June, although some individuals may deposit eggs as early as April and as late as August. Hatchlings will stay at the nest location and will emerge in the early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and occasionally frogs and fish (Calherps 2011a). Habitat destruction is the primary threat to this species. Dams also cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury 2008).

3.5.2.29 Western Mastiff Bat (*Eumops perotis*) CSC

The western mastiff bat is listed as a CSC. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown (TPWD 2008).

3.5.2.30 Western Snowy Plover (*Charadruis alexandrinus nivosus*) FT, CSC

The western snowy plover (nesting, coastal populations) is federally listed as threatened and is also a CSC. The Pacific coastal population breeds primarily on beaches from southern Washington to southern Baja California, Mexico. Interior populations can be found in the Central Valley of California, Oregon, Nevada, and other western states. The western snowy plover nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitats, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds, and infrequently on bluff-backed beaches (USFWS 2001). This small plover has a pale tan back, rump, and tail; white underparts; and dark patches on the sides of its neck that reach around onto the top of its chest. Habitat alteration and recreational beach use have led to a serious decline in nesting habitat and populations over the last 40 years (USFWS 2001, Page et al. 1995).

3.5.2.31 White-Faced Ibis (*Plegadis chihi*) WL

The white-faced ibis (nesting colony) is a CDFG WL species. It breeds across the western United States northward to Montana, eastward to western Louisiana, and southward to South America. It winters from southern California and Louisiana southward. The white-faced ibis usually nests in low trees and shrubs over shallow water. It inhabits primarily freshwater wetlands, especially cattail and bulrush marshes. It feeds in flooded hay meadows, agricultural fields, and estuarine wetlands. The white-faced ibis is a dark bronze-colored wader with a long, decurved bill. During the breeding season, adults have distinctive white feathers along the edges of their bare facial skin. Erosion and flood-control measures and irrigation projects have eliminated or degraded traditional nesting colony sites, leading to nest abandonment. Other losses of wetland habitat can also negatively affect populations (Ryder and Manry 1994).

3.6. SPECIES OBSERVED

The following plant species were observed while habitat assessments were conducted on the Project site: annual bur-sage (*Ambrosia acanthicarpa*), pineapple weed (*Chamomilla suaveolens*), prickly lettuce, cudweed aster (*Lessingia filaginifolia*), wreathplant (*Stephanomeria* sp.), fiddlenecks (*Amsinckia* sp.), western tansy-mustard (*Descurainia pinnata*), Russian thistle, rattlesnake weed (*Chamaesyce albomarginata*), dove weed (*Eremocarpus setigerus*), lupine (*Lupinus* sp.), red-stemmed filaree (*Erodium cicutarium*), dune evening primrose (*Oenothera deltoides*), salt cedar, Siberian elm (*Ulmus pumila*), cheat grass (*Bromus tectorum*), foxtail barley (*Hordeum murinum*), Mediterranean schismus (*Schismus barbatus*) and fescue (*Vulpia myuros*).

The following wildlife species were observed while habitat assessments were conducted on the Project site: Great horned owl (2 nests; *Bubo virginianus*), common raven (*Corvus corax*), horned lark (*Eremophila alepestris*), domestic sheep (*Ovis aries*), gopher (mounds; *Thomomys* sp.) and ground squirrel (burrows; *Spermophillus* sp.).

The following 19 special status plant species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- alkali mariposa lily
- Barstow woolly sunflower

- Clokey's cryptantha
- Davidson's bush mallow
- Darwin rock cress
- desert cymopterus
- Horn's milk-vetch
- Lancaster milk-vetch
- pale-yellow layia Parish's popcorn-flower
- Parry's spineflower
- Peirson's morning-glory
- recurved larkspur
- round-leaved filaree
- sagebrush loeflingia
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa lily
- white pygmy-poppy

The following 28 special status wildlife species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- American badger
- arroyo toad
- Bell's sage sparrow
- California red-legged frog
- coast horned lizard
- Cooper's hawk
- desert tortoise
- least Bell's vireo
- Le Conte's thrasher
- loggerhead shrike
- Merlin
- Mohave ground squirrel
- mountain plover
- Nelson's antelope squirrel
- pallid San Diego pocket mouse
- San Bernardino kangaroo rat
- Sierra Madre yellow-legged frog
- short-eared owl
- southern California rufous-crowned sparrow
- southern grasshopper mouse
- Swainson's hawk
- Tehachapi pocket mouse
- tricolored blackbird
- two-striped garter snake
- western pond turtle
- western mastiff bat

- western snowy plover
- white-faced ibis

The following special status wildlife species has a **low** potential to occur onsite due to the presence of low quality suitable habitat on the Project site, the quality of adjacent habitat, and historical records of these species occurring within five miles of the Project site:

- silvery legless lizard

The following special status wildlife species has a **moderate** potential to occur on the Project site due to the presence of low quality suitable habitat and historical records of these species occurring within three miles of the Project site:

- Burrowing owl. The Project site is primarily a fallow agricultural field and several small mammal burrows where observed on the site, which could provide a prey source and nesting habitat for the burrowing owl. In addition, burrowing owls have been recorded to occur within three miles of the Project site. Therefore, the burrowing owl has a moderate potential for occurrence on the Project site.

The following special status wildlife species has a **high** potential to occur on the Project site due to the presence of high quality suitable habitat and historical records of these species occurring within one mile of the Project site:

- Ferruginous hawk. The Ferruginous hawk is present in California during the winter season. This species winters in open terrain from grasslands to deserts where small mammals are abundant. Several small mammal burrows were observed on the Project site. In addition, Ferruginous hawks have been recorded to occur within one mile of the site. Therefore, the ferruginous hawk has a high potential for occurrence (foraging) on the Project site.

SECTION 4.0 – CONCLUSIONS

4.1. SPECIAL STATUS SPECIES

The Project site is primarily a fallow agricultural site. All of the special status plant species known to occur within the vicinity of the Project site are considered absent due to lack of suitable habitat; therefore, no further surveys for special status plant species are recommended at this time.

Of the 31 special status wildlife species known to occur within the vicinity of the Project site, 29 are considered absent or have a low potential to occur due to lack of suitable habitat; therefore, no further surveys for these special status wildlife species are recommended at this time.

4.1.1 Burrowing Owl

There is a moderate potential for burrowing owl to occur on the project site. Although burrowing owls are not federal- and/or state-listed as endangered or threatened, this species is listed as a CSC. While the majority of CSC listed species do not typically require focused surveys, specific focused survey protocol for the burrowing owl has been developed by the California Burrowing Owl Consortium and adopted by the CDFG.

4.1.2 Ferruginous Hawk

The ferruginous hawk has a high potential for occurrence on the Project site, however this species is not listed as federal and/or state threatened or endangered. Therefore, no additional surveys are recommended for this species at this time.

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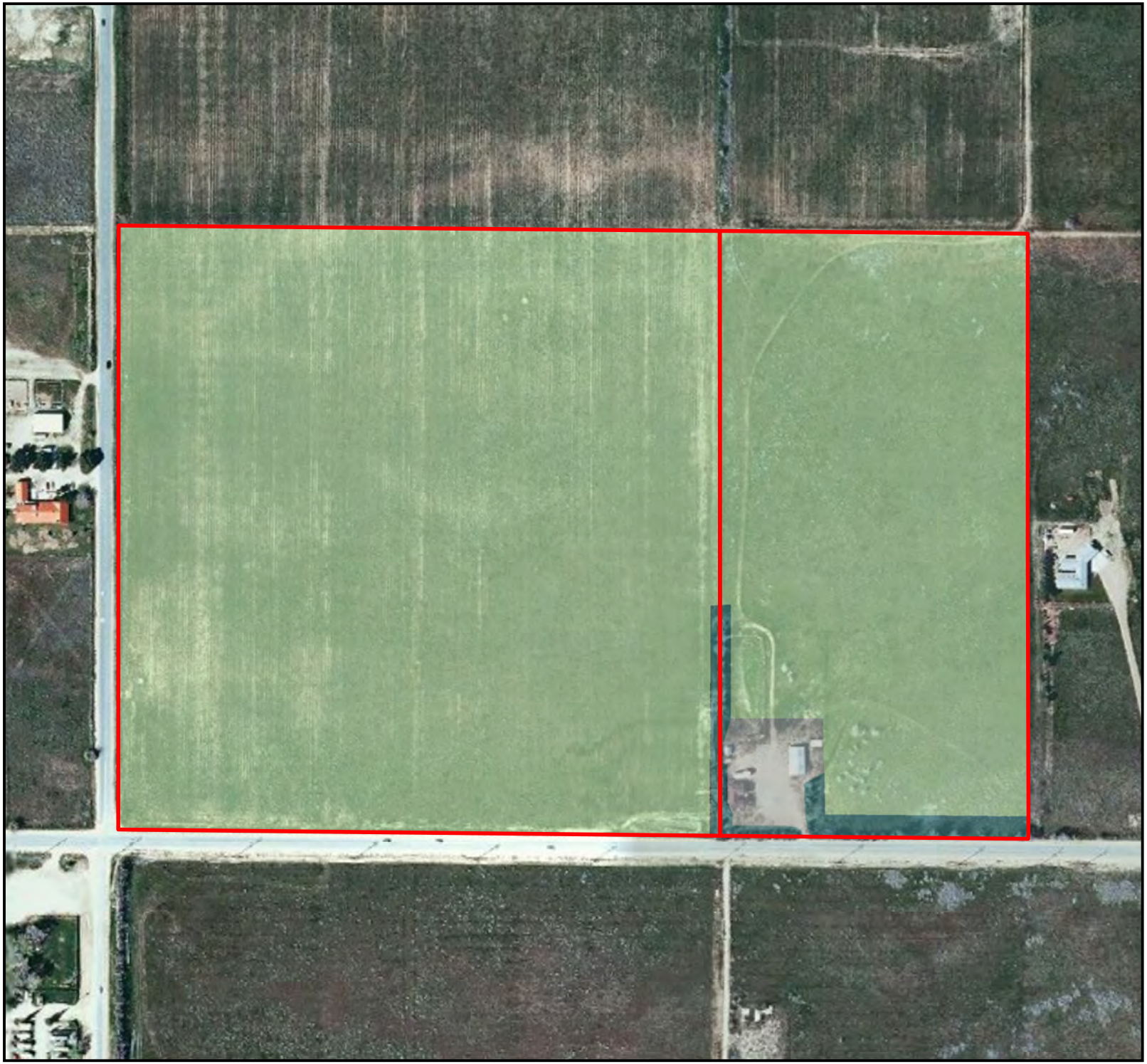
APPENDIX A – VEGETATION COMMUNITIES MAP



Vegetation Map
Apex Greenworks

Apex Greenworks
Developed
Non-Native Annual Grassland
Tamarisk Scrub

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APPENDIX B – SITE PHOTOGRAPHS

APPENDIX B – SITE PHOTOGRAPHS

	Photo 1- Apex Greenworks. Photo is taken looking south across the Project site.
	Photo 2- Apex Greenworks. Photo is taken looking southeast across the Project site.
	Photo 3- Apex Greenworks. Photo is taken looking east across the Project site.

BIOLOGICAL TECHNICAL REPORT FOR THE CENTRAL ANTELOPE DRY FARM RANCH PROJECT SITE (CUP 10) CITY OF LANCASTER LOS ANGELES COUNTY, CALIFORNIA

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SECTION 1.0 – INTRODUCTION

Silverado Power, LLC (Silverado Power) is an independent solar power producer and developer of distributed solar power assets for utilities that are for both municipally and investor owned. Silverado Power strives to be a leader in wholesale solar power generation and the process of developing, building, and operating solar generation facilities (SGFs).

Chambers Group, Inc. (Chambers Group) was retained by Tetratech (for Silverado Power) to conduct a literature review and biological technical report (BTR) on the proposed Central Antelope Dry Farm Ranch Solar project site located in Los Angeles County. The purpose of this document is to report the results of the reconnaissance-level biological survey.

1.1. PROJECT DESCRIPTION

Silverado Power plans to develop the Central Antelope Dry Farm Ranch SGF (the Project). The Project facilities would operate year-round, producing electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the fourth quarter of 2014.

The proposed Project would have a generating capacity of 16 megawatts alternating current (MW-AC). The Project will employ photovoltaic (PV) modules to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system.

The Project would meet the increasing demand for electricity generated from clean, renewable technology. The recent legislation enacted in California recognizes the multiple benefits associated with the development of renewable energy resources. These benefits include a reduced reliance on foreign sources of fuel, promotion of national security, diversification of energy portfolios, reductions in greenhouse gas emissions, and the creation of “green” jobs within the state of California.

1.2. PROJECT LOCATION

The proposed Project site (APN: 3218-001-003) encompases approximately 98 acres of previously disturbed, fallow agricultural land in the Antelope Valley area of unincorporated northeastern Los Angeles County. Antelope Dry Farm Ranch is located on the southwest corner of the intersection of West Avenue I and 95th Street West approximately a half mile north of the Antelope Valley electrical substation. The site is located within the *Del Sur* California USGS 7.5 minute quadrangle. Agriculturte fields and small areas of development surround the Project site. Project Regional and Vicinity maps are presented in Figure 1 and Figure 2.

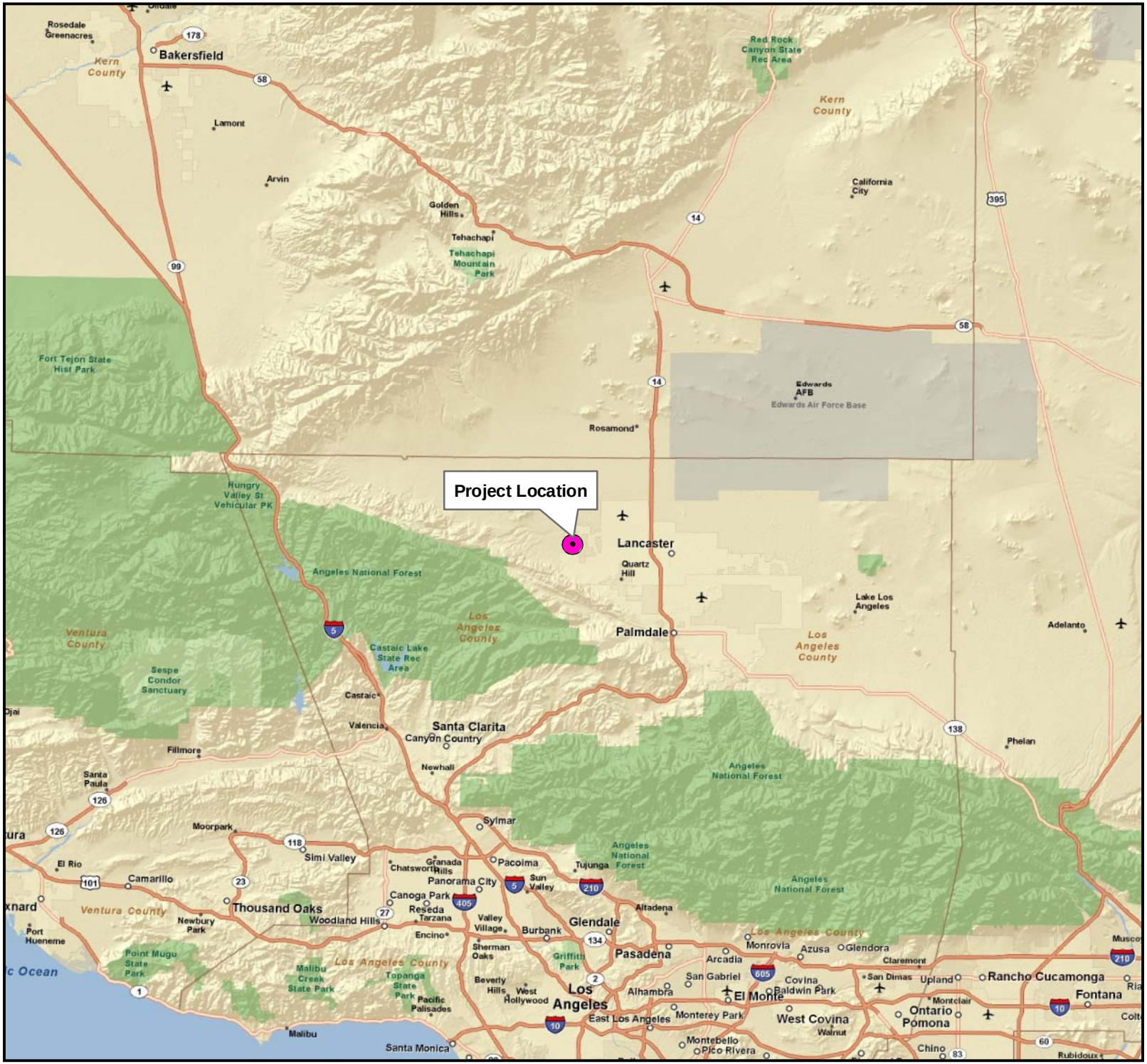

Figure 1
Regional Map
Central Antelope
Dry Farm Ranch

Legend

Project Location

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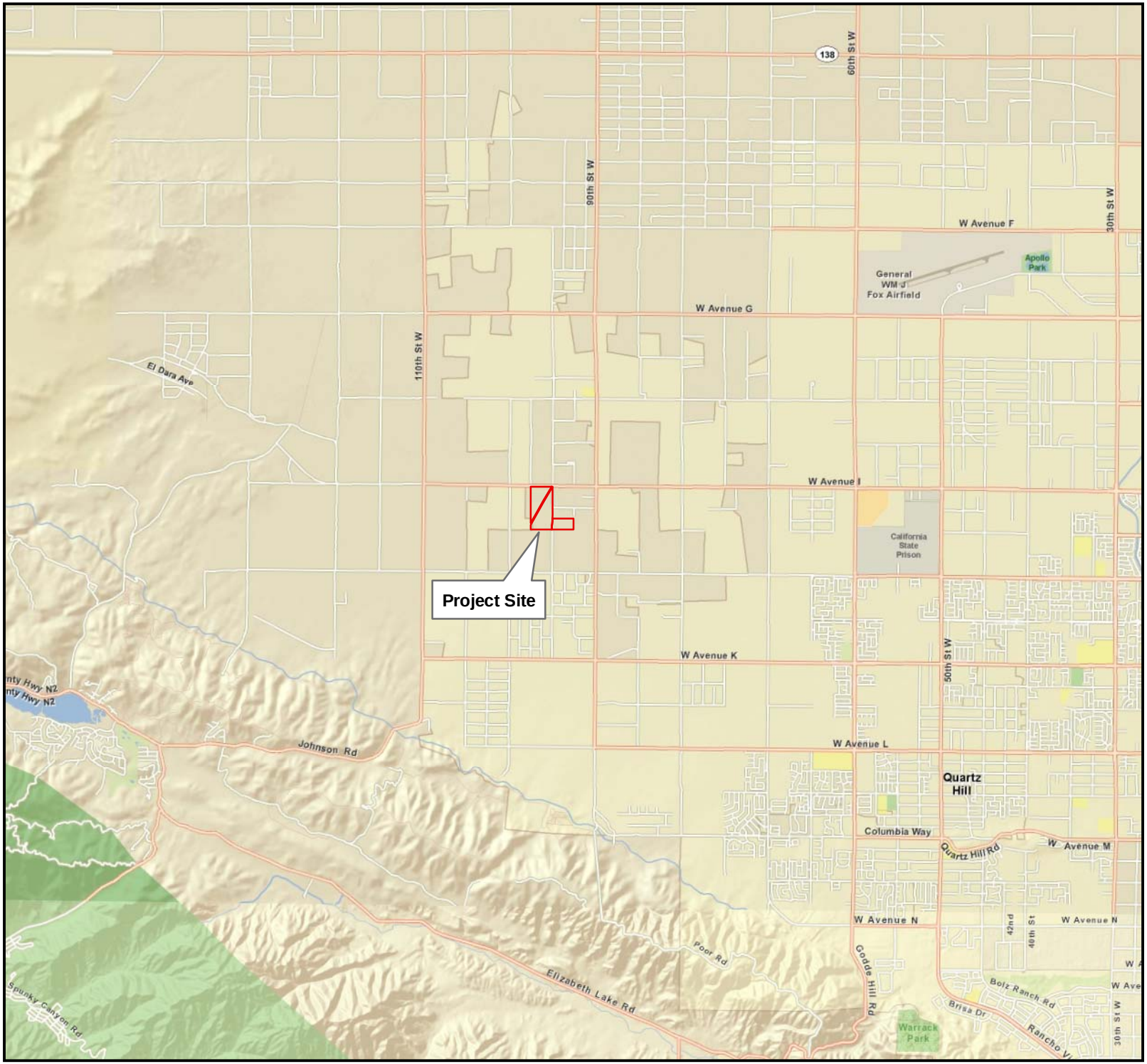

Figure 2
Vicinity Map
Central Antelope
Dry Farm Ranch

Legend

Project Site

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SECTION 2.0 – METHODS

2.1. LITERATURE REVIEW

Prior to conducting the field surveys, existing documentation relevant to the Project sites was reviewed. The most recent records of the California Department of Fish and Game California Natural Diversity Database (CNDDB 2011) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2011) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Fairmont Butte, Little Butte, Rosamond, Rosamond Lake, Redman, Alpine Butte, Lancaster East, Lancaster West, Del Sur, Lake Hughes, Burnt Peak, Little Rock, Lovejoy Buttes, El Mirage*, California USGS 7.5 minute quadrangles). The database contains records of reported occurrences of federal- or state-listed as endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Special Concern (CSC), or otherwise sensitive species or habitats that may occur within or in the vicinity of the Project sites.

2.2. BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

The field survey was conducted on the Project sites in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support special status wildlife species and to identify any potential jurisdictional waters of the United States. Chambers Group biologists Rebecca Alvidrez and Ana Hernandez conducted the general reconnaissance survey on May 17, 2011. Weather conditions during the survey included temperatures averaging approximately 58 degrees Fahrenheit with 80 percent cloud cover and no precipitation. During the survey the biologists walked the Project site documenting the native vegetation communities and took notes regarding the potential for special status species and jurisdictional waters to occur onsite. Photographs of the Project site were taken to document existing conditions.

2.3. VEGETATION

All plant species and soil types observed onsite were noted. Plant communities on the Project site were identified, qualitatively described, and mapped onto an aerial photograph (Appendix A). Plant communities were determined in accordance with the categories set forth in Holland (1986) or Gray and Bramlet (1992). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California* (Hickman 1993).

2.4. WILDLIFE

All wildlife and wildlife sign observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support state- and/or federal-listed or proposed listed species. Notes were made on the general habitat types, species observed, and the conditions of the site. Photographs of the site are provided in Appendix B.

SECTION 3.0 – RESULTS

3.1. LITERATURE REVIEW

According to the literature review, 19 special status plant and 31 special status wildlife species were documented to occur within the vicinity of the Project sites. This list included ten wildlife species that are federal- and/or state-listed endangered or threatened. Of the 19 special status plant species listed in the literature review, none are federal- and/or state-listed endangered or threatened.

3.2. VEGETATION COMMUNITIES

Lancaster Dry Farm Ranch is classified as an old agriculture field that is now Non-Native Annual Grassland with small patches of rubber rabbitbrush scrub (See Appendix A).

3.2.1 Non-native Annual Grassland

Non-Native Grassland consists of a dense to sparse cover of annual grasses such as oats (*Avena* sp.), bromes (*Bromus* sp.), and ryegrass (*Lolium* sp.) with flowering culms up to 3 feet in height. This community is often associated with numerous species of showy-flowered, native annual forbs "wildflowers" such as California poppy (*Eschscholzia californica*), lupines (*Lupinus* sp.), and goldfields (*Lasthenia* sp.) especially in years of favorable rainfall (Holland 1986). Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from winter through spring. Typically plants are dead through the summer-fall dry season persisting as seeds. Non-native grasslands can be found on fine-textured usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall.

The Project site consists primarily of Non-Native Grassland. Plant species observed on the Project site typical of this vegetation community include: cheatgrass (*Bromus tectorum*), foxtail chess (*Bromus madritensis* ssp. *Rubens*) and redstem filaree (*Erodium cicutarium*).

3.2.2 Rubber Rabbitbrush Scrub

Rubber Rabbitbrush Scrub is dominated by rubber rabbitbrush (*Chrysothamnus nauseosus*), usually approximately 3 feet in height with regularly-spaced gray-green shrubs that bloom in late summer or early fall (Holland 1986). Rabbitbrush Scrub is a disturbance-maintained community in which fire, grazing, or soil tilling perpetuate the same species within the herb and shrub layers and the disturbance occurs with regular (less than 10 years) frequency.

A small amount of Rubber Rabbitbrush Scrub is present within the northern portion of the Project site. Plant species found within this site typical of this vegetation community include: whitemargin sandmat (*Chamaesyce albomarginata*), fescue (*Vulpia myuros*) and rubber rabbitbrush.

3.3. JURISDICTIONAL FEATURES

No man-made agricultural irrigation basins or canals are located onsite.

3.4. SPECIAL STATUS SPECIES

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Project site.

CNPS

List 1A	=	Plants presumed extinct in California.
List 1B	=	Plants rare and endangered in California and throughout their range.
List 2	=	Plants rare, threatened, or endangered in California but more common elsewhere in their range.
List 3	=	Plants about which we need more information; a review list.
List 4	=	Plants of limited distribution; a watch list.

CNPS Extensions

0.1	=	Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2	=	Fairly endangered in California (20 to 80 percent occurrences threatened).
0.3	=	Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE	=	Federally listed; Endangered
FT	=	Federally listed; Threatened
FC	=	Federal Candidate for listing
FPT	=	Federal Proposed listing as Threatened

State

ST	=	State listed; Threatened
SE	=	State listed; Endangered
RARE	=	State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC	=	State Species of Special Concern
WL	=	California Department of Fish and Game (CDFG) Watch List

3.5. SENSITIVE SPECIES DESCRIPTIONS

3.5.1 Sensitive Plants in the Los Angeles County Area

3.5.1.1 Alkali Mariposa Lily (*Calochortus striatus*) CNPS List 1B.1

Alkali mariposa lily is a CNPS List 1B.2 species. This perennial, bulbiferous herb flowers between April and June. This species occurs on alkaline and mesic soils within Chaparral, Chenopod Scrub, Mojavean Desert Scrub, and Meadows and Seeps habitats at elevations between 230 and 5,233 feet above mean sea level (amsl). Known range for this species includes: Kern, Los Angeles, San Bernardino, and Tulare Counties. Threats to alkali mariposa lily include groundwater pumping urbanization, grazing, trampling, road construction, water diversion resulting in lowering the water table, and possibly horticultural collecting.

3.5.1.2 Barstow Woolly Sunflower (*Eriophyllum mohavense*) CNPS List 1B.2

Barstow woolly sunflower is a CNPS List 1B.2 species. This annual herb flowers between March and May. Barstow woolly sunflower occurs within Chenopod Scrub, Mojavean Desert Scrub, and Playas habitats at elevations between 1,640 and 3,150 feet amsl. Known range for this species includes: Fresno, Kern, Los Angeles, and San Bernardino Counties. Threats to this species include vehicles, grazing, energy development, and road improvements.

3.5.1.3 Clokey's Cryptantha (*Cryptantha clokeyi*) CNPS List 1B.2

Clokey's cryptantha is a CNPS List 1B.2 species. This annual herb flowers in April. Clokey's cryptantha occurs within Mojavean Desert Scrub habitat at elevations between 2,379 and 4,478 feet amsl. Known range for this species includes: Inyo, Los Angeles, and San Bernardino Counties. Major threats to this species include military activities and alteration of fire regimes.

3.5.1.4 Darwin Rock Cress (*Arabis pulchra* var. *munciensis*) CNPS List 2.3

Darwin rock cress is a CNPS List 2.3 species. This perennial herb flowers in April. Darwin rock cress occurs in carbonate soils of Chenopod Scrub and Mojavean Desert Scrub habitats at elevations between 3,608 and 6,807 feet amsl. Known range includes Inyo, Los Angeles, and San Bernardino Counties.

3.5.1.5 Davidson's Bush Mallow (*Malacothamnus davidsonii*) CNPS List 1B.2

Davidson's bush mallow is a CNPS List 1B.2 species. This perennial deciduous shrub flowers between June and January. Davidson's bush mallow occurs within chaparral, Coastal Scrub, Cismontane Woodland, and riparian woodland habitats at elevations between 607 and 2,805 feet amsl. Known ranges include: Los Angeles, Monterey, Santa Clara, San Mateo, and San Luis Obispo Counties. Urbanization, maintenance activities, and erosion are the main threats to this species.

3.5.1.6 Desert Cymopterus (*Cymopterus deserticola*) CNPS List 1B.1

Desert cymopterus is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs on sandy soils within Mojavean Desert Scrub and Joshua Tree Woodland habitats at elevations between 2,066 and 4,921 feet amsl. Known range for this species includes: Kern, Los Angeles, and San Bernardino Counties. Threats to desert cymopterus include military activities, sheep grazing, vehicles, utility construction, and urbanization.

3.5.1.7 Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*) CNPS List 1B.1

Horn's milk-vetch is a CNPS List 1B.1 species. This annual herb flowers between May and October. This species occurs along lake margins in poorly drained, alkaline soils of meadows and seeps and Playas habitats at elevations between 195 to 2,790 feet amsl. Known ranges include Inyo, Kern, and San Bernardino Counties and Nevada. Poisonous to sheep, it was subject to eradication by farmers in the early 1900s; current threats to Horn's milk-vetch are habitat alterations.

3.5.1.8 Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*) CNPS List 1B.1

Lancaster milk-vetch is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs within Chenopod Scrub habitat. Known ranges include Kern, Los Angeles, and San

Bernardino Counties and Nevada. Limited range, including areas only near Lancaster and Edwards Air Force Base, is the major threat to Lancaster milk-vetch.

3.5.1.9 Pale-Yellow Layia (*Layia heterotricha*) CNPS List 1B.1

Pale-yellow layia is a CNPS List 1B.1 species. This annual herb flowers between March and June. This species occurs in alkaline or clay soils within Cismontane Woodland, Coastal Scrub, Pinyon-Juniper Woodland, and Valley and Foothill Grassland habitats at elevations between 984 and 5,594 feet amsl. Known ranges include Fresno, Kern, Kings, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, San Benito, and Ventura Counties. Threats to pale-yellow layia include vehicle use, competition from non-native plants, agricultural conversion, and grazing.

3.5.1.10 Parish's Popcorn-Flower (*Plagiobothrys parishii*) CNPS List 1B.1

Parish's popcorn-flower is a CNPS List 1B.1 species. This annual herb flowers between March and November. This species occurs on alkaline and mesic soils within Great Basin Scrub and Joshua tree Woodland habitats at elevations between 2,460 and 4,595 feet amsl. Known range for this species includes: Inyo, Los Angeles, Mono, and San Bernardino Counties. Threats to Parish's popcorn-flower include groundwater pumping.

3.5.1.11 Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) CNPS List 1B.1

Parry's spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and June. This species occurs in sandy or rocky soils and openings within Cismontane Woodland, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 902 and 4,002 feet amsl. Known ranges include Los Angeles, Riverside and San Bernardino Counties. Threats to this species include development, altered flood regime, mining, vehicles, and competition from non-native plants.

3.5.1.12 Peirson's Morning-Glory (*Calystegia peirsonii*) CNPS List 4.2

Peirson's morning-glory is a CNPS List 4.2 species. This perennial, rhizomatous herb flowers between April and June. This species occurs within chaparral, Chenopod Scrub, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, and Valley and Foothill Grassland habitats at elevations between 98 and 5,085 feet amsl. Known ranges include Los Angeles County. Major threats to Peirson's morning-glory include grazing and development; possible threats include power line construction.

3.5.1.13 Recurved Larkspur (*Delphinium recurvatum*) CNPS List 1B.2

Recurved larkspur is a CNPS List 1B.2 species. This perennial herb flowers between March and June. This species occurs on alkaline soils within Chenopod Scrub, Cismontane Woodland, and Valley and Foothill Grassland habitats at elevations between 10 and 2,460 feet amsl. Known ranges of the recurved larkspur include: Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solana, Sutter, and Tulare Counties. Conversion of habitat, grazing, and trampling are threats to the recurved larkspur.

3.5.1.14 Round-Leaved Filaree (*California macrophylla*) CNPS List 1B.1

Round-leaved filaree is a CNPS List 1B.1 species. This annual herb flowers between March and May. Round-leaved filaree occurs in clay soils within Cismontane Woodland and Valley and Foothill Grassland

habitats at elevations between 50 and 3,937 feet amsl. Known ranges include Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, Santa Barbara, San Benito, Santa Clara, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Ventura, and Yolo Counties and Santa Cruz Island. Threats to this species include urbanization, feral pigs, habitat alteration, pipeline construction, urbanization and competition from non-native plants.

3.5.1.15 Sagebrush Loeflingia (*Loeflingia squarrosa*) CNPS List 2.2

Sagebrush loeflingia is a CNPS List 2.2 species. This annual herb flowers between April and May. This species occurs in sandy soils of Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub habitats at elevations between 2,295 and 5,300 feet amsl. Known range includes Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino Counties and Nevada, Oregon, and Wyoming. Possible threats to sagebrush loeflingia include off-highway vehicles and grazing.

3.5.1.16 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*) CNPS List 1B.1

San Fernando Valley spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and July. This species occurs in sandy soils of Coastal Scrub and Valley and Foothill Grassland habitats at elevations between 492 and 4,002 feet amsl. Known range includes Los Angeles, Orange, and Ventura Counties. Possible threats to this species include competition from non-native plants and development.

3.5.1.17 Short-Joint Beavertail (*Opuntia basilaris brachyclada*) CNPS List 1B.2

Short-joint beavertail is a CNPS List 1B.2 species. This perennial stem succulent flowers between April and June. This species occurs within chaparral, Mojavean Desert Scrub, Joshua Tree Woodland, and Pinyon-Juniper Woodland habitats at elevations between 394 and 5,905 feet amsl. Known range for this species includes Los Angeles and San Bernardino Counties. Major threats to short-joint beavertail include vehicles, grazing, urbanization, mining, and horticultural collecting; possible threats include power line construction.

3.5.1.18 Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*) CNPS List 1B.1

Slender mariposa lily is a CNPS List 1B.1 species. This perennial, bulbiferous herb flowers between March and June. This species occurs within chaparral, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 1,050 and 3,280 feet amsl. Known ranges include Los Angeles and Ventura Counties. Threats to slender mariposa lily include vehicles, development, mining, and competition from non-native plants.

3.5.1.19 White Pygmy-Poppy (*Canbya candida*) CNPS List 4.2

White pygmy-poppy is a CNPS List 4.2 species. This annual herb flowers between March and June. This species occurs on gravelly, sandy, or granitic soils within Joshua Tree Woodland, Mojave Desert Scrub, and Pinyon-Juniper Woodland habitats at elevations between 600 and 4,800 feet amsl. Known ranges include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino Counties. This species is threatened by development, off-highway vehicles, grazing, mining, and competition from non-native plants.

3.5.2 Sensitive Wildlife Species in the Los Angeles County Area

3.5.2.1 American Badger (*Taxidea taxus*) CSC

The American badger is a California Species of Concern (CSC). This carnivorous species ranges over most of the western U.S and upper midwestern U.S. south into central Mexico. In California, the badger may occupy a variety of habitats, especially grasslands, savannas, montane meadows, sparse scrublands, and deserts. It prefers friable soils for burrowing, and relatively open, uncultivated ground. Prey items include gophers, ground squirrels, marmots, kangaroo rats, other rodents, and the occasional reptile or amphibian. The American badger may weigh up to 25 pounds and is easily recognized by its overall yellowish gray coloration, the white stripe on top of its head, white cheeks, and black feet with noticeably long front claws. It is a heavy-bodied animal with short legs and a characteristic pigeon-toed gait. It is chiefly nocturnal, but it is often seen by day as well. It gives birth to two to five young anywhere from February to May, depending on its altitude and latitude. Threats to this species include habitat loss to agriculture, housing, and other land conversions, and illegal hunting.

3.5.2.2 Arroyo Toad (*Anaxyrus californicus*) FE, CSC

The arroyo toad is a federally endangered species and a CSC. The range of this species is within coastal California from Monterey County into northwestern Baja California, Mexico. It is found in washes, streams, and arroyos; and preferred habitats include sandy banks within riparian woodlands such as willow, cottonwood, sycamore, mulefat, and/or coast live oak. It breeds in shallow, sandy/gravelly riverine pools with low silt content and normally disperses onto adjacent uplands after breeding. Individuals have been observed up to 2 kilometers (km) from the streams in which they breed, but most often they are within 0.5 km of those streams (USFWS 1992a). During the breeding season, males call nocturnally from open areas on banks at the edges of streams. Males typically precede females at breeding sites. Females lay their eggs among gravel, leaves, or sticks, on mud or clean sand within low to moderately flowing sections of streams in areas with little or no emergent vegetation and little woody marginal growth. Newly metamorphosed individuals remain near pools for up to several weeks until the areas dry. Juveniles begin feeding primarily on ants and shift to small beetles as they grow (Sweet 1991) before moving into adjacent wintering grounds. Many spend the next 6 to 8 months overwintering in burrows up to 20 centimeters deep in sandy substrates of these habitats. Adults obtain shelter primarily by burrowing into fine, sandy soils in both adjacent and upland habitats (Sweet 1991). This small to moderately-sized species is distinguished from other toads by its chevron-shaped marking between the eyes and by the lack of a mid-dorsal stripe. Coloration may vary from light olive gray to tannish brown above, and the unmarked undersurfaces are creamy to dirty white. The iris is dark brown with scattered gold iridophores on the upper and lower portions of the iris. The primary threat to this species is habitat loss.

3.5.2.3 Bell's Sage Sparrow (*Amphispiza belli belli*) WL

The Bell's sage sparrow is a subspecies of sage sparrow and a CDFG Watch List (WL) species. It breeds primarily in chamise chaparral along the coastal side of California from the western foothills of the Sierra Nevada to San Diego County and northwest Mexico. It also breeds less commonly in coastal sage, mixed chaparral, and big sagebrush communities. Wintering birds of this subspecies may migrate to desert floors or remain in their breeding habitats. This species is distinguished from other sparrows by its gray head and back, thin white eye-ring, single dark breast spot, and heavy whisker-like pattern about the

face. Populations are in decline due to habitat loss and fragmentation, frequent wildfires, grazing, invasive plants, and brood parasitism caused by the brown-headed cowbird (*Molothrus ater*).

3.5.2.4 Burrowing Owl (*Athene cunicularia*) CSC

The burrowing owl, a CSC, is broadly distributed across the western United States with populations in Florida and Central and South America. Burrowing owls use a variety of natural and modified habitats for nesting and foraging, typically characterized by low-growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrublands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. Burrowing owls typically use burrows made by mammals, such as California ground squirrels (*Spermophilus beecheyi*), foxes, or badgers. They sometimes dig their own burrows and will often utilize man-made structures such as earthen berms; cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls often are found within, under, or in close proximity to man-made structures. Prey sources for this species include small rodents; arthropods such as spiders, crickets, centipedes, and grasshoppers; smaller birds; amphibians; reptiles; and carrion. Threats to the burrowing owl include loss of nesting burrows, habitat loss, and mortality from motor vehicles.

3.5.2.5 California Red-Legged Frog (*Rana aurora draytonii*) FT, CSC

The California red-legged frog is a federally threatened species and a CSC. It is found from Mendocino County in California south to northwestern Baja, Mexico. It may occur in a variety of habitats from near sea level to 8,000 feet in elevation and is strongly associated with permanent sources of water, including cattail and tule marshes, reservoirs, ponds, and stream sides. It prefers deep, still, or slow moving water with low salinity levels and shallow margins or riffle zones. This species may disperse far from water (up to one mile) during and after significant rain events, and other habitats may include moist woodlands and grasslands from the lowlands through the foothills. It may make seasonal movements into riparian thickets and upland habitats for foraging, where it may seek small mammal burrows, leaf litter, or other moist areas of refuge for shelter or hibernation. The metamorphosis of this species is slower than most large frog species, requiring 11 to 20 weeks of permanent water for larval development. Most individuals have a dark mask bordered by a whitish jaw stripe; a reddish-orange venter; and coarse red, yellow, black, and/or gray mottling in the groin. This subspecies of the red-legged frog has experienced dramatic population declines since the late nineteenth century; some estimates claim a 75 percent rate of disappearance from its former range. Threats to this species include habitat loss and predation by non-native species such as bullfrogs and non-native fishes. In addition, this species was historically exploited as a source of frog legs for human consumption.

3.5.2.6 Coast Horned Lizard (*Phrynosoma blainvillii*) CSC

The coast horned lizard is a CSC found along the Pacific coast of California on the western side of the Sierra Mountains to the Baja peninsular area in Mexico. This species is found in many habitats including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet amsl. It inhabits sandy washes or areas with loose, fine, sandy soils for burying and having low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native species of ants. Populations of this species have been reduced due to development, agriculture, and the introduction of Argentine ants that heavily compete with native ant species (Stebbins 2003). This species is approximately 2 to 4 inches in snout to vent

length (adult) with numerous elongated and pointed scales (spines) on the dorsal side and two rows of enlarged scales along the flank. This species is brown, yellowish, reddish, or gray with several dark bands that cross the back with highlighted white areas along the rear of the bands (Sherbrooke 2003).

3.5.2.7 Cooper's Hawk (*Accipiter cooperii*) WL

The Cooper's hawk (nesting) is a CDFG WL species. This species occurs as a migrant and/or resident over most of the U.S. from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known to breed in suburban and urban areas with similar tree structure to native habitats. This medium-sized (14 to 20 inches) hawk is well-adapted for hunting birds as prey with its long tail and short, rounded wings; these features allow maneuverability in pursuit and on the ambush. It is similar in appearance to the sharp-shinned hawk (*Accipiter striatus*) but is distinguished by its larger size, more rounded tail, and darker crown. In addition to birds, it may also take amphibians, reptiles, and small mammals as supplemental prey items. Historic population losses resulted from the widespread use of DDT. Other threats include habitat loss and illegal hunting (Remsen 1978).

3.5.2.8 Desert Tortoise (*Gopherus agassizzi*) FT, ST

The desert tortoise is a federal- and state-listed threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo Counties, as well as most of San Bernardino, Riverside, and Imperial Counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. It is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark gray-brown. Besides range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

3.5.2.9 Ferruginous Hawk (*Buteo regalis*) WL

The ferruginous hawk (wintering) is a CDFG WL species. This species nests from the Canadian prairie provinces south to Oregon, Nevada, Arizona, and Oklahoma and winters in the southern half of its breeding range as well as the southwestern states from California to west Texas, then south into Mexico. It requires large, open areas of grassland, sparse shrub, or desert habitats interspersed with trees. It roosts in open areas, usually on lone trees, cliff ledge, or hill scarps. It winters in open terrain from grasslands to deserts where pocket gophers, ground squirrels, or rabbits are abundant, and it nests in either natural or human-made structures or on cliffs, buttes, cut banks, shrubs, or trees. In addition to pocket gophers, ground squirrels, and rabbits, it also eats prairie dogs, snakes, lizards, birds, large insects, and other rodents. The ferruginous hawk has distinct light and dark morphs. Light morphs are

reddish or light brown above and whitish below, with rusty leg feathers and a pale tail. Dark morphs are uncommon in about less than 10 percent of the population and are a deep rufous to brown above and below with very bright white on the underside of the flight feathers and a narrow, white crescent on the underside of the wrist (Sibley 2003). This species is the largest of the buteos. The biggest threat to the ferruginous hawk is habitat loss, fragmentation, or degradation resulting from land use practices including conversion of native habitat to agriculture, urbanization, improper grazing practices, and conversion of shrubland to grassland (Collins and Reynolds 2005). Other threats include illegal shooting and collisions with cars.

3.5.2.10 Least Bell's Vireo (*Vireo bellii pusillus*) FE, SE

The least Bell's vireo was state-listed as an endangered subspecies of Bell's vireo by the CDFG in 1980 and federally listed as endangered by the U.S. Fish and Wildlife Service (USFWS) in 1986. Critical habitat for the least Bell's vireo was designated in 1994 (USFWS 1986). The least Bell's vireo subspecies is restricted to coastal and inland southern California and Baja California, Mexico. Its winter range extends along the Pacific coast from northern Mexico south to northern Nicaragua. The two major factors in the decline of least Bell's vireo populations are loss of habitat and nest parasitism by the brown headed-cowbird. Habitat loss, fragmentation, and degradation, especially along streams and rivers, due to development, agriculture, flood control projects, logging operations, and intensive cattle grazing practices, are the greatest threats to the continued existence of the least Bell's vireo. The least Bell's vireo is a small, gray songbird with pale yellow wash on its sides, two faint wing bars, and a faint eye ring. Preferred nesting habitat is low, dense, scrubby vegetation in early successional areas that are particularly dependent on riparian areas. Habitats may include willow woodlands and dense mule fat, scrub oak, coastal chaparral, and mesquite patches with dense early successional understories.

3.5.2.11 Le Conte's Thrasher (*Toxostoma lecontei*) CSC

The Le Conte's thrasher is a CSC in the San Joaquin Valley area. It occurs in deserts of the southwest U.S., southwestern Utah, southern Arizona, and northwestern Mexico (Weigand and Fitton 2008). Habitat includes open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; and in Joshua tree habitat with scattered shrubs. Le Conte's thrasher is a medium-sized songbird with a long dark tail, black decurved bill, and a plain grayish or sandy-colored body. It is distinguished from other thrashers by its unspotted breast, deep buff crissum, dark eye, and dark tail that contrasts sharply with its body. Le Conte's thrashers forage as generalists on bare ground and in vegetation litter under shrubs by scratching the soil and overturning objects (Weigand and Fitton 2008). In some parts of its range, this thrasher has lost extensive habitat to development; irrigated lawns, groves, and fields have been created over valuable xeric habitat. Development, wild burros, off-road vehicle recreation, and invasive plant species threaten this species (Weigand and Fitton 2008).

3.5.2.12 Loggerhead Shrike (*Lanius ludovicianus*) CSC

The loggerhead shrike (nesting) is a CSC. Its range includes most of the U.S. from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua tree woodlands, and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other structures that serve as lookout posts for potential prey. They prefer dense, thorny shrubs and trees, brush piles, and tumbleweeds for nesting (Seattle Audubon 2008). Both adults gather nesting materials,

including twigs, grass, hair, feathers, and green vegetation; but only females build the cup-shaped nests. They lay between 5 and 6 eggs, which are incubated for 15 to 17 days; and nestlings will leave the nest after 17 to 20 days but won't fly for another week (Seattle Audubon 2008). The loggerhead shrike is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. This bird has a habit of caching its food for later consumption by impaling its prey on thorns, sharp twigs, or barbed wire; hence the term "butcher bird." It is recognized by its black facial mask; overall gray, black, and white color pattern; relatively big head; and hook-tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988, Scott and Morrison 1990).

3.5.2.13 Merlin (*Falco columbarius*) WL

The merlin (wintering) is a CDFG WL species. This species breeds in the northern parts of the Northern Hemisphere and winters in northern South America and northern Africa. In California, it occurs as a winter resident. Breeding habitats include open woodlands, savannas, cliffs near grasslands, and tundra. Migratory habitats include foothills, marshes, and open coastlines. Wintering habitats include open grasslands, semi-open forests, and coastal areas (i.e. beach dunes, marshes, and tidal flats). The merlin is a small falcon, slightly larger than the American kestrel (*Falco sparverius*), and appears heavier and bulkier in flight than the kestrel. The adult male merlin has a gray-blue back and crown and rufous washes on the sides of the breast. The adult female may be up to 30 percent larger than the male and has a brown back. The merlin mainly feeds on other birds, especially migrating and over-wintering waterfowl and shorebirds. Threats to its populations include habitat loss, pesticide use, and heavy metal poisoning.

3.5.2.14 Mohave Ground Squirrel (*Spermophilus mohavensis*) ST

The Mohave ground squirrel is a state-listed threatened species. The Mohave ground squirrel is specific to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Johnson 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 1998). They inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils. They will also feed in annual grasslands (Johnson 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study showed that most of their diet includes seeds from winter fat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and saltbush (Laabs 1998). Mohave ground squirrels are active in spring and early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (Johnson 1990).

3.5.2.15 Mountain Plover (*Charadrius montanus*) CSC, FPT

The mountain plover (wintering) is a CSC and a federally Proposed Threatened Species. This species breeds from the prairie and sagebrush country of north-central Montana, eastern Wyoming, and the area around southeastern Colorado. It winters from central California along the southern border states southward to northern Mexico (Udvardy 1977). Breeding habitats include semi-arid plains, grasslands, and plateaus. Common wintering habitats consist of dry, barren ground, smooth dirt fields, agricultural fields, and shortgrass prairies. This species tends to form small flocks in the winter. It is one of the few shorebird species that prefers habitats away from water. It is an insectivore that eats flies, beetles, grasshoppers, crickets, and other insects. The mountain plover is a relatively non-descript shorebird with a short tail, long legs, plain brown plumage above, and whiter plumage below. Males develop a

black patch on the forehead during the breeding season. This species is sometimes confused with the American golden plover; but unlike that species, the belly and under-wing is a clean, white color and the legs are pale. Populations are in decline due to overgrazing practices and are also linked to declining prairie dog populations; mountain plovers often use prairie dog mounds as nest sites. The continued loss and alteration of habitats on breeding and wintering grounds are the primary threats to the mountain plover.

3.5.2.16 Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*) ST

The Nelson's antelope squirrel is a state threatened species. Nelson's antelope squirrels are restricted to the central and western areas of the San Joaquin Valley and inner coast ranges from 165 to 3,608 feet amsl. This species is found in alkali desert scrub and annual grasslands habitats on a variety of soil types including alluvial, loamy, sandy, gravely, or fine-textured sands. This species rarely digs its own burrows, preferring instead to use burrows made by other small mammals. Nelson's antelope squirrels are diurnally active, with most activity occurring in the early morning or late afternoon. This species is buff and yellow-brown above with a white stripe on each side and white under its tail. It can reach up to 10 inches in length. Nelson's ground squirrels feed primarily on grass and forb seeds, insects, and other green vegetation. The primary threats to this species include loss of habitat due to agriculture, urbanization, petroleum extraction, and rodent control poisons (Whitaker et al. 2008).

3.5.2.17 Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*) CSC

The pallid San Diego pocket mouse is a CSC. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican border. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus; and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or course gravel (Grinnell 1933, Miller and Stebbins 1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and pinyon-juniper woodlands. Pallid San Diego pocket mouse densities have been recorded as high as 39 per hectare (Lackey 1996). This species is similar in appearance to *C.f. fallax* but is lighter in overall coloration. Population declines may be due to urban and agricultural development.

3.5.2.18 San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE, CSC

The San Bernardino kangaroo rat is a federally endangered species and a CSC. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside Counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about 7 distinct populations. It prefers gravelly and sandy soils in alluvial habitats where it constructs underground burrows, and it rarely occurs in dense vegetation. This species is a small, nocturnally active rodent with pale yellow and dusky brown fur, and dark brown tail stripes, footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in is burrows for later consumption. It also consumes some green vegetation and insects when available. The primary threats to the continued existence of this species include habitat loss,

degradation, and fragmentation due to developments related to housing, mining, and flood control (CDPR 1998).

3.5.2.19 Sierra Madre Yellow-Legged Frog (*Rana muscosa*) FE, SCE, CSC

The Sierra Madre yellow-legged frog is a federal-listed endangered, state candidate for listing as endangered, and a CSC. This species is found in the Sierra Nevadas from Fresno County to Kern County, and isolated populations are found in the San Gabriel, San Bernardino, and San Jacinto mountains of southern California, ranging in elevation from 4,500 to 11,980 feet amsl. This species was previously known as the mountain yellow-legged frog but is now considered a separate species from those found north of the Kings River north and middle forks, known as the Sierra Nevada yellow-legged frog (*Rana sierrae).* They range in size from 1.5 to 3.5 inches snout to vent length; and coloration is highly variable with olive, yellow, or brown with black or brown speckling above and pale yellow to orange below and on the hind legs (Calherps 2011b). They can be distinguished from *Rana sierra* by having slightly longer hind legs and a different mating call; both smell like garlic when handled (Calherps 2011b). Sierra Nevada populations occur in montane riparian, lodgepole pine, subalpine conifer, and wet meadows in association with lakes, ponds, and streams; southern California populations are found in lakes, ponds, and streams of montane conifer-hardwood, montane riparian, and ponderosa pine habitats. Adults feed on aquatic and terrestrial invertebrates; tadpoles feed on algae and diatoms. Sierra Madre yellow-legged frogs are closely associated with aquatic environments and can be found in vegetation or on perching rocks within a few feet of water, diving into the water when threatened. They lay their eggs in shallow water and attach them to gravel or rocks; tadpoles can take up to two over-wintering periods to complete their aquatic development. They are diurnally active and will hibernate over the winter under the ice, and southern populations may estivate. Threats to this species include bullfrogs, non-native trout, cattle grazing, mining, off-road vehicles, public dumping, chytrid fungus, fires, and excessive flooding (Calherps 2011b).

3.5.2.20 Short-Eared Owl (*Asio flammeus*) CSC

The short-eared owl (nesting) is a CSC. The range of this species is nearly worldwide; and in North America, it breeds in northern Canada and Alaska as well as in large portions of the western U.S. and the Great Lakes area. In California, this species is an uncommon winter migrant in the Central Valley, Sierra Nevada, and southern California; and it is known to breed from the San Francisco area north. Migrants arrive in California in September to October and leave in April. Habitats include grasslands, prairies, dunes, tundra, meadows, irrigated fields, wetlands, and fresh and saltwater marshes. Within these open habitat types, it prefers denser areas where it can seek cover along the ground. Short-eared owls nest in depressions on dry ground where vegetation provides cover; nests are built with grasses, sticks, feathers, and forbs. Clutch size ranges from 3 to 14 eggs. Eggs are laid in April and incubated for 24 to 37 days, and the young fledge after 21 to 36 days. This owl is mostly active at night, but it may forage by day in late afternoons or on cloudy days. Although it feeds mostly on voles and other small mammals, it will also eat birds, amphibians, reptiles, and arthropods. It characteristically flies in an erratic and buoyant manner, low over open areas, before plunging feet first to catch prey. The short-eared owl is a relatively medium-sized owl with an overall tawny brown color and buffy wing patches. It has bold, yellow eyes that contrast sharply with its dark facial discs. Predators include golden eagles, great horned owls, snowy owls, and peregrine falcons. Small predatory mammals and large reptiles prey on eggs. Competitors include gulls, northern harriers, barn owls, and other owls. Overgrazing, destruction, and fragmentation of grasslands and wetland habitats, increased nest predation, and illegal shooting are all factors in the decline of this species.

3.5.2.21 Silvery Legless Lizard (*Anniella pulchra pulchra*) CSC

The silvery legless lizard is a CSC. Its range extends from the San Francisco Bay in California to northwestern Baja California, Mexico; and it can also be found on a few offshore islands of California. This species is found in chaparral, pine-oak woodlands, riparian woodlands, and also on beaches from sea level to around 5,100 feet. It occurs less commonly in desert scrub. Within these habitats, it prefers loose soils or sand for burrowing, moisture, warmth, and plant cover (Stebbins 2003). It forages in leaf litter during the day for insects such as termites, spiders, beetles, and larvae. On warm evenings, it may emerge to forage during the night. This legless lizard has a silver, gray, or beige dorsal coloration with a dark mid-dorsal line and is yellow below. The primary threats to the continued existence of this species include habitat loss due to agriculture and urban sprawl, overabundant non-native vegetation (i.e. iceplant on sand dunes), sand mining operations, off-road vehicle use, and other anthropogenic disturbances, including trampling and over-collecting for the pet trade.

3.5.2.22 Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) WL

The southern California rufous-crowned sparrow is a CDFG WL species. It is one of 17 recognized subspecies of the rufous–crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico; however, this sub-species is a resident of southwest California on the slopes of the Transverse and Coast ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martin Island. Habitats include broken sage scrub and chaparral; native grasslands with sparse shrubs; and rocky, brush-laden hillsides and canyons with open patches. It is a small non-descript sparrow with a rusty crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

3.5.2.23 Southern Grasshopper Mouse (*Onychomys torridus ramona*) CSC

The southern grasshopper mouse is a CSC. It occurs throughout desert and semi-arid habitats in the southwestern United States and much of Mexico, including western Nevada; the southern portions of California, Arizona, and New Mexico; northern Baja California; western Texas; and south to central Mexico (Hall 1981). The subspecies *ramona* is restricted to coastal southern California, with marginal records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley (Hall 1981). The grasshopper mouse rangewide is often found in low, arid scrub and semi-scrub vegetation; but this subspecies is found in grasslands and sparse sage scrub habitats. It nests in burrows often dug by kangaroo rats and pocket gophers, but it may dig its own burrows in sandy or other friable substrates (Baily and Sperry 1929, Stapp 1997). Specific habitat requirements of the southern grasshopper mouse generally are unknown, but Stapp (1997) found that grasshopper mice use open areas and microhabitats dominated by gopher mounds and burrows. Stapp suggests that grasshopper mice selected these microhabitats because of greater prey availability (i.e., arthropods using burrows for refuge), greater mobility in open areas, and dust bathing sites. It prefers low to moderate shrub cover and is active year-round. Unlike most other mice, this species is primarily carnivorous. It feeds nocturnally on a variety of arthropods, including grasshoppers, beetles, and scorpions. It will also feed on frogs, salamanders, lizards, small mammals, and, occasionally, seeds. It has been known to kill species larger than itself, such as kangaroo rats. Prey items are stalked, rushed, seized, and typically killed with a bite in the head. Curiously, it emits a howl on occasion, perhaps in defense of its territory. Home ranges can be as large

as four hectares; and, consistent with its carnivorous nature, population densities are normally low. It breeds from May to June; and after about 30 days, it gives birth to an average of 4 young. Predators include snakes, raptors, and a variety of mammals, including coyotes, owls, and foxes. Habitat loss and degradation are the primary threats to this species.

3.5.2.24 Swainson's Hawk (*Buteo swainsoni*) ST

The Swainson's hawk (nesting) is a state-listed threatened species. This species breeds from southwest Canada through the western U.S. into northern Mexico, with isolated breeding populations also observed in northern Illinois and the Sacramento and San Joaquin valleys of California. This species winters to South America. The Swainson's hawk forages in open stands of grass-dominated vegetation; sparse shrublands; and small, open woodlands. It typically nests in scattered trees within these grassland, shrubland, or agricultural landscapes. The Swainson's hawk feeds largely on insects, and thus is affected by pesticide use, particularly DDT and organophosphate pesticides currently used in South America (England et al. 1997).

3.5.2.25 Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*) CSC

The Tehachapi pocket mouse is a CSC. This species occurs in the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos, and east to the lower San Gabriel Mountains to Lake Elizabeth (Laabs 1998). The Tehachapi pocket mouse is one of two subspecies of *Perognathus alticola*; the second subspecies, *P. a. alticola,* occurs in the San Bernardino Mountains and has not been observed in over 50 years. Male Tehachapi pocket mice can reach up to 6.5 inches in length; while females are significantly smaller, reaching only 5.9 inches. Both sexes are yellowish-brown with a heavy overlay of black dorsally and white ventrally; facial markings are fainter, and the inside of the ears are white; its tail is bicolored and is slightly longer than head to body length (Laabs 1998). This species occurs in native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland, oak savanna, chaparral, coastal sage scrub, fallow grain fields, and rangeland at elevations ranging from 3,500 to 6,000 feet amsl, preferring loose, sandy soils for burrowing (Laabs 1998). They are nocturnal, feeding on seeds of grasses and forbs but will eat green vegetation and insects. Threats to this species include surface disturbance like mineral extraction and conversion of habitat to urban development.

3.5.2.26 Tricolored Blackbird (*Agelaius tricolor*) CSC

The tricolored blackbird (nesting colony) is a CSC that occurs primarily in California, with smaller populations in northern Mexico. This species is locally common in parts of the Central Valley and along the coast in Sonoma County but is not found commonly over most parts of its range. This species breeds near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds. Breeding season usually takes place from mid-April into late July, but Orians (1960) also reported active breeding in October and November in Sacramento Valley. Over the past few decades, numbers have been declining in California (DeHaven 1975). Reasons for the decline include the conversion of marshland habitats and agricultural poisoning.

3.5.2.27 Two-Striped Garter Snake (*Thamnophis hammondii*) CSC

The two-striped garter snake is a CSC. It is found in disjunct populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. The historic range of this species has been lost to housing, urban development, and other human impacts by an estimated 40 percent (Stebbins 2003).

3.5.2.28 Western Pond Turtle (*Actinemys marmorata pallida*) CSC

The western pond turtle is a CSC. This species occurs along the coast of North America from Baja California up to San Francisco Bay and occurs from sea level to 5,900 feet in elevation (Calherps 2011a). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (Calherps 2011a). The western pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Basking sites are necessary for thermoregulation. Reptile body temperature is dependent upon the environment the air, the substratum, and solar radiation. Basking is absorption of the sun's radiation and/or through the substratum. This species occurs in a variety of habitat types including woodland, grassland, and open forest (Calherps 2011a). Although this species is considered aquatic, this species usually leaves the aquatic site to reproduce, to estivate, and to overwinter. Pond turtles hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (Calherps 2011a). The species is highly sensitive to disturbance and will quickly slide into water when they feel threatened. Pond turtles are diurnal and are most active from February to November; however, if water temperatures remain warm, this species may be active year long (Bury 2008). Mating takes place in April or May, and females will deposit eggs in a vegetated upland location that may be a considerable distance (400 m or more) from the aquatic habitat to the nest. Eggs are generally deposited in grassy, upland areas adjacent to streams during May and June, although some individuals may deposit eggs as early as April and as late as August. Hatchlings will stay at the nest location and will emerge in the early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and occasionally frogs and fish (Calherps 2011a). Habitat destruction is the primary threat to this species. Dams also cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury 2008).

3.5.2.29 Western Mastiff Bat (*Eumops perotis*) CSC

The western mastiff bat is listed as a CSC. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural

substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown (TPWD 2008).

3.5.2.30 Western Snowy Plover (*Charadruis alexandrinus nivosus*) FT, CSC

The western snowy plover (nesting, coastal populations) is federally listed as threatened and is also a CSC. The Pacific coastal population breeds primarily on beaches from southern Washington to southern Baja California, Mexico. Interior populations can be found in the Central Valley of California, Oregon, Nevada, and other western states. The western snowy plover nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitats, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds, and infrequently on bluff-backed beaches (USFWS 2001). This small plover has a pale tan back, rump, and tail; white underparts; and dark patches on the sides of its neck that reach around onto the top of its chest. Habitat alteration and recreational beach use have led to a serious decline in nesting habitat and populations over the last 40 years (USFWS 2001, Page et al. 1995).

3.5.2.31 White-Faced Ibis (*Plegadis chihi*) WL

The white-faced ibis (nesting colony) is a CDFG WL species. It breeds across the western United States northward to Montana, eastward to western Louisiana, and southward to South America. It winters from southern California and Louisiana southward. The white-faced ibis usually nests in low trees and shrubs over shallow water. It inhabits primarily freshwater wetlands, especially cattail and bulrush marshes. It feeds in flooded hay meadows, agricultural fields, and estuarine wetlands. The white-faced ibis is a dark bronze-colored wader with a long, decurved bill. During the breeding season, adults have distinctive white feathers along the edges of their bare facial skin. Erosion and flood-control measures and irrigation projects have eliminated or degraded traditional nesting colony sites, leading to nest abandonment. Other losses of wetland habitat can also negatively affect populations (Ryder and Manry 1994).

3.6. SPECIES OBSERVED

The following plant species were observed while habitat assessments were conducted on site 1 of the Project: annual mountain dandelion (*Agoseris heterophylla*), rubber rabbitbrush, whitemargin sandmat, coast goldfields (*Lasthenia californica*), cudweed aster (*Lessingia filaginifolia*), common fiddleneck (*Amsinckia menziesii*), shortpod mustard (*Hirschfeldia incana*), tumble mustard (*Sisymbrium altissimum*), Russian thistle (*Salsola tragus*), bindweed (*Convolvulus* sp.), dove weed (*Eremocarpus setigerus*), lupine (*Lupinus* sp.), broad-lobed filaree (*Erodium botrys*), vinegar weed (*Trichostema lanceolatum*), Siberian elm (*Ulmus pumila*), foxtail chess, cheat grass, glaucous foxtail barley (*Hordeum murinum*), small fescue (*Vulpia microstachys*) and fescue.

The following wildlife species were observed while habitat assessments were conducted on the Project site: Common raven (nest; *Corvus corax*), California ground squirrel, western meadowlark (*Sturnella neglecta*), domestic sheep (scat; *Ovis aries*) and kangaroo rat (bones; *Dipodomys* sp.).

The following 19 special status plant species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- alkali mariposa lily
- Barstow woolly sunflower
- Clokey's cryptantha
- Davidson's bush mallow
- Darwin rock cress
- desert cymopterus
- Horn's milk-vetch
- Lancaster milk-vetch
- pale-yellow layia Parish's popcorn-flower
- Parry's spineflower
- Peirson's morning-glory
- recurved larkspur
- round-leaved filaree
- sagebrush loeflingia
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa lily
- white pygmy-poppy

The following 27 special status wildlife species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- American badger
- arroyo toad
- Bell's sage sparrow
- California red-legged frog
- Cooper's hawk
- desert tortoise
- least Bell's vireo
- Le Conte's thrasher
- loggerhead shrike
- Merlin
- Mohave ground squirrel
- mountain plover
- Nelson's antelope squirrel
- pallid San Diego pocket mouse
- San Bernardino kangaroo rat
- Sierra Madre yellow-legged frog
- short-eared owl
- southern California rufous-crowned sparrow
- southern grasshopper mouse
- Swainson's hawk
- Tehachapi pocket mouse
- tricolored blackbird
- two-striped garter snake
- western pond turtle
- western mastiff bat

- western snowy plover
- white-faced ibis

The following special status wildlife species have **low** potential to occur on the Project site due to the presence of low quality suitable habitat and historical records of these species occurring within five miles of the Project site:

- silvery legless lizard
- coast horned lizard
- Burrowing owl (foraging only). The Project site consists primarily of non-native annual grasslands and several small mammals were observed onsite, which could act as a prey source for the owls. In addition, burrowing owls have been recorded to occur within five miles of the Project site. However, no burrows large enough to provide suitable habitat were observed onsite. Therefore, there is a low potential for the burrowing owl to occur on the Project site.

The following special status wildlife species has a **moderate** potential to occur on both sites of the Project due to the presence of low quality suitable habitat and historical records of these species occurring within three miles of the Project site:

- Ferruginous hawk. The ferruginous hawk is present in California during the winter season. This species winters in open terrain from grasslands to deserts where small mammals are abundant. Several small mammal burrows were observed on the Project site. In addition, ferruginous hawks have been recorded to occur within three miles of the site. Therefore, the ferruginous hawk has a moderate potential for occurrence (foraging) on the Project site.

SECTION 4.0 – CONCLUSIONS

4.1. SPECIAL STATUS SPECIES

All of the special status plant species known to occur within the vicinity of the Project sites are considered absent due to lack of suitable habitat; therefore, no further surveys for special status plant species are recommended at this time.

Of the 31 special status wildlife species known to occur within the vicinity of the Project site, 30 are considered absent or have a low potential to occur due to lack of suitable habitat.

4.1.1 Ferruginous Hawk

The ferruginous hawk has a moderate potential to occur on the Project site; however, this species is not federal- and/or state-listed threatened or endangered. Suitable nesting habitat does not occur within the Project site. Therefore, no further surveys for this species are recommended at this time.

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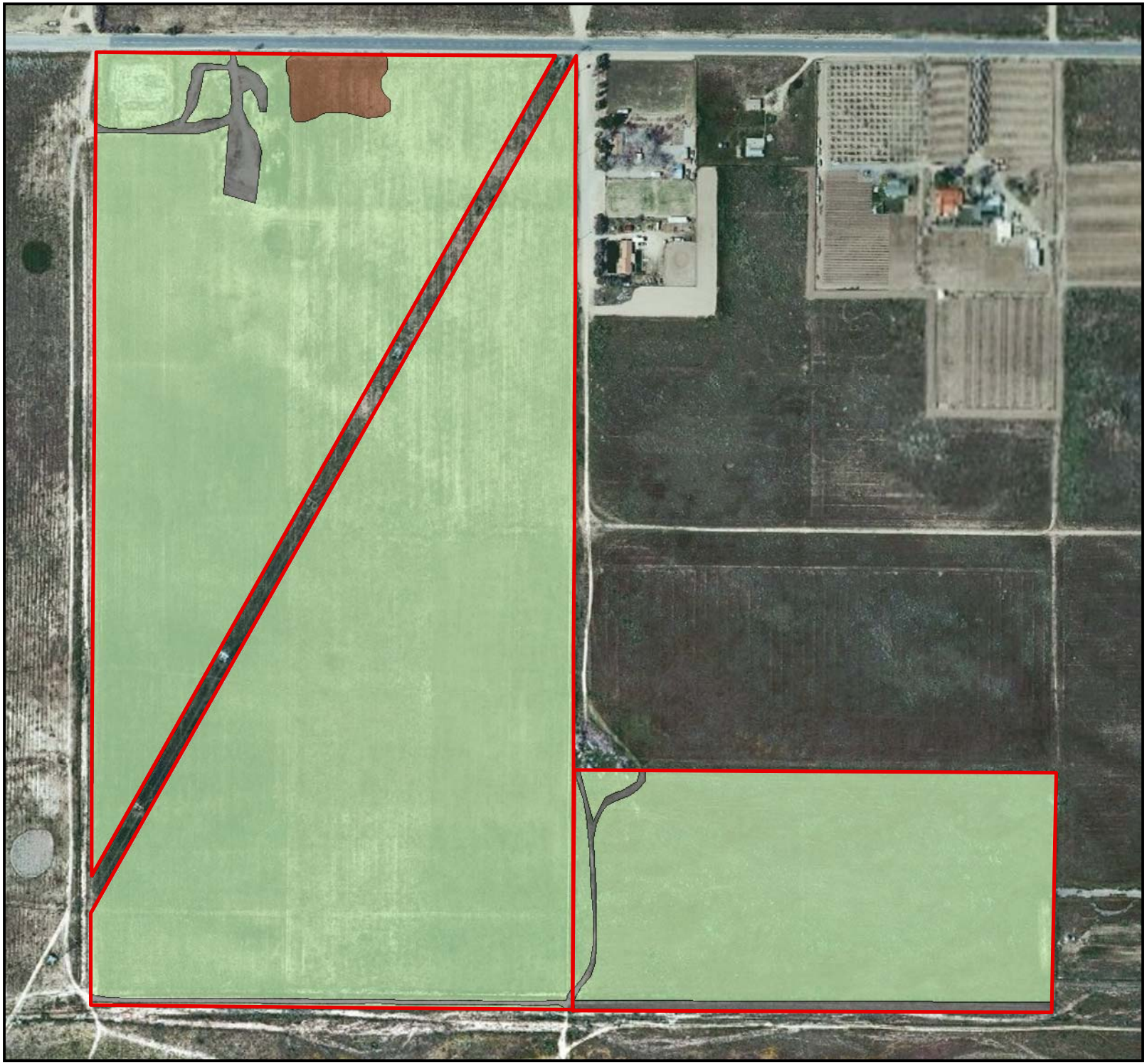
APPENDIX A – VEGETATION COMMUNITIES MAP



Vegetation Map
Central Antelope
Dry Farm Ranch

Legend

- Project Site
- Access Road
- Disturbed Rubber Rabbitbrush Scrub
- Non-Native Annual Grassland

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APPENDIX B – SITE PHOTOGRAPHS

APPENDIX B – SITE PHOTOGRAPHS

	Photo 1- Central Antelope Dry Farm Ranch. Photo is taken looking north across the Project site from the center of the site.
	Photo 2- Central Antelope Dry Farm Ranch. Photo is taken looking east across the Project site from the center of the site.
	Photo 3- Central Antelope Dry Farm Ranch. Photo is taken looking south from the center of the Project site at a transmission line.

BIOLOGICAL TECHNICAL REPORT
FOR THE HALCYON SOLAR PROJECT SITE (CUP 10)
CITY OF LANCASTER
LOS ANGELES COUNTY, CALIFORNIA

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SECTION 1.0 – INTRODUCTION

Silverado Power, LLC (Silverado Power) is an independent solar power producer and developer of distributed solar power assets for utilities that are both municipally and investor owned. Silverado Power strives to be a leader in wholesale solar power generation and the process of developing, building, and operating solar generation facilities (SGFs).

Chambers Group, Inc. (Chambers Group) was retained by Tetratech (for Silverado Power) to conduct a literature review and biological technical report (BTR) on the proposed Halcyon Solar project site located in Los Angeles County. The purpose of this document is to report the results of the reconnaissance-level biological survey.

1.1. PROJECT DESCRIPTION

Silverado Power plans to develop the Halcyon Solar SGF (the Project). The Project facilities would operate year-round, producing electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the fourth quarter of 2014.

The proposed Project would have a generating capacity of 10 megawatts alternating current (MW-AC). The Project will employ photovoltaic (PV) modules to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system.

The Project would meet the increasing demand for electricity generated from clean, renewable technology. The recent legislation enacted in California recognizes the multiple benefits associated with the development of renewable energy resources. These benefits include a reduced reliance on foreign sources of fuel, promotion of national security, diversification of energy portfolios, reductions in greenhouse gas emissions, and the creation of “green” jobs within the state of California.

1.2. PROJECT LOCATION

The Project (APN: 3218-002-004) is located in the Antelope Valley area in unincorporated northeastern Los Angeles County. The Project site comprises approximately 40 acres of primarily tamarisk scrub, non-native annual grassland and ruderal lands. Halcyon Solar is located within the city of Lancaster, CA, on the east side of 90th Street West and approximately .25 miles north of West Avenue J. The site is located within the *Del Sur* California USGS 7.5 minute quadrangle. Fallow agricultural fields surround the Project site. Project Regional and Vicinity maps are located in Figure 1 and Figure 2.

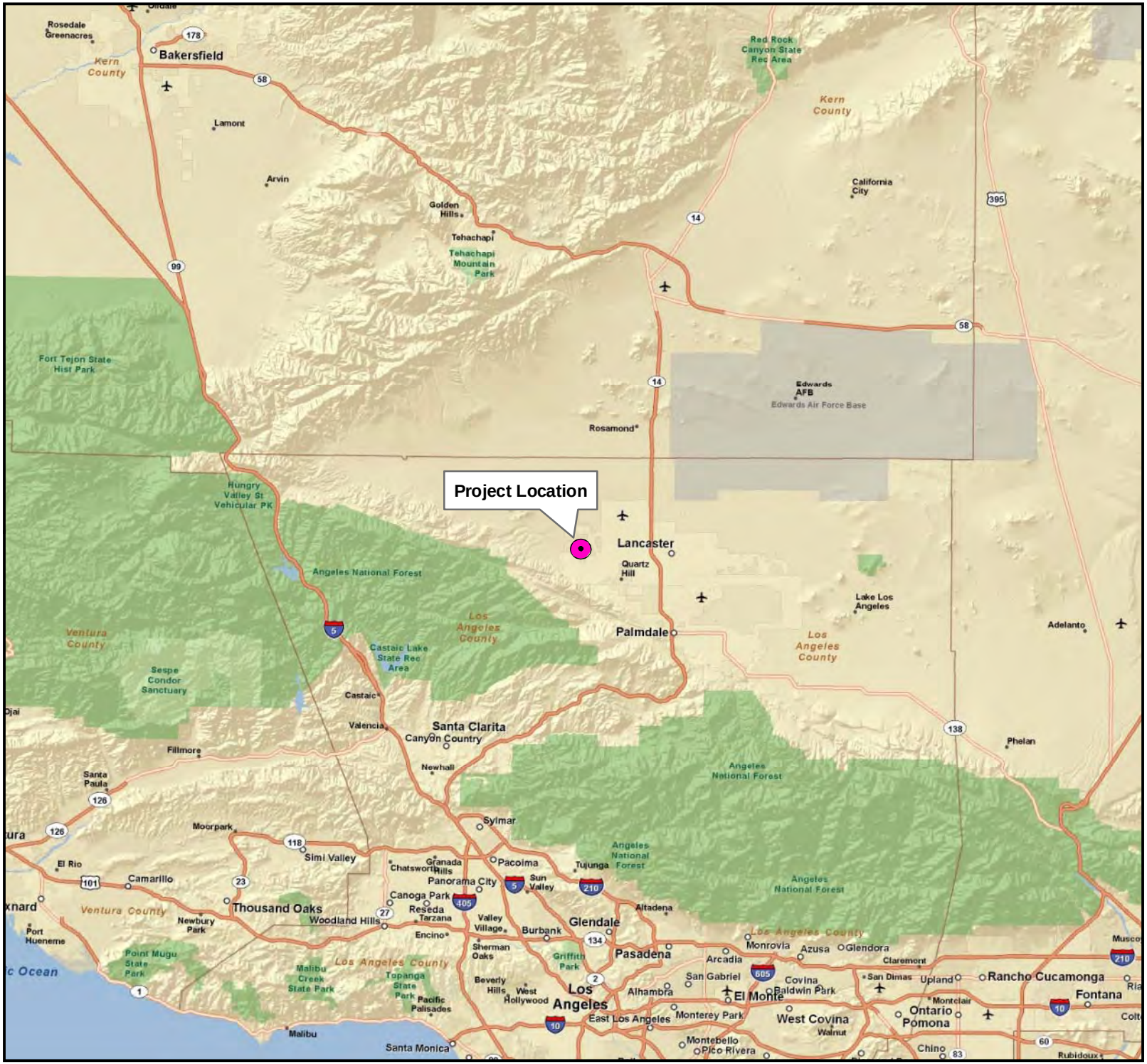

Figure 1
Regional Map
Halcyon Solar

Legend

Project Location

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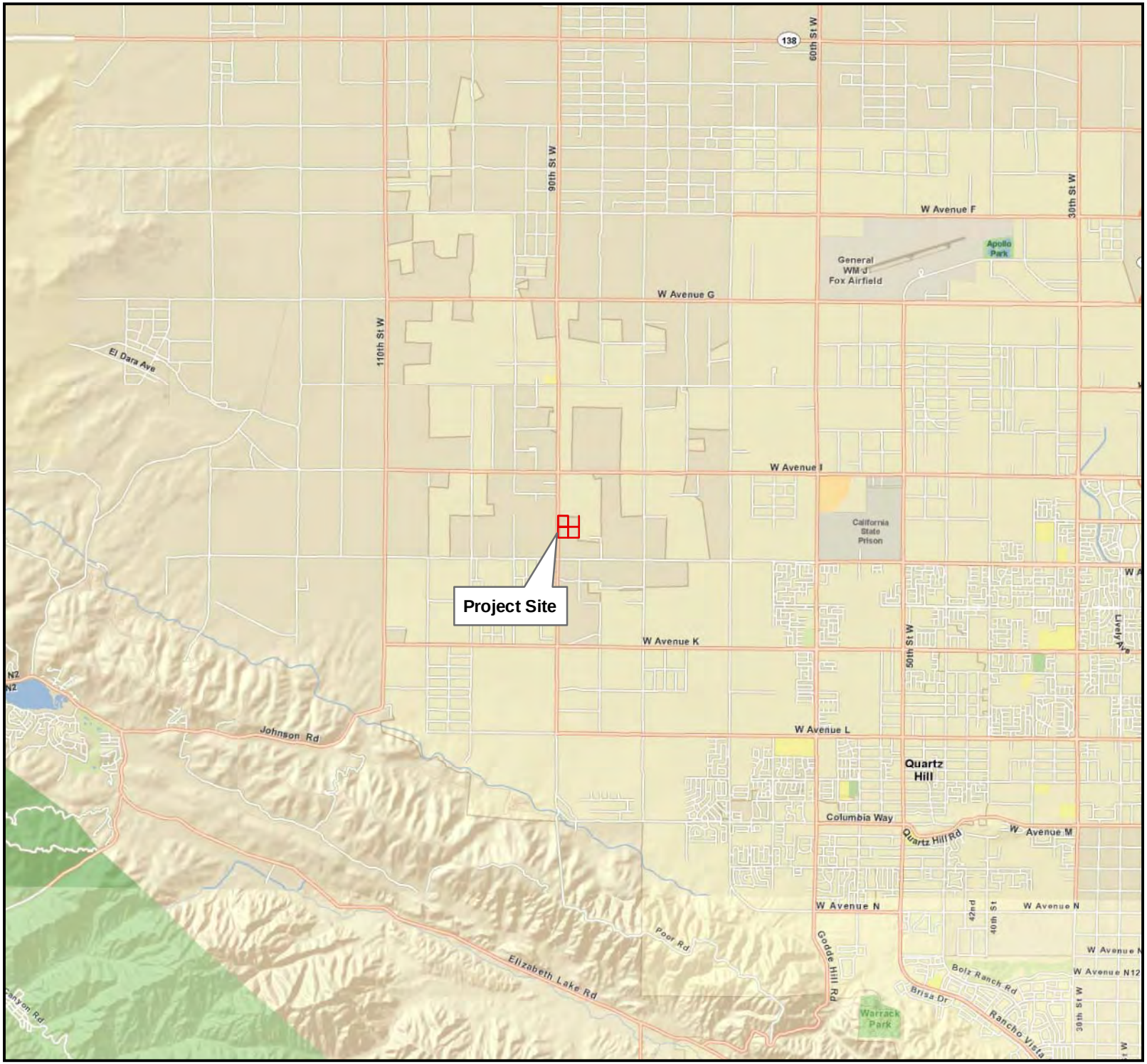

Figure 2
Vicinity Map
Halcyon Solar

Legend

Project Site

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SECTION 2.0 – METHODS

2.1. LITERATURE REVIEW

Prior to conducting the field surveys, existing documentation relevant to the Project site was reviewed. The most recent records of the California Department of Fish and Game California Natural Diversity Database (CNDDB 2011) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2011) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Fairmont Butte, Little Butte, Rosamond, Rosamond Lake, Redman, Alpine Butte, Lancaster East, Lancaster West, Del Sur, Lake Hughes, Burnt Peak, Little Rock, Lovejoy Buttes, El Mirage*, California USGS 7.5 minute quadrangles). The database contains records of reported occurrences of federal- or state-listed as endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Special Concern (CSC), or otherwise sensitive species or habitats that may occur within or in the vicinity of the Project site.

2.2. BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

The field survey was conducted on the Project site in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support special status wildlife species and to identify any potential jurisdictional waters of the United States. Chambers Group biologists Linette Lina and Maya Mazon conducted the general reconnaissance survey on May 17, 2011. Weather conditions during the survey included temperatures ranging from approximately 54 to 61 degrees Fahrenheit with 70 percent cloud cover and no precipitation. During the survey the biologists walked the Project site documenting the native vegetation communities and took notes regarding the potential for special status species and jurisdictional waters to occur onsite. Photographs of the Project site were also taken to document existing conditions.

2.3. VEGETATION

All plant species and soil types observed onsite were noted. Plant species identified onsite are provided in Appendix A. Plant communities on the Project site were identified, qualitatively described, and mapped onto an aerial photograph. Plant communities were determined in accordance with the categories set forth in Holland (1986) or Gray and Bramlet (1992). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California* (Hickman 1993).

2.4. WILDLIFE

All wildlife and wildlife sign observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support state- and/or federal-listed or proposed listed species. Notes were made on the general habitat types, species observed, and the conditions of the site. Photographs of the site are provided in Appendix B.

SECTION 3.0 – RESULTS

3.1. LITERATURE REVIEW

According to the literature review, 19 special status plant and 31 special status wildlife species were documented to occur within the vicinity of the Project site. This list included ten wildlife species that are federal- and/or state-listed endangered or threatened. Of the 19 special status plant species listed in the literature review, none are federal- and/or state-listed endangered or threatened.

3.2. VEGETATION COMMUNITIES

The Project site is classified as Tamarisk Scrub, Non-Native Annual Grassland and Ruderal. A map displaying the vegetation community on the Project site is included in Appendix A.

3.2.1 Tamarisk Scrub

Tamarisk Scrub is composed of weedy mainly monoculture of any of several tamarisk species (*Tamarix* sp.) usually supplanting native vegetation following a major disturbance. Soil is usually sandy or gravelly in braided washes or intermittent streams, often in areas where high evaporation increases the stream's saltiness. Because tamarisk is a strong phreatophyte and prolific seeder, this species is predisposed to aggressively compete in disturbed riparian corridors (Holland 1986).

Tamarisk Scrub is present on the western border of the Project site. Plant species found on the project site typical of this vegetation community include: salt cedar (*Tamarix ramosissima*), Russian thistle (*Salsola tragus*) and black locust (*Robinia pseudoacacia*).

3.2.2 Non-native Annual Grassland

Non-Native Grassland consists of a dense to sparse cover of annual grasses such as oats (*Avena* sp.), bromes (*Bromus* sp.), and ryegrass (*Lolium* sp.) with flowering culms up to 3 feet in height. This community is often associated with numerous species of showy-flowered, native annual forbs "wildflowers" such as California poppy (*Eschscholzia californica*), lupines (*Lupinus* sp.), and goldfields (*Lasthenia* sp.) especially in years of favorable rainfall (Holland 1986). Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from winter through spring. Typically plants are dead through the summer-fall dry season persisting as seeds. Non-native grasslands can be found on fine-textured usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall.

The Project site is primarily composed of non-native grasslands. Plant species found on the project site typical of this vegetation community include: cheatgrass (*Bromus tectorum*), fiddleneck (*Amsinkia sp.*) and ripgut brome (*Bromus diandrus*).

3.2.3 Ruderal

Areas classified as Ruderal are dominated by pioneering herbaceous species that readily colonize disturbed ground and that are typically found in temporary, often frequently disturbed habitats. The soils in ruderal areas are typically characterized as heavily compacted or frequently disturbed. The vegetation in these areas is adapted to living in compacted soils where water does not readily penetrate

the soil. Often, ruderal areas are dominated by species of the *Centaurea*, *Brassica*, *Malva*, *Salsola*, *Eremocarpus, Amaranthus*, and *Atriplex* genera.

Ruderal plant species found on the Project site include: tumble mustard (*Sisymbrium altissimum*), Russian thistle, and yellow pincushion (*Chaenactis glabriuscula*).

3.3. JURISDICTIONAL FEATURES

Chambers Group conducted a preliminary assessment for jurisdictional features found on the Project site. The Project site contains an agricultural drainage located along Lancaster Blvd. This drainage feature may fall subject to state jurisdiction. A formal delineation was not conducted.

3.4. SPECIAL STATUS SPECIES

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Project site.

CNPS

List 1A	=	Plants presumed extinct in California.
List 1B	=	Plants rare and endangered in California and throughout their range.
List 2	=	Plants rare, threatened, or endangered in California but more common elsewhere in their range.
List 3	=	Plants about which we need more information; a review list.
List 4	=	Plants of limited distribution; a watch list.

CNPS Extensions

0.1	=	Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2	=	Fairly endangered in California (20 to 80 percent occurrences threatened).
0.3	=	Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE	=	Federally listed; Endangered
FT	=	Federally listed; Threatened
FC	=	Federal Candidate for listing
FPT	=	Federal Proposed listing as Threatened

State

ST	=	State listed; Threatened
SE	=	State listed; Endangered
RARE	=	State-listed; Rare (Listed “Rare” animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC	=	State Species of Special Concern
WL	=	California Department of Fish and Game (CDFG) Watch List

3.5. SENSITIVE SPECIES DESCRIPTIONS

3.5.1 Sensitive Plants in the Los Angeles County Area

3.5.1.1 Alkali Mariposa Lily (*Calochortus striatus*) CNPS List 1B.1

Alkali mariposa lily is a CNPS List 1B.2 species. This perennial, bulbiferous herb flowers between April and June. This species occurs on alkaline and mesic soils within Chaparral, Chenopod Scrub, Mojavean Desert Scrub, and Meadows and Seeps habitats at elevations between 230 and 5,233 feet above mean sea level (amsl). Known range for this species includes: Kern, Los Angeles, San Bernardino, and Tulare Counties. Threats to alkali mariposa lily include groundwater pumping urbanization, grazing, trampling, road construction, water diversion resulting in lowering the water table, and possibly horticultural collecting.

3.5.1.2 Barstow Woolly Sunflower (*Eriophyllum mohavense*) CNPS List 1B.2

Barstow woolly sunflower is a CNPS List 1B.2 species. This annual herb flowers between March and May. Barstow woolly sunflower occurs within Chenopod Scrub, Mojavean Desert Scrub, and Playas habitats at elevations between 1,640 and 3,150 feet amsl. Known range for this species includes: Fresno, Kern, Los Angeles, and San Bernardino Counties. Threats to this species include vehicles, grazing, energy development, and road improvements.

3.5.1.3 Clokey's Cryptantha (*Cryptantha clokeyi*) CNPS List 1B.2

Clokey's cryptantha is a CNPS List 1B.2 species. This annual herb flowers in April. Clokey's cryptantha occurs within Mojavean Desert Scrub habitat at elevations between 2,379 and 4,478 feet amsl. Known range for this species includes: Inyo, Los Angeles, and San Bernardino Counties. Major threats to this species include military activities and alteration of fire regimes.

3.5.1.4 Darwin Rock Cress (*Arabis pulchra* var. *munciensis*) CNPS List 2.3

Darwin rock cress is a CNPS List 2.3 species. This perennial herb flowers in April. Darwin rock cress occurs in carbonate soils of Chenopod Scrub and Mojavean Desert Scrub habitats at elevations between 3,608 and 6,807 feet amsl. Known range includes Inyo, Los Angeles, and San Bernardino Counties.

3.5.1.5 Davidson's Bush Mallow (*Malacothamnus davidsonii*) CNPS List 1B.2

Davidson's bush mallow is a CNPS List 1B.2 species. This perennial deciduous shrub flowers between June and January. Davidson's bush mallow occurs within chaparral, Coastal Scrub, Cismontane Woodland, and riparian woodland habitats at elevations between 607 and 2,805 feet amsl. Known ranges include: Los Angeles, Monterey, Santa Clara, San Mateo, and San Luis Obispo Counties. Urbanization, maintenance activities, and erosion are the main threats to this species.

3.5.1.6 Desert Cymopterus (*Cymopterus deserticola*) CNPS List 1B.1

Desert cymopterus is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs on sandy soils within Mojavean Desert Scrub and Joshua Tree Woodland habitats at elevations between 2,066 and 4,921 feet amsl. Known range for this species includes: Kern, Los Angeles,

and San Bernardino Counties. Threats to desert cymopterus include military activities, sheep grazing, vehicles, utility construction, and urbanization.

3.5.1.7 Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*) CNPS List 1B.1

Horn's milk-vetch is a CNPS List 1B.1 species. This annual herb flowers between May and October. This species occurs along lake margins in poorly drained, alkaline soils of meadows and seeps and Playas habitats at elevations between 195 to 2,790 feet amsl. Known ranges include Inyo, Kern, and San Bernardino Counties and Nevada. Poisonous to sheep, it was subject to eradication by farmers in the early 1900s; current threats to Horn's milk-vetch are habitat alterations.

3.5.1.8 Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*) CNPS List 1B.1

Lancaster milk-vetch is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs within Chenopod Scrub habitat. Known ranges include Kern, Los Angeles, and San Bernardino Counties and Nevada. Limited range, including areas only near Lancaster and Edwards Air Force Base, is the major threat to Lancaster milk-vetch.

3.5.1.9 Pale-Yellow Layia (*Layia heterotricha*) CNPS List 1B.1

Pale-yellow layia is a CNPS List 1B.1 species. This annual herb flowers between March and June. This species occurs in alkaline or clay soils within Cismontane Woodland, Coastal Scrub, Pinyon-Juniper Woodland, and Valley and Foothill Grassland habitats at elevations between 984 and 5,594 feet amsl. Known ranges include Fresno, Kern, Kings, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, San Benito, and Ventura Counties. Threats to pale-yellow layia include vehicle use, competition from non-native plants, agricultural conversion, and grazing.

3.5.1.10 Parish's Popcorn-Flower (*Plagiobothrys parishii*) CNPS List 1B.1

Parish's popcorn-flower is a CNPS List 1B.1 species. This annual herb flowers between March and November. This species occurs on alkaline and mesic soils within Great Basin Scrub and Joshua tree Woodland habitats at elevations between 2,460 and 4,595 feet amsl. Known range for this species includes: Inyo, Los Angeles, Mono, and San Bernardino Counties. Threats to Parish's popcorn-flower include groundwater pumping.

3.5.1.11 Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) CNPS List 1B.1

Parry's spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and June. This species occurs in sandy or rocky soils and openings within Cismontane Woodland, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 902 and 4,002 feet amsl. Known ranges include Los Angeles, Riverside and San Bernardino Counties. Threats to this species include development, altered flood regime, mining, vehicles, and competition from non-native plants.

3.5.1.12 Peirson's Morning-Glory (*Calystegia peirsonii*) CNPS List 4.2

Peirson's morning-glory is a CNPS List 4.2 species. This perennial, rhizomatous herb flowers between April and June. This species occurs within chaparral, Chenopod Scrub, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, and Valley and Foothill Grassland habitats at elevations

between 98 and 5,085 feet amsl. Known ranges include Los Angeles County. Major threats to Peirson's morning-glory include grazing and development; possible threats include power line construction.

3.5.1.13 Recurved Larkspur (*Delphinium recurvatum*) CNPS List 1B.2

Recurved larkspur is a CNPS List 1B.2 species. This perennial herb flowers between March and June. This species occurs on alkaline soils within Chenopod Scrub, Cismontane Woodland, and Valley and Foothill Grassland habitats at elevations between 10 and 2,460 feet amsl. Known ranges of the recurved larkspur include: Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solana, Sutter, and Tulare Counties. Conversion of habitat, grazing, and trampling are threats to the recurved larkspur.

3.5.1.14 Round-Leaved Filaree (*California macrophylla*) CNPS List 1B.1

Round-leaved filaree is a CNPS List 1B.1 species. This annual herb flowers between March and May. Round-leaved filaree occurs in clay soils within Cismontane Woodland and Valley and Foothill Grassland habitats at elevations between 50 and 3,937 feet amsl. Known ranges include Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, Santa Barbara, San Benito, Santa Clara, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Ventura, and Yolo Counties and Santa Cruz Island. Threats to this species include urbanization, feral pigs, habitat alteration, pipeline construction, urbanization and competition from non-native plants.

3.5.1.15 Sagebrush Loeflingia (*Loeflingia squarrosa*) CNPS List 2.2

Sagebrush loeflingia is a CNPS List 2.2 species. This annual herb flowers between April and May. This species occurs in sandy soils of Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub habitats at elevations between 2,295 and 5,300 feet amsl. Known range includes Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino Counties and Nevada, Oregon, and Wyoming. Possible threats to sagebrush loeflingia include off-highway vehicles and grazing.

3.5.1.16 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*) CNPS List 1B.1

San Fernando Valley spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and July. This species occurs in sandy soils of Coastal Scrub and Valley and Foothill Grassland habitats at elevations between 492 and 4,002 feet amsl. Known range includes Los Angeles, Orange, and Ventura Counties. Possible threats to this species include competition from non-native plants and development.

3.5.1.17 Short-Joint Beavertail (*Opuntia basilaris brachyclada*) CNPS List 1B.2

Short-joint beavertail is a CNPS List 1B.2 species. This perennial stem succulent flowers between April and June. This species occurs within chaparral, Mojavean Desert Scrub, Joshua Tree Woodland, and Pinyon-Juniper Woodland habitats at elevations between 394 and 5,905 feet amsl. Known range for this species includes Los Angeles and San Bernardino Counties. Major threats to short-joint beavertail include vehicles, grazing, urbanization, mining, and horticultural collecting; possible threats include power line construction.

3.5.1.18 Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*) CNPS List 1B.1

Slender mariposa lily is a CNPS List 1B.1 species. This perennial, bulbiferous herb flowers between March and June. This species occurs within chaparral, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 1,050 and 3,280 feet amsl. Known ranges include Los Angeles and Ventura Counties. Threats to slender mariposa lily include vehicles, development, mining, and competition from non-native plants.

3.5.1.19 White Pygmy-Poppy (*Canbya candida*) CNPS List 4.2

White pygmy-poppy is a CNPS List 4.2 species. This annual herb flowers between March and June. This species occurs on gravelly, sandy, or granitic soils within Joshua Tree Woodland, Mojave Desert Scrub, and Pinyon-Juniper Woodland habitats at elevations between 600 and 4,800 feet amsl. Known ranges include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino Counties. This species is threatened by development, off-highway vehicles, grazing, mining, and competition from non-native plants.

3.5.2 Sensitive Wildlife Species in the Los Angeles County Area

3.5.2.1 American Badger (*Taxidea taxus*) CSC

The American badger is a California Species of Concern (CSC). This carnivorous species ranges over most of the western U.S and upper midwestern U.S. south into central Mexico. In California, the badger may occupy a variety of habitats, especially grasslands, savannas, montane meadows, sparse scrublands, and deserts. It prefers friable soils for burrowing, and relatively open, uncultivated ground. Prey items include gophers, ground squirrels, marmots, kangaroo rats, other rodents, and the occasional reptile or amphibian. The American badger may weigh up to 25 pounds and is easily recognized by its overall yellowish gray coloration, the white stripe on top of its head, white cheeks, and black feet with noticeably long front claws. It is a heavy-bodied animal with short legs and a characteristic pigeon-toed gait. It is chiefly nocturnal, but it is often seen by day as well. It gives birth to two to five young anywhere from February to May, depending on its altitude and latitude. Threats to this species include habitat loss to agriculture, housing, and other land conversions, and illegal hunting.

3.5.2.2 Arroyo Toad (*Anaxyrus californicus*) FE, CSC

The arroyo toad is a federally endangered species and a CSC. The range of this species is within coastal California from Monterey County into northwestern Baja California, Mexico. It is found in washes, streams, and arroyos; and preferred habitats include sandy banks within riparian woodlands such as willow, cottonwood, sycamore, mulefat, and/or coast live oak. It breeds in shallow, sandy/gravelly riverine pools with low silt content and normally disperses onto adjacent uplands after breeding. Individuals have been observed up to 2 kilometers (km) from the streams in which they breed, but most often they are within 0.5 km of those streams (USFWS 1992a). During the breeding season, males call nocturnally from open areas on banks at the edges of streams. Males typically precede females at breeding sites. Females lay their eggs among gravel, leaves, or sticks, on mud or clean sand within low to moderately flowing sections of streams in areas with little or no emergent vegetation and little woody marginal growth. Newly metamorphosed individuals remain near pools for up to several weeks until the areas dry. Juveniles begin feeding primarily on ants and shift to small beetles as they grow (Sweet 1991) before moving into adjacent wintering grounds. Many spend the next 6 to 8 months overwintering in burrows up to 20 centimeters deep in sandy substrates of these habitats. Adults obtain

shelter primarily by burrowing into fine, sandy soils in both adjacent and upland habitats (Sweet 1991). This small to moderately-sized species is distinguished from other toads by its chevron-shaped marking between the eyes and by the lack of a mid-dorsal stripe. Coloration may vary from light olive gray to tannish brown above, and the unmarked undersurfaces are creamy to dirty white. The iris is dark brown with scattered gold iridophores on the upper and lower portions of the iris. The primary threat to this species is habitat loss.

3.5.2.3 Bell's Sage Sparrow (*Amphispiza belli belli*) WL

The Bell's sage sparrow is a subspecies of sage sparrow and a CDFG Watch List (WL) species. It breeds primarily in chamise chaparral along the coastal side of California from the western foothills of the Sierra Nevada to San Diego County and northwest Mexico. It also breeds less commonly in coastal sage, mixed chaparral, and big sagebrush communities. Wintering birds of this subspecies may migrate to desert floors or remain in their breeding habitats. This species is distinguished from other sparrows by its gray head and back, thin white eye-ring, single dark breast spot, and heavy whisker-like pattern about the face. Populations are in decline due to habitat loss and fragmentation, frequent wildfires, grazing, invasive plants, and brood parasitism caused by the brown-headed cowbird (*Molothrus ater*).

3.5.2.4 Burrowing Owl (*Athene cunicularia*) CSC

The burrowing owl, a CSC, is broadly distributed across the western United States with populations in Florida and Central and South America. Burrowing owls use a variety of natural and modified habitats for nesting and foraging, typically characterized by low-growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrublands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. Burrowing owls typically use burrows made by mammals, such as California ground squirrels (*Spermophilus beecheyi*), foxes, or badgers. They sometimes dig their own burrows and will often utilize man-made structures such as earthen berms; cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls often are found within, under, or in close proximity to man-made structures. Prey sources for this species include small rodents; arthropods such as spiders, crickets, centipedes, and grasshoppers; smaller birds; amphibians; reptiles; and carrion. Threats to the burrowing owl include loss of nesting burrows, habitat loss, and mortality from motor vehicles.

3.5.2.5 California Red-Legged Frog (*Rana aurora draytonii*) FT, CSC

The California red-legged frog is a federally threatened species and a CSC. It is found from Mendocino County in California south to northwestern Baja, Mexico. It may occur in a variety of habitats from near sea level to 8,000 feet in elevation and is strongly associated with permanent sources of water, including cattail and tule marshes, reservoirs, ponds, and stream sides. It prefers deep, still, or slow moving water with low salinity levels and shallow margins or riffle zones. This species may disperse far from water (up to one mile) during and after significant rain events, and other habitats may include moist woodlands and grasslands from the lowlands through the foothills. It may make seasonal movements into riparian thickets and upland habitats for foraging, where it may seek small mammal burrows, leaf litter, or other moist areas of refuge for shelter or hibernation. The metamorphosis of this species is slower than most large frog species, requiring 11 to 20 weeks of permanent water for larval development. Most individuals have a dark mask bordered by a whitish jaw stripe; a reddish-orange venter; and coarse red, yellow, black, and/or gray mottling in the groin. This subspecies of the red-legged frog has experienced

dramatic population declines since the late nineteenth century; some estimates claim a 75 percent rate of disappearance from its former range. Threats to this species include habitat loss and predation by non-native species such as bullfrogs and non-native fishes. In addition, this species was historically exploited as a source of frog legs for human consumption.

3.5.2.6 Coast Horned Lizard (*Phrynosoma blainvillii*) CSC

The coast horned lizard is a CSC found along the Pacific coast of California on the western side of the Sierra Mountains to the Baja peninsular area in Mexico. This species is found in many habitats including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet amsl. It inhabits sandy washes or areas with loose, fine, sandy soils for burying and having low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native species of ants. Populations of this species have been reduced due to development, agriculture, and the introduction of Argentine ants that heavily compete with native ant species (Stebbins 2003). This species is approximately 2 to 4 inches in snout to vent length (adult) with numerous elongated and pointed scales (spines) on the dorsal side and two rows of enlarged scales along the flank. This species is brown, yellowish, reddish, or gray with several dark bands that cross the back with highlighted white areas along the rear of the bands (Sherbrooke 2003).

3.5.2.7 Cooper's Hawk (*Accipiter cooperii*) WL

The Cooper's hawk (nesting) is a CDFG WL species. This species occurs as a migrant and/or resident over most of the U.S. from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known to breed in suburban and urban areas with similar tree structure to native habitats. This medium-sized (14 to 20 inches) hawk is well-adapted for hunting birds as prey with its long tail and short, rounded wings; these features allow maneuverability in pursuit and on the ambush. It is similar in appearance to the sharp-shinned hawk (*Accipiter striatus*) but is distinguished by its larger size, more rounded tail, and darker crown. In addition to birds, it may also take amphibians, reptiles, and small mammals as supplemental prey items. Historic population losses resulted from the widespread use of DDT. Other threats include habitat loss and illegal hunting (Remsen 1978).

3.5.2.8 Desert Tortoise (*Gopherus agassizzi*) FT, ST

The desert tortoise is a federal- and state-listed threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo Counties, as well as most of San Bernardino, Riverside, and Imperial Counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. It is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark gray-brown. Besides range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of

gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

3.5.2.9 Ferruginous Hawk (*Buteo regalis*) WL

The ferruginous hawk (wintering) is a CDFG WL species. This species nests from the Canadian prairie provinces south to Oregon, Nevada, Arizona, and Oklahoma and winters in the southern half of its breeding range as well as the southwestern states from California to west Texas, then south into Mexico. It requires large, open areas of grassland, sparse shrub, or desert habitats interspersed with trees. It roosts in open areas, usually on lone trees, cliff ledge, or hill scarps. It winters in open terrain from grasslands to deserts where pocket gophers, ground squirrels, or rabbits are abundant, and it nests in either natural or human-made structures or on cliffs, buttes, cut banks, shrubs, or trees. In addition to pocket gophers, ground squirrels, and rabbits, it also eats prairie dogs, snakes, lizards, birds, large insects, and other rodents. The ferruginous hawk has distinct light and dark morphs. Light morphs are reddish or light brown above and whitish below, with rusty leg feathers and a pale tail. Dark morphs are uncommon in about less than 10 percent of the population and are a deep rufous to brown above and below with very bright white on the underside of the flight feathers and a narrow, white crescent on the underside of the wrist (Sibley 2003). This species is the largest of the buteos. The biggest threat to the ferruginous hawk is habitat loss, fragmentation, or degradation resulting from land use practices including conversion of native habitat to agriculture, urbanization, improper grazing practices, and conversion of shrubland to grassland (Collins and Reynolds 2005). Other threats include illegal shooting and collisions with cars.

3.5.2.10 Least Bell's Vireo (*Vireo bellii pusillus*) FE, SE

The least Bell's vireo was state-listed as an endangered subspecies of Bell's vireo by the CDFG in 1980 and federally listed as endangered by the U.S. Fish and Wildlife Service (USFWS) in 1986. Critical habitat for the least Bell's vireo was designated in 1994 (USFWS 1986). The least Bell's vireo subspecies is restricted to coastal and inland southern California and Baja California, Mexico. Its winter range extends along the Pacific coast from northern Mexico south to northern Nicaragua. The two major factors in the decline of least Bell's vireo populations are loss of habitat and nest parasitism by the brown headed-cowbird. Habitat loss, fragmentation, and degradation, especially along streams and rivers, due to development, agriculture, flood control projects, logging operations, and intensive cattle grazing practices, are the greatest threats to the continued existence of the least Bell's vireo. The least Bell's vireo is a small, gray songbird with pale yellow wash on its sides, two faint wing bars, and a faint eye ring. Preferred nesting habitat is low, dense, scrubby vegetation in early successional areas that are particularly dependent on riparian areas. Habitats may include willow woodlands and dense mule fat, scrub oak, coastal chaparral, and mesquite patches with dense early successional understories.

3.5.2.11 Le Conte's Thrasher (*Toxostoma lecontei*) CSC

The Le Conte's thrasher is a CSC in the San Joaquin Valley area. It occurs in deserts of the southwest U.S., southwestern Utah, southern Arizona, and northwestern Mexico (Weigand and Fitton 2008). Habitat includes open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; and in Joshua tree habitat with scattered shrubs. Le Conte's thrasher is a medium-sized songbird with a long dark tail, black decurved bill, and a plain grayish or sandy-colored body. It is distinguished from other thrashers by its unspotted breast, deep buff crissum, dark eye, and dark tail that contrasts sharply with its

body. Le Conte's thrashers forage as generalists on bare ground and in vegetation litter under shrubs by scratching the soil and overturning objects (Weigand and Fitton 2008). In some parts of its range, this thrasher has lost extensive habitat to development; irrigated lawns, groves, and fields have been created over valuable xeric habitat. Development, wild burros, off-road vehicle recreation, and invasive plant species threaten this species (Weigand and Fitton 2008).

3.5.2.12 Loggerhead Shrike (*Lanius ludovicianus*) CSC

The loggerhead shrike (nesting) is a CSC. Its range includes most of the U.S. from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua tree woodlands, and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other structures that serve as lookout posts for potential prey. They prefer dense, thorny shrubs and trees, brush piles, and tumbleweeds for nesting (Seattle Audubon 2008). Both adults gather nesting materials, including twigs, grass, hair, feathers, and green vegetation; but only females build the cup-shaped nests. They lay between 5 and 6 eggs, which are incubated for 15 to 17 days; and nestlings will leave the nest after 17 to 20 days but won't fly for another week (Seattle Audubon 2008). The loggerhead shrike is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. This bird has a habit of caching its food for later consumption by impaling its prey on thorns, sharp twigs, or barbed wire; hence the term "butcher bird." It is recognized by its black facial mask; overall gray, black, and white color pattern; relatively big head; and hook-tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988, Scott and Morrison 1990).

3.5.2.13 Merlin (*Falco columbarius*) WL

The merlin (wintering) is a CDFG WL species. This species breeds in the northern parts of the Northern Hemisphere and winters in northern South America and northern Africa. In California, it occurs as a winter resident. Breeding habitats include open woodlands, savannas, cliffs near grasslands, and tundra. Migratory habitats include foothills, marshes, and open coastlines. Wintering habitats include open grasslands, semi-open forests, and coastal areas (i.e. beach dunes, marshes, and tidal flats). The merlin is a small falcon, slightly larger than the American kestrel (*Falco sparverius*), and appears heavier and bulkier in flight than the kestrel. The adult male merlin has a gray-blue back and crown and rufous washes on the sides of the breast. The adult female may be up to 30 percent larger than the male and has a brown back. The merlin mainly feeds on other birds, especially migrating and over-wintering waterfowl and shorebirds. Threats to its populations include habitat loss, pesticide use, and heavy metal poisoning.

3.5.2.14 Mohave Ground Squirrel (*Spermophilus mohavensis*) ST

The Mohave ground squirrel is a state-listed threatened species. The Mohave ground squirrel is specific to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Johnson 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 1998). They inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils. They will also feed in annual grasslands (Johnson 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study showed that most of their diet includes seeds from winter fat (*Krascheninnikovia lanata*), spiny

hopsage (*Grayia spinosa*), and saltbush (Laabs 1998). Mohave ground squirrels are active in spring and early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (Johnson 1990).

3.5.2.15 Mountain Plover (*Charadrius montanus*) CSC, FPT

The mountain plover (wintering) is a CSC and a federally Proposed Threatened Species. This species breeds from the prairie and sagebrush country of north-central Montana, eastern Wyoming, and the area around southeastern Colorado. It winters from central California along the southern border states southward to northern Mexico (Udvardy 1977). Breeding habitats include semi-arid plains, grasslands, and plateaus. Common wintering habitats consist of dry, barren ground, smooth dirt fields, agricultural fields, and shortgrass prairies. This species tends to form small flocks in the winter. It is one of the few shorebird species that prefers habitats away from water. It is an insectivore that eats flies, beetles, grasshoppers, crickets, and other insects. The mountain plover is a relatively non-descript shorebird with a short tail, long legs, plain brown plumage above, and whiter plumage below. Males develop a black patch on the forehead during the breeding season. This species is sometimes confused with the American golden plover; but unlike that species, the belly and under-wing is a clean, white color and the legs are pale. Populations are in decline due to overgrazing practices and are also linked to declining prairie dog populations; mountain plovers often use prairie dog mounds as nest sites. The continued loss and alteration of habitats on breeding and wintering grounds are the primary threats to the mountain plover.

3.5.2.16 Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*) ST

The Nelson's antelope squirrel is a state threatened species. Nelson's antelope squirrels are restricted to the central and western areas of the San Joaquin Valley and inner coast ranges from 165 to 3,608 feet amsl. This species is found in alkali desert scrub and annual grasslands habitats on a variety of soil types including alluvial, loamy, sandy, gravely, or fine-textured sands. This species rarely digs its own burrows, preferring instead to use burrows made by other small mammals. Nelson's antelope squirrels are diurnally active, with most activity occurring in the early morning or late afternoon. This species is buff and yellow-brown above with a white stripe on each side and white under its tail. It can reach up to 10 inches in length. Nelson's ground squirrels feed primarily on grass and forb seeds, insects, and other green vegetation. The primary threats to this species include loss of habitat due to agriculture, urbanization, petroleum extraction, and rodent control poisons (Whitaker et al. 2008).

3.5.2.17 Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*) CSC

The pallid San Diego pocket mouse is a CSC. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican border. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus; and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or course gravel (Grinnell 1933, Miller and Stebbins 1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and pinyon-juniper woodlands. Pallid San Diego pocket mouse densities have been recorded as high as 39

per hectare (Lackey 1996). This species is similar in appearance to *C.f. fallax* but is lighter in overall coloration. Population declines may be due to urban and agricultural development.

3.5.2.18 San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE, CSC

The San Bernardino kangaroo rat is a federally endangered species and a CSC. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside Counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about 7 distinct populations. It prefers gravelly and sandy soils in alluvial habitats where it constructs underground burrows, and it rarely occurs in dense vegetation. This species is a small, nocturnally active rodent with pale yellow and dusky brown fur, and dark brown tail stripes, footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in is burrows for later consumption. It also consumes some green vegetation and insects when available. The primary threats to the continued existence of this species include habitat loss, degradation, and fragmentation due to developments related to housing, mining, and flood control (CDPR 1998).

3.5.2.19 Sierra Madre Yellow-Legged Frog (*Rana muscosa*) FE, SCE, CSC

The Sierra Madre yellow-legged frog is a federal-listed endangered, state candidate for listing as endangered, and a CSC. This species is found in the Sierra Nevadas from Fresno County to Kern County, and isolated populations are found in the San Gabriel, San Bernardino, and San Jacinto mountains of southern California, ranging in elevation from 4,500 to 11,980 feet amsl. This species was previously known as the mountain yellow-legged frog but is now considered a separate species from those found north of the Kings River north and middle forks, known as the Sierra Nevada yellow-legged frog (*Rana sierrae).* They range in size from 1.5 to 3.5 inches snout to vent length; and coloration is highly variable with olive, yellow, or brown with black or brown speckling above and pale yellow to orange below and on the hind legs (Calherps 2011b). They can be distinguished from *Rana sierra* by having slightly longer hind legs and a different mating call; both smell like garlic when handled (Calherps 2011b). Sierra Nevada populations occur in montane riparian, lodgepole pine, subalpine conifer, and wet meadows in association with lakes, ponds, and streams; southern California populations are found in lakes, ponds, and streams of montane conifer-hardwood, montane riparian, and ponderosa pine habitats. Adults feed on aquatic and terrestrial invertebrates; tadpoles feed on algae and diatoms. Sierra Madre yellow-legged frogs are closely associated with aquatic environments and can be found in vegetation or on perching rocks within a few feet of water, diving into the water when threatened. They lay their eggs in shallow water and attach them to gravel or rocks; tadpoles can take up to two over-wintering periods to complete their aquatic development. They are diurnally active and will hibernate over the winter under the ice, and southern populations may estivate. Threats to this species include bullfrogs, non-native trout, cattle grazing, mining, off-road vehicles, public dumping, chytrid fungus, fires, and excessive flooding (Calherps 2011b).

3.5.2.20 Short-Eared Owl (*Asio flammeus*) CSC

The short-eared owl (nesting) is a CSC. The range of this species is nearly worldwide; and in North America, it breeds in northern Canada and Alaska as well as in large portions of the western U.S. and the Great Lakes area. In California, this species is an uncommon winter migrant in the Central Valley, Sierra Nevada, and southern California; and it is known to breed from the San Francisco area north. Migrants arrive in California in September to October and leave in April. Habitats include grasslands, prairies,

dunes, tundra, meadows, irrigated fields, wetlands, and fresh and saltwater marshes. Within these open habitat types, it prefers denser areas where it can seek cover along the ground. Short-eared owls nest in depressions on dry ground where vegetation provides cover; nests are built with grasses, sticks, feathers, and forbs. Clutch size ranges from 3 to 14 eggs. Eggs are laid in April and incubated for 24 to 37 days, and the young fledge after 21 to 36 days. This owl is mostly active at night, but it may forage by day in late afternoons or on cloudy days. Although it feeds mostly on voles and other small mammals, it will also eat birds, amphibians, reptiles, and arthropods. It characteristically flies in an erratic and buoyant manner, low over open areas, before plunging feet first to catch prey. The short-eared owl is a relatively medium-sized owl with an overall tawny brown color and buffy wing patches. It has bold, yellow eyes that contrast sharply with its dark facial discs. Predators include golden eagles, great horned owls, snowy owls, and peregrine falcons. Small predatory mammals and large reptiles prey on eggs. Competitors include gulls, northern harriers, barn owls, and other owls. Overgrazing, destruction, and fragmentation of grasslands and wetland habitats, increased nest predation, and illegal shooting are all factors in the decline of this species.

3.5.2.21 Silvery Legless Lizard (*Anniella pulchra pulchra*) CSC

The silvery legless lizard is a CSC. Its range extends from the San Francisco Bay in California to northwestern Baja California, Mexico; and it can also be found on a few offshore islands of California. This species is found in chaparral, pine-oak woodlands, riparian woodlands, and also on beaches from sea level to around 5,100 feet. It occurs less commonly in desert scrub. Within these habitats, it prefers loose soils or sand for burrowing, moisture, warmth, and plant cover (Stebbins 2003). It forages in leaf litter during the day for insects such as termites, spiders, beetles, and larvae. On warm evenings, it may emerge to forage during the night. This legless lizard has a silver, gray, or beige dorsal coloration with a dark mid-dorsal line and is yellow below. The primary threats to the continued existence of this species include habitat loss due to agriculture and urban sprawl, overabundant non-native vegetation (i.e. iceplant on sand dunes), sand mining operations, off-road vehicle use, and other anthropogenic disturbances, including trampling and over-collecting for the pet trade.

3.5.2.22 Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) WL

The southern California rufous-crowned sparrow is a CDFG WL species. It is one of 17 recognized subspecies of the rufous–crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico; however, this sub-species is a resident of southwest California on the slopes of the Transverse and Coast ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martin Island. Habitats include broken sage scrub and chaparral; native grasslands with sparse shrubs; and rocky, brush-laden hillsides and canyons with open patches. It is a small non-descript sparrow with a rusty crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

3.5.2.23 Southern Grasshopper Mouse (*Onychomys torridus ramona*) CSC

The southern grasshopper mouse is a CSC. It occurs throughout desert and semi-arid habitats in the southwestern United States and much of Mexico, including western Nevada; the southern portions of California, Arizona, and New Mexico; northern Baja California; western Texas; and south to central Mexico (Hall 1981). The subspecies *ramona* is restricted to coastal southern California, with marginal

records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley (Hall 1981). The grasshopper mouse rangewide is often found in low, arid scrub and semi-scrub vegetation; but this subspecies is found in grasslands and sparse sage scrub habitats. It nests in burrows often dug by kangaroo rats and pocket gophers, but it may dig its own burrows in sandy or other friable substrates (Baily and Sperry 1929, Stapp 1997). Specific habitat requirements of the southern grasshopper mouse generally are unknown, but Stapp (1997) found that grasshopper mice use open areas and microhabitats dominated by gopher mounds and burrows. Stapp suggests that grasshopper mice selected these microhabitats because of greater prey availability (i.e., arthropods using burrows for refuge), greater mobility in open areas, and dust bathing sites. It prefers low to moderate shrub cover and is active year-round. Unlike most other mice, this species is primarily carnivorous. It feeds nocturnally on a variety of arthropods, including grasshoppers, beetles, and scorpions. It will also feed on frogs, salamanders, lizards, small mammals, and, occasionally, seeds. It has been known to kill species larger than itself, such as kangaroo rats. Prey items are stalked, rushed, seized, and typically killed with a bite in the head. Curiously, it emits a howl on occasion, perhaps in defense of its territory. Home ranges can be as large as four hectares; and, consistent with its carnivorous nature, population densities are normally low. It breeds from May to June; and after about 30 days, it gives birth to an average of 4 young. Predators include snakes, raptors, and a variety of mammals, including coyotes, owls, and foxes. Habitat loss and degradation are the primary threats to this species.

3.5.2.24 Swainson's Hawk (*Buteo swainsoni*) ST

The Swainson's hawk (nesting) is a state-listed threatened species. This species breeds from southwest Canada through the western U.S. into northern Mexico, with isolated breeding populations also observed in northern Illinois and the Sacramento and San Joaquin valleys of California. This species winters to South America. The Swainson's hawk forages in open stands of grass-dominated vegetation; sparse shrublands; and small, open woodlands. It typically nests in scattered trees within these grassland, shrubland, or agricultural landscapes. The Swainson's hawk feeds largely on insects, and thus is affected by pesticide use, particularly DDT and organophosphate pesticides currently used in South America (England et al. 1997).

3.5.2.25 Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*) CSC

The Tehachapi pocket mouse is a CSC. This species occurs in the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos, and east to the lower San Gabriel Mountains to Lake Elizabeth (Laabs 1998). The Tehachapi pocket mouse is one of two subspecies of *Perognathus alticola*; the second subspecies, *P. a. alticola,* occurs in the San Bernardino Mountains and has not been observed in over 50 years. Male Tehachapi pocket mice can reach up to 6.5 inches in length; while females are significantly smaller, reaching only 5.9 inches. Both sexes are yellowish-brown with a heavy overlay of black dorsally and white ventrally; facial markings are fainter, and the inside of the ears are white; its tail is bicolored and is slightly longer than head to body length (Laabs 1998). This species occurs in native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland, oak savanna, chaparral, coastal sage scrub, fallow grain fields, and rangeland at elevations ranging from 3,500 to 6,000 feet amsl, preferring loose, sandy soils for burrowing (Laabs 1998). They are nocturnal, feeding on seeds of grasses and forbs but will eat green vegetation and insects. Threats to this species include surface disturbance like mineral extraction and conversion of habitat to urban development.

3.5.2.26 Tricolored Blackbird (*Agelaius tricolor*) CSC

The tricolored blackbird (nesting colony) is a CSC that occurs primarily in California, with smaller populations in northern Mexico. This species is locally common in parts of the Central Valley and along the coast in Sonoma County but is not found commonly over most parts of its range. This species breeds near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds. Breeding season usually takes place from mid-April into late July, but Orians (1960) also reported active breeding in October and November in Sacramento Valley. Over the past few decades, numbers have been declining in California (DeHaven 1975). Reasons for the decline include the conversion of marshland habitats and agricultural poisoning.

3.5.2.27 Two-Striped Garter Snake (*Thamnophis hammondii*) CSC

The two-striped garter snake is a CSC. It is found in disjunct populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. The historic range of this species has been lost to housing, urban development, and other human impacts by an estimated 40 percent (Stebbins 2003).

3.5.2.28 Western Pond Turtle (*Actinemys marmorata pallida*) CSC

The western pond turtle is a CSC. This species occurs along the coast of North America from Baja California up to San Francisco Bay and occurs from sea level to 5,900 feet in elevation (Calherps 2011a). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (Calherps 2011a). The western pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Basking sites are necessary for thermoregulation. Reptile body temperature is dependent upon the environment the air, the substratum, and solar radiation. Basking is absorption of the sun's radiation and/or through the substratum. This species occurs in a variety of habitat types including woodland, grassland, and open forest (Calherps 2011a). Although this species is considered aquatic, this species usually leaves the aquatic site to reproduce, to estivate, and to overwinter. Pond turtles hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (Calherps 2011a). The species is highly sensitive to disturbance and will quickly slide into water when they feel threatened. Pond turtles are diurnal and are most active from February to November; however, if water temperatures remain warm, this species may be active year long (Bury 2008). Mating takes place in April or May, and females will deposit eggs in a vegetated upland location that may be a considerable distance (400 m or more) from the aquatic habitat to the nest. Eggs are generally deposited in grassy, upland areas adjacent to streams during May and June, although some individuals may deposit eggs as early as April

and as late as August. Hatchlings will stay at the nest location and will emerge in the early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and occasionally frogs and fish (Calherps 2011a). Habitat destruction is the primary threat to this species. Dams also cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury 2008).

3.5.2.29 Western Mastiff Bat (*Eumops perotis*) CSC

The western mastiff bat is listed as a CSC. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown (TPWD 2008).

3.5.2.30 Western Snowy Plover (*Charadruis alexandrinus nivosus*) FT, CSC

The western snowy plover (nesting, coastal populations) is federally listed as threatened and is also a CSC. The Pacific coastal population breeds primarily on beaches from southern Washington to southern Baja California, Mexico. Interior populations can be found in the Central Valley of California, Oregon, Nevada, and other western states. The western snowy plover nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitats, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds, and infrequently on bluff-backed beaches (USFWS 2001). This small plover has a pale tan back, rump, and tail; white underparts; and dark patches on the sides of its neck that reach around onto the top of its chest. Habitat alteration and recreational beach use have led to a serious decline in nesting habitat and populations over the last 40 years (USFWS 2001, Page et al. 1995).

3.5.2.31 White-Faced Ibis (*Plegadis chihi*) WL

The white-faced ibis (nesting colony) is a CDFG WL species. It breeds across the western United States northward to Montana, eastward to western Louisiana, and southward to South America. It winters from southern California and Louisiana southward. The white-faced ibis usually nests in low trees and shrubs over shallow water. It inhabits primarily freshwater wetlands, especially cattail and bulrush marshes. It feeds in flooded hay meadows, agricultural fields, and estuarine wetlands. The white-faced ibis is a dark bronze-colored wader with a long, decurved bill. During the breeding season, adults have distinctive white feathers along the edges of their bare facial skin. Erosion and flood-control measures and irrigation projects have eliminated or degraded traditional nesting colony sites, leading to nest abandonment. Other losses of wetland habitat can also negatively affect populations (Ryder and Manry 1994).

3.6. SPECIES OBSERVED

The following plant species were observed while habitat assessments were conducted on the Project site: cudweed aster (*Lessingia filaginifolia*), fiddleneck, cryptantha (*Cryptantha* sp.), tumble mustard, Russian thistle, black locust, redstem filaree (*Erodium cicutarium*), horehound (*Marrubium vulgare*), saltcedar, velvet ash (*Fraxinus velutina*), ripgut grass, yellow pincushion, foxtail chess (*Bromus madritensis* ssp. *rubens*), cheat grass and squirreltail (*Elymus elemoides*).

The following wildlife species were observed while habitat assessments were conducted on the Project site: California ground squirrel, common raven (nest; *Corvus corax*), desert cottontail (*Sylvilagus audubonii*), domestic sheep (*Ovis aries*), house finch (*Carpodacus mexicanus*), greater roadrunner (*Geococcyx californianus*), hooded oriole (*Icterus cucullatus*), western meadowlark (*Sturnella neglecta*) and killdeer (*Charadrius vociferous*).

3.7. SENSITIVE SPECIES

The following 19 special status plant species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- alkali mariposa lily
- Barstow woolly sunflower
- Clokey's cryptantha
- Davidson’s bush mallow
- Darwin rock cress
- desert cymopterus
- Horn’s milk-vetch
- Lancaster milk-vetch
- pale-yellow layia Parish’s popcorn-flower
- Parry’s spineflower
- Peirson’s morning-glory
- recurved larkspur
- round-leaved filaree
- sagebrush loeflingia
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa lily
- white pygmy-poppy

The following 26 special status wildlife species are considered **absent** from the Project site due to a lack of suitable habitat and/or no historical records of the species occurring within 10 miles of the Project site:

- American badger
- arroyo toad
- Bell’s sage sparrow
- California red-legged frog
- Cooper’s hawk
- desert tortoise

- least Bell's vireo
- Le Conte's thrasher
- loggerhead shrike
- merlin
- Mohave ground squirrel
- mountain plover
- Nelson's antelope squirrel
- pallid San Diego pocket mouse
- San Bernardino kangaroo rat
- Sierra Madre yellow-legged frog
- short-eared owl
- southern California rufous-crowned sparrow
- southern grasshopper mouse
- Tehachapi pocket mouse
- tricolored blackbird
- two-striped garter snake
- western pond turtle
- western mastiff bat
- western snowy plover
- white-faced ibis

The following three special status wildlife species have a **low** potential to occur onsite due to the presence of low quality suitable habitat and historical records of these species occurring within five miles of the Project site:

- silvery legless lizard
- coast horned lizard

The following two special status wildlife species have a **moderate** potential to occur onsite due to the presence of low quality suitable habitat and historical records of these species occurring within three miles of the Project site:

- Burrowing owl. The Project site is primarily a fallow agricultural field and several small mammal burrows where observed on the site, which could provide a prey source and nesting habitat for the burrowing owl. In addition, burrowing owls have been recorded to occur within three miles of the Project site. Therefore, the burrowing owl has a moderate potential for occurrence on the Project site.

- Swainson's hawk. A row of tamarisk trees and 12kv power lines run along the western border of the Project site and several tall trees (15-20 ft) run along the western boundary of the site which could provide suitable nesting habitat for this species. In addition, several small mammal burrows were observed within the Project site which could provide foraging for Swainson's hawks. Swainson's hawks have been recorded to occur within three miles of the Project site. Therefore, the Swainson's hawk has moderate potential for occurrence on the project site.

The following special status wildlife species has a **high** potential to occur onsite due to the presence of high quality suitable habitat and historical records of these species occurring within one mile of the Project site:

- Ferruginous hawk. Although no suitable nesting habitat was identified during the survey effort, this species may forage on or adjacent to the Project site. Small mammals were observed on the Project site. Additionally, ferruginous hawks have been recorded to occur within one mile of the Project site; therefore the potential for this species to forage on site is high.

SECTION 4.0 – CONCLUSIONS

4.1. SPECIAL STATUS SPECIES

The Project site is primarily a fallow agricultural site. All of the special status plant species known to occur within the vicinity of the Project site are considered absent due to lack of suitable habitat; therefore, no further surveys for special status plant species are recommended at this time.

Of the 31 special status wildlife species known to occur within the vicinity of the Project site, 28 are considered absent or have a low potential to occur due to lack of suitable habitat; therefore, no further surveys for these special status wildlife species are recommended at this time.

4.1.1 Burrowing Owl

Burrowing owl has a moderate potential to occur on the Project site. Although burrowing owls are not federal- and/or state-listed as endangered or threatened, this species is listed as a CSC. While the majority of CSC listed species do not typically require focused surveys, specific focused survey protocol for the burrowing owl has been developed by the California Burrowing Owl Consortium and adopted by the CDFG.

4.1.2 Swainson's Hawk

The Swainson's hawk, a state-listed threatened species has a moderate potential to occur onsite. This species was observed within a half a mile of the project site and could nest in trees located near the Project site. This species as well as other raptors are protected during nesting season.

4.1.3 Ferruginous Hawk

The potential for this species to occur (forage) is high. This species is not a CSC or listed species. No nesting habitat for this species was observed on site.

4.2. JURISDICTIONAL FEATURES

The Project site contains an agricultural drainage located along Lancaster Blvd. This drainage feature may fall subject to state jurisdiction. A formal delineation of the Project was not conducted.

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APPENDIX A – VEGETATION COMMUNITIES MAP

Vegetation Map
Halcyon Solar

Legend

- Project Site
- Access Road
- Drainage Feature
- Non-Native Annual Grassland
- Ruderal
- Tamarisk Scrub

N
W E
S

0 70 140 280
Feet

7-13-11
20327

Chambers Group Inc.

APPENDIX B – SITE PHOTOGRAPHS

APPENDIX B – SITE PHOTOGRAPHS

	Photo 1- Halcyon Solar. Photo is taken looking southeast across the Project site.
	Photo 2- Halcyon Solar. Photo is taken looking northeast across the Project site.
	Photo 3- Halcyon Solar. Photo is taken looking southwest across the Project site.

2013 BURROWING OWL SURVEY

For

ANTELOPE SOLAR GREENWORKS PROJECT
LOS ANGELES COUNTY, CALIFORNIA

Prepared by

AUGUST 2013

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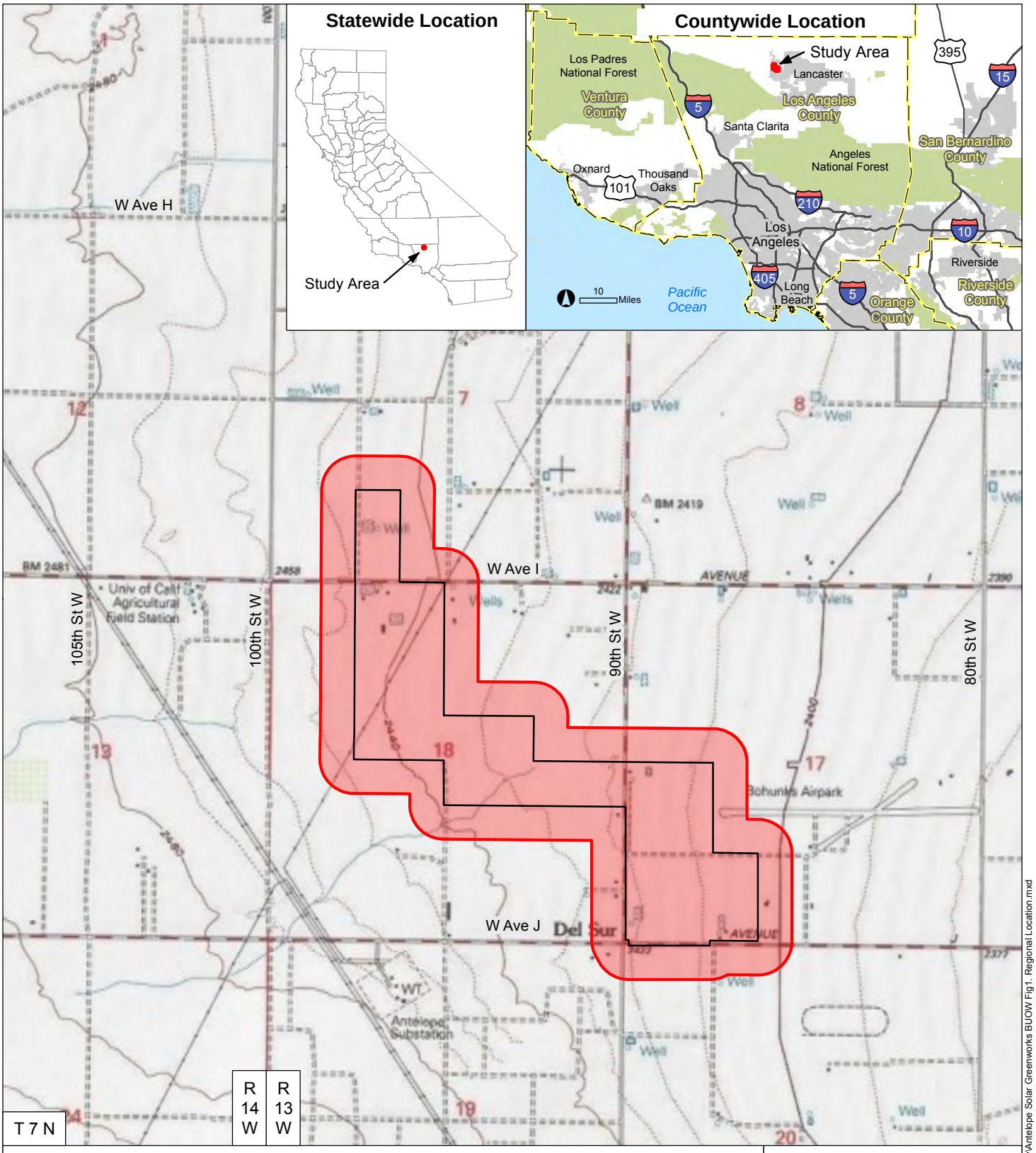
Appendix A Avian Compendium

Appendix B Photographic Log

1.0 INTRODUCTION

This report provides the methods, assumptions, and results of focused surveys for Burrowing Owl (*Athene cunicularia*) conducted within the limits of the proposed Antelope Solar Greenworks Project (here after referred to as the Project). The surveys were performed by NOREAS Inc., (NOREAS), on behalf of Silverado Power, LLC (Silverado). The Project is located within Los Angeles County, California (Fig.1). The Project can be found on the Del Sur United States Geological Survey (USGS 1982) 7.5-minute quadrangle map; San Bernardino Base and Meridian, Township 7 North, Range 13 West, Sections 7, 17, 18, 19, and 20. For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint (Project Site), plus a 500-ft buffer where practical. The Project Site is east of 97th Street and west of 85th Street, at an approximate elevation of 1,400 ft. above mean sea level. The study area is heavily disturbed and supports mostly ruderal vegetation with substantial inclusions of bare ground.



Study Area
Project Site
County Boundary (inset)
Urban Area (inset)
Interstate or State Highway (inset)
Water Body (inset)
Park or National Forest (inset)

Data Sources:
- BingMaps accessed Jul 2013
- ESRI StreetMap North America 2010
- ESRI US Topo Maps accessed Jul 2013

Map Prepared: 7-16-13

The Study Area is located on the Del Sur USGS 7.5-minute quadrangle map; San Bernardino Base and Meridian, Township 7 North, Range 13 West, Sections 7, 17, 18, 19, and 20.

0 1,000 2,000 Feet
1 inch = 2,000 feet

Prepared by:
NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\LA County\Antelope Solar Greenworks BUOW Fig1. Regional Location.mxd

Figure 1. Regional Location

2.0 BURROWING OWL BACKGROUND

The Burrowing Owl has been designated by the California Department of Fish and Wildlife (CDFW) as a species of special concern. "State Species of Special Concern" status applies to animals not listed for protection under the federal Endangered Species Act or the California Endangered Species Act. The designation denotes that a species is declining at a rate that could result in State listing or that a species has historically occurred in low numbers and known threats to their persistence currently exist. In essence, the designation is intended to result in "special consideration" for these animals during the environmental review and discretionary permitting processes. In addition, the designation is also intended to focus research and management attention on poorly-known, potentially at-risk species by stimulating the collection of additional information on their biology, distribution, and status.

Burrowing Owls prefer open, dry annual or perennial grasslands, agricultural and rangelands, deserts, and scrublands characterized by low-growing vegetation. Burrowing Owls also prefer areas inhabited by small mammals as they predominately depend on mammal burrows (particularly ground squirrels) for subterranean nesting. Owls can be found at elevations ranging from 200 ft. below sea level to 9,000 ft. above (CDFG 1995). Burrowing Owls commonly perch on fence posts or on mounds outside their burrows. Northern populations of Burrowing Owls are usually migratory, while more southern populations may move short distances or not at all (Haug et al. 1993, Botelho 1996). Little is known about the winter ranges of migratory populations, although migratory Burrowing Owls are believed to mix with resident populations in California during the winter months (Coulombe 1971, Haug et al. 1993).

Burrowing Owls tend to be resident where food sources are stable and available year-round (Rosenberg et al. 1998). Typically, they disperse or migrate south in areas when food becomes seasonally scarce. Burrowing Owls tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a substantial portion of their diet (Rosenberg et al. 1998). Small mammals, especially mice, rats, gophers, and ground squirrels, are also important food items. Other prey animals include reptiles and amphibians, scorpions, young cottontail rabbits, bats, and birds such as sparrows and Horned Larks. Consumption of insects increases during the breeding season. Burrowing Owls hover while hunting; after catching their prey they return to perches on fence posts or the ground. Burrowing Owls are primarily active at dusk and dawn, but if necessary will hunt at any time of day (CBOC 1993, CDFG 1995; Rosenberg et al. 1998).

The breeding season for Burrowing Owls is March to late August; the season tends to last later in the northern part of the range (CBOC 1993, CDFG 1995, Klute et al. 2003). Clutch size (number of birds hatched at the same time) ranges from 1 to 12 and averages about 7 (Ehrlich 1988). The incubation period is 28–30 days (Ehrlich 1988). The female performs all the incubation and brooding (sitting on eggs to hatch them by the warmth of the body) and is believed to remain continually in the burrow while the male does all the hunting (Rosenberg et al. 1998). The young fledge (take their first flight out of the nest) at 44 days but remain near the burrow and join the adults in foraging flights at dusk (Ehrlich 1988). The maximum life span recorded for a banded bird in the wild is approximately 8.5 years (Rosenberg et al. 1998).

In resident populations, nest site fidelity is common, with many adults nesting each year in their previous year's burrow; young from the previous year often establish nest sites near (<900 ft) their natal sites (Trulio 1997,Rosenberg et al. 1998). Burrowing Owls in migratory populations

also often nest in the same burrow, particularly if the previous year's breeding was successful (Belthoff and King 1997). Other birds in the same population may move to burrows near their previous year's burrow. The species is threatened primarily by loss, degradation, and fragmentation of habitat, although they do readily inhabit anthropogenic landscapes such as agricultural fields, golf courses, and airport grasslands (Korfanta et al. 2005).

3.0 METHODS

Prior to field surveys, natural resource databases, local resource management plans, aerial photos, and other readily available commercial data associated with the Project were reviewed to determine the locations and types of avian species that have the potential to exist within the study area. Primary data sources included, but were not limited to, the following:

- U.S. Fish and Wildlife Service Critical Habitat Mapper and File Data (USFWS 2013);
- California Burrowing Owl Consortium. 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines;
- California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation; and
- 2013 California Natural Diversity Database maintained by the CDFW (CDFW 2013).

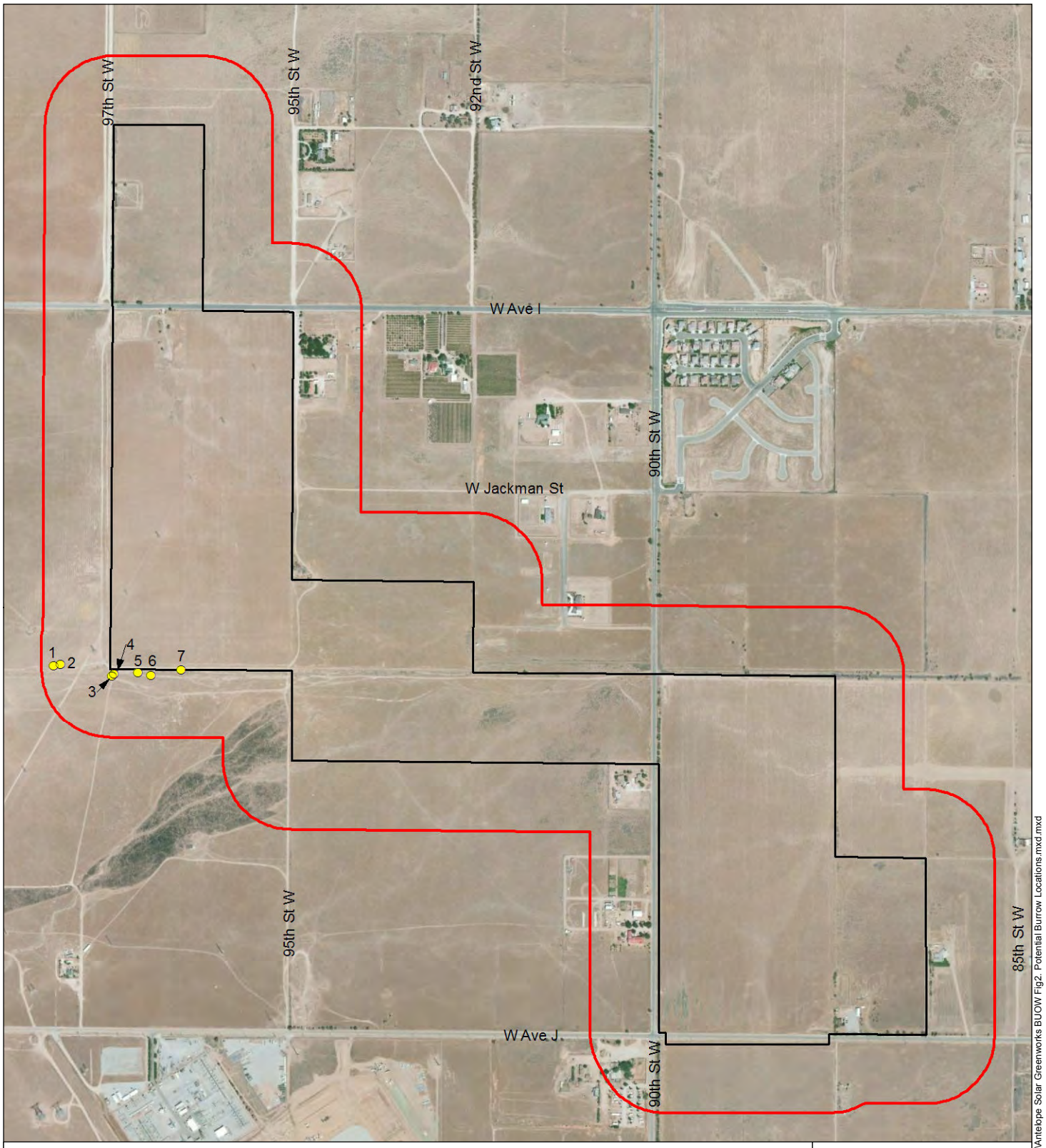
Survey methods were derived from generally accepted professional standards including the 1993 California Burrowing Owl Consortium Survey Protocol and Mitigation Guidelines (CBOC 1993), the 1995 and 2012 California Department of Fish and Game Staff Reports on Burrowing Owl Mitigation (CDFG 1995 and 2012). Accordingly, a methodical pedestrian-survey for owl burrows and sign was conducted by walking through areas of suitable habitat within study area limits (including evaluations of man-made structures, debris piles, etc.). Survey transects were spaced at approximately 100-ft intervals to allow for complete visual coverage of the study area. Where necessary, transect spacing was reduced or expanded to account for differences in terrain, vegetation density, and visibility. The presence of each observed species was based on direct observations of individual(s), sign, and/or vocalization. Avian scientific nomenclature and common names follows Sibley (2000).

Field surveys were conducted when weather conditions were conducive to observing birds. Surveys were not performed during rain, extreme temperatures, high winds (> 25 miles per hour), or dense fog. Where access was limited, observations were made from the nearest appropriate vantage points with the use of binoculars and spotting scopes. Surveys were conducted from approximately 1 hr before sunrise to 2 hr after sunset, when weather conditions were conducive to observing owls outside of burrows.

4.0 RESULTS

Field surveys were performed on 13 April, 07 May, 06 June, and 01 July 2013. Weather conditions during the surveys were sunny and clear, ambient temperature ranged from 60 to 84 degrees Fahrenheit, with wind speeds between 0-15 miles per hour. The study area is heavily disturbed and supports mostly ruderal vegetation dominated by non-native annual grass species including filaree (*Erodium cicutarium*), tumble mustard (*Sisymbrium altissimum*), Russian thistle (*Salsola tragus*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*). There is also evidence of historical agricultural practices. The study area lacks a perennial water and robust food source (i.e., insects, small mammals, etc.) for Burrowing Owls, and a population of predators (e.g., coyote sign and other raptors) was detected during survey events.

Several potential burrows of extremely low quality were documented within the study area, but outside the Project Site (Fig. 2). Nonetheless, no sign or Burrowing Owls were observed nesting, foraging, dispersing, or utilizing refuge habitats during field surveys. Appendix A includes a list of all avian species observed. Appendix B includes representative photographs of the study area.



Study Area (558 acres which includes a 500-ft buffer and the Project Site)

Project Site (259 acres)

Potential Burrow Locations

Inactive

0 500 1,000 Feet

1 inch = 1,000 feet

Data Sources:
- BingMaps accessed Jul 2013
- Silverado Power 2013

Map Prepared: 7-8-13

Prepared by:
NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\LA County\Antelope Solar Greenworks BUOW Fig2. Potential Burrow Locations.mxd

Figure 2. Potential Burrow Locations

5.0 CONCLUSIONS

No sign or Burrowing Owls were observed within the study area. The majority of the Project Site consists of disturbed and developed lands. Additionally, the study area seems unlikely to support Burrowing Owls because it lacks perennial water and food sources, and predators were observed. The field survey data suggests that no Burrowing Owls would be adversely affected by the Project.

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APPENDIX A

AVIAN COMPENDIUM

APPENDIX A

AVIAN COMPENDIUM

Scientific name	Common name
Accipiter cooperii	Cooper's Hawk
Carpodacus mexicanus	House Finch
Charadrius vociferus	Killdeer
Chondestes grammacus	Lark Sparrow
Columba livia	Rock Pigeon
Corvus brachyrhynchos	American Crow
Corvus corax	Raven
Eremophila alpestris	Horned Lark
Mimus polyglottos	Northern Mockingbird
Passer domesticus	House Sparrow
Passerculus sandwichensis	Savannah Sparrow
Sturnella neglecta	Meadowlark
Tyrannus verticalis	Western Kingbird
Zenaida macroura	Mourning Dove

APPENDIX B

PHOTOGRAPHIC LOG

APPENDIX B

PHOTOGRAPHIC LOG

	Photograph: 1 **Facing North**
	Photograph: 2 **Facing South West**

Photograph: 3

Potential Burrow

APPENDIX B.3-6 PROJECT 5 SILVER SUN GREENWORKS

2013 BURROWING OWL SURVEY BIOLOGICAL TECHNICAL REPORT

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2013 BURROWING OWL SURVEY

For

SILVER SUN GREENWORKS PROJECT
LOS ANGELES COUNTY, CALIFORNIA

Prepared by

AUGUST 2013

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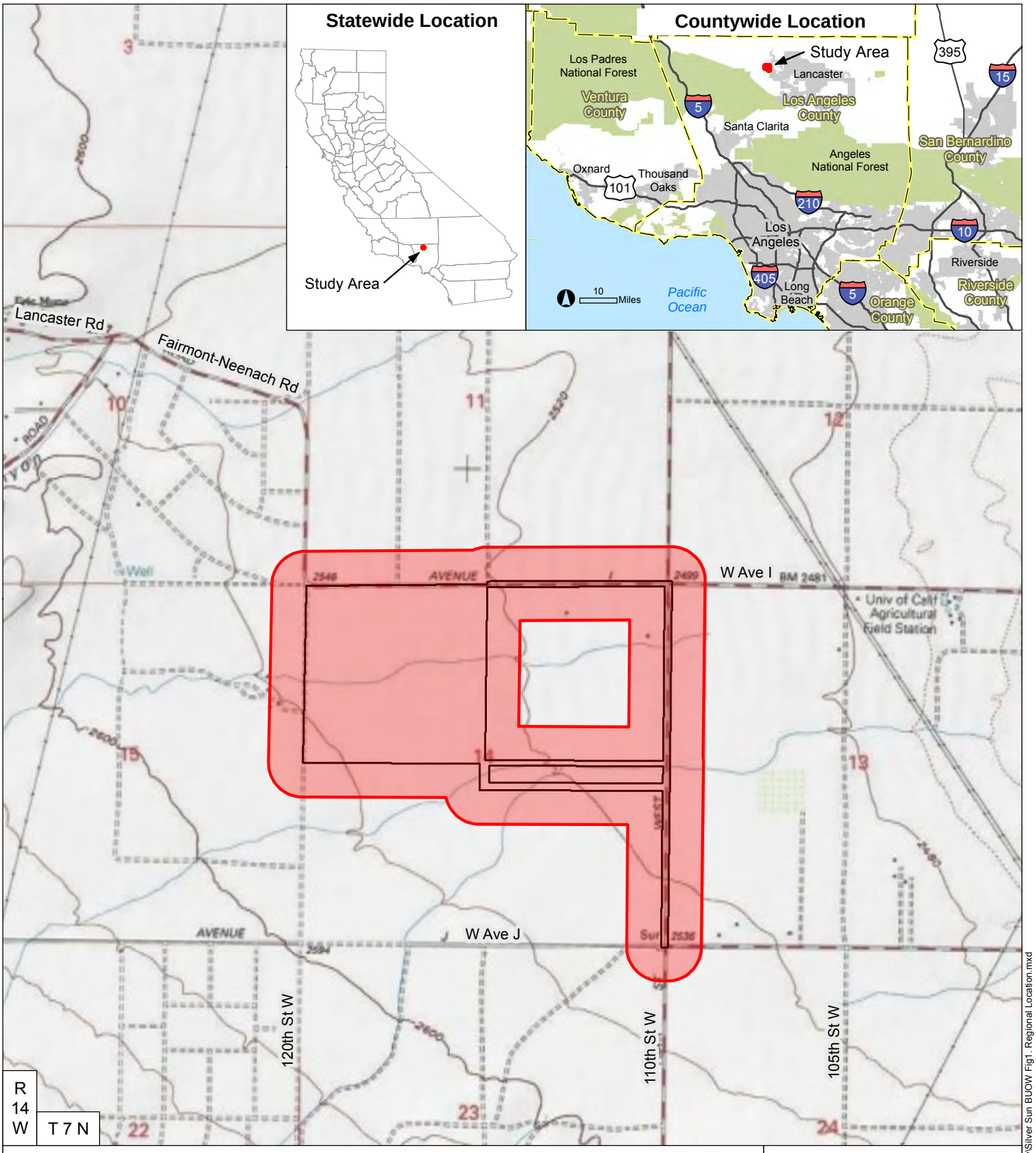
APPENDICES

Appendix A Avian Compendium

Appendix B Photographic Log

1.0 INTRODUCTION

This report provides the methods, assumptions, and results of focused surveys for Burrowing Owl (*Athene cunicularia*) conducted within the limits of the proposed Silver Sun Greenworks Project (here after referred to as the Project). The surveys were performed by NOREAS Inc., (NOREAS), on behalf of Silverado Power, LLC (Silverado). The Project is located within Los Angeles County, California (Fig. 1). The Project can be found on the Del Sur United States Geological Survey (USGS 1982) 7.5-minute quadrangle map; San Bernardino Base and Meridian, Township 7 North, Range 14 West, Sections 10, 11, 12, 13, 14, 15, 23, and 24. For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint (Project Site), plus a 500-ft buffer where practical. The Project Site is south of West Avenue I, and north of West Avenue J at an approximate elevation of 2,520 ft above mean sea level. The study area is disturbed and supports mostly ruderal vegetation, with a couple of discrete inclusions of native rubber rabbit brush scrub habitat and bare ground (Chambers 2012, NOREAS 2013).



Study Area
Project Site
County Boundary (inset)
Urban Area (inset)
Interstate or State Highway (inset)
Water Body (inset)
Park or National Forest (inset)

Data Sources:
- BingMaps accessed Jul 2013
- ESRI StreetMap North America 2010
- ESRI US Topo Maps accessed Jul 2013

Map Prepared: 7-5-13

The Study Area is located on the Del Sur USGS 7.5-minute quadrangle map; San Bernardino Base and Meridian, Township 7 North, Range 14 West, Sections 10, 11, 12, 13, 14, 15, 23 and 24.

0 1,000 2,000 Feet
1 inch = 2,000 feet

Prepared by:
NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\LA County\Silver Sun BUOW Fig1. Regional Location.mxd

Figure 1. Regional Location

2.0 BURROWING OWL BACKGROUND

The Burrowing Owl has been designated by the California Department of Fish and Wildlife (CDFW) as a species of special concern. "State Species of Special Concern" status applies to animals not listed for protection under the federal Endangered Species Act or the California Endangered Species Act. The designation denotes that a species is declining at a rate that could result in State listing or that a species has historically occurred in low numbers and known threats to their persistence currently exist. In essence, the designation is intended to result in "special consideration" for these animals during the environmental review and discretionary permitting processes. In addition, the designation is also intended to focus research and management attention on poorly-known, potentially at-risk species by stimulating the collection of additional information on their biology, distribution, and status.

Burrowing Owls prefer open, dry annual or perennial grasslands, agricultural and rangelands, deserts, and scrublands characterized by low-growing vegetation. Burrowing Owls also prefer areas inhabited by small mammals as they predominately depend on mammal burrows (particularly ground squirrels) for subterranean nesting. Owls can be found at elevations ranging from 200 ft below sea level to 9,000 ft above (CDFG 1995). Burrowing Owls commonly perch on fence posts or on mounds outside their burrows. Northern populations of Burrowing Owls are usually migratory, while more southern populations may move short distances or not at all (Haug et al. 1993, Botelho 1996). Little is known about the winter ranges of migratory populations, although migratory Burrowing Owls are believed to mix with resident populations in California during the winter months (Coulombe 1971, Haug et al. 1993).

Burrowing Owls tend to be resident where food sources are stable and available year-round (Rosenberg et al. 1998). Typically, they disperse or migrate south in areas when food becomes seasonally scarce. Burrowing Owls tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a substantial portion of their diet (Rosenberg et al. 1998). Small mammals, especially mice, rats, gophers, and ground squirrels, are also important food items. Other prey animals include reptiles and amphibians, scorpions, young cottontail rabbits, bats, and birds such as sparrows and Horned Larks. Consumption of insects increases during the breeding season. Burrowing Owls hover while hunting; after catching their prey they return to perches on fence posts or the ground. Burrowing Owls are primarily active at dusk and dawn but, if necessary, will hunt at any time of day (CBOC 1993, CDFG 1995; Rosenberg et al. 1998).

The breeding season for Burrowing Owls is March to late August; the season tends to last later in the northern part of the range (CBOC 1993, CDFG 1995, Klute et al. 2003). Clutch size (number of birds hatched at the same time) ranges from 1 to 12 and averages about 7 (Ehrlich 1988). The incubation period is 28–30 days (Ehrlich 1988). The female performs all the incubation and brooding (sitting on eggs to hatch them by the warmth of the body) and is believed to remain continually in the burrow while the male does all the hunting (Rosenberg et al. 1998). The young fledge (take their first flight out of the nest) at 44 days but remain near the burrow and join the adults in foraging flights at dusk (Ehrlich 1988). The maximum life span recorded for a banded bird in the wild is approximately 8.5 years (Rosenberg et al. 1998).

In resident populations, nest site fidelity is common, with many adults nesting each year in their previous year's burrow; young from the previous year often establish nest sites near (<900 ft) their natal sites (Trulio 1997,Rosenberg et al. 1998). Burrowing Owls in migratory populations

also often nest in the same burrow, particularly if the previous year's breeding was successful (Belthoff and King 1997). Other birds in the same population may move to burrows near their previous year's burrow. The species is threatened primarily by loss, degradation, and fragmentation of habitat, although they do readily inhabit anthropogenic landscapes such as agricultural fields, golf courses, and airport grasslands (Korfanta et al. 2005).

3.0 METHODS

Prior to field surveys, natural resource databases, local resource management plans, aerial photos, and other readily available commercial data associated with the Project were reviewed to determine the locations and types of avian species that have the potential to exist within the study area. Primary data sources included, but were not limited to, the following:

- U.S. Fish and Wildlife Service Critical Habitat Mapper and File Data (USFWS 2013);
- California Burrowing Owl Consortium. 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines;
- California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation; and
- 2013 California Natural Diversity Database maintained by the CDFW (CDFW 2013);
- Biological Technical Review for the Silver Sun Greenworks Solar Project Site (Chambers 2012); and
- Biological Technical Review for the Silver Sun Greenworks Solar Project Site (NOREAS 2013).

Survey methods were derived from generally accepted professional standards including the 1993 California Burrowing Owl Consortium Survey Protocol and Mitigation Guidelines (CBOC 1993), the 1995 and 2012 California Department of Fish and Game Staff Reports on Burrowing Owl Mitigation (CDFG 1995 and 2012). Accordingly, a methodical pedestrian-survey for owl burrows and sign was conducted by walking through areas of suitable habitat within study area limits (including evaluations of man-made structures, debris piles, etc.). Survey transects were spaced at approximately 100-ft intervals to allow for complete visual coverage of the study area. Where necessary, transect spacing was reduced or expanded to account for differences in terrain, vegetation density, and visibility. The presence of each observed species was based on direct observations of individual(s), sign, and/or vocalization. Avian scientific nomenclature and common names follows Sibley (2000).

Field surveys were conducted when weather conditions were conducive to observing birds. Surveys were not performed during rain, extreme temperatures, high winds (> 25 miles per hour), or dense fog. Where access was limited, observations were made from the nearest appropriate vantage points with the use of binoculars and spotting scopes. Surveys were conducted from approximately 1 hr before sunrise to 2 hr after sunset, when weather conditions were conducive to observing owls outside of burrows.

4.0 RESULTS

Field surveys were performed on 11 April, 08 May, 06 June, and 01 July 2013. Weather conditions during the surveys were sunny and clear, ambient temperature ranged from 51 to 87 degrees Fahrenheit, with wind speeds between 0-15 miles per hour. The study area is heavily disturbed and supports mostly non-native vegetation dominated by oats (*Avena* sp.), bromes (*Bromus* sp.), and ryegrass (*Lolium* sp.). A couple isolated patches of rubber rabbit brush (*Chrysothamnus nauseosus*) were detected toward the center portion of the Project Site. There is also evidence of extensive agricultural practices.

No sign or Burrowing Owls were observed within the Project Site. Nonetheless, several Burrowing Owls were detected utilizing three active burrows within the study area as illustrated in Fig. 2. Appendix A includes a list of avian species observed. Appendix B includes representative photographs of the study area as well.

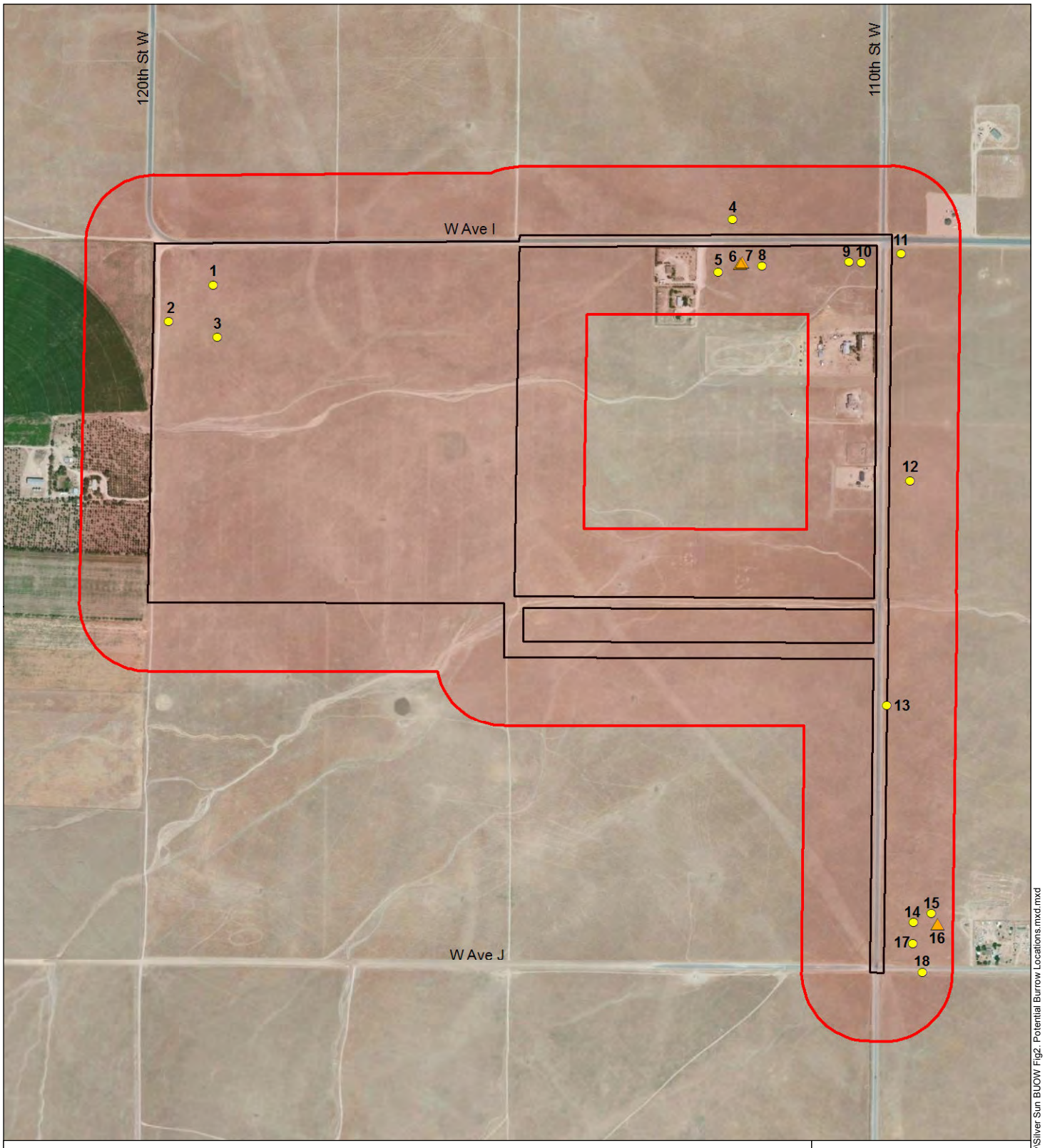


Figure 2. Potential Burrow Locations

5.0 CONCLUSIONS

No sign or Burrowing Owls were observed within the Project Site. Given the low quality habitat and extent of anthropogenic disturbance; the Project Site seems unlikely to support Burrowing Owls. The survey data suggests that no Burrowing Owls would be adversely affected by the Project.

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APPENDIX A

AVIAN COMPENDIUM

APPENDIX A

AVIAN COMPENDIUM

Scientific name	Common name
Athene cunicularia	Burrowing Owl
Carpodacus mexicanus	House Finch
Charadrius vociferus	Killdeer
Chondestes grammacus	Lark Sparrow
Columba livia	Rock Pigeon
Corvus brachyrhynchos	American Crow
Corvus corax	Raven
Eremophila alpestris	Horned Lark
Euphagus cyanocephalus	Brewer's Blackbird
Mimus polyglottos	Northern Mockingbird
Myiarchus cinerascens	Ash-throated Flycatcher
Passer domesticus	House Sparrow
Sturnella neglecta	Meadowlark
Tyrannus verticalis	Western Kingbird
Zenaida macroura	Mourning Dove
Zonotrichia leucophrys	White-crowned Sparrow

APPENDIX B

PHOTOGRAPHIC LOG

APPENDIX B

PHOTOGRAPHIC LOG

	Photograph: 1 **Facing North**
	Photograph: 2 **Facing East**

	Photograph: 3 **Active Burrow #6**
	Photograph: 4 **Active Burrow #7**

BIOLOGICAL TECHNICAL REVIEW
FOR THE SILVER SUN GREENWORKS SOLAR PROJECT SITE (CUP 11)
CITY OF LANCASTER
LOS ANGELES COUNTY, CALIFORNIA

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SECTION 1.0 – INTRODUCTION

Silverado Power, LLC (Silverado Power) is an independent solar power producer and developer of distributed solar power assets utilities that are for both municipally and investor owned. Silverado Power strives to be a leader in wholesale solar power generation and the process of developing, building, and operating solar generation facilities (SGFs).

Chambers Group, Inc. (Chambers Group) was retained by Tetratech (for Silverado Power) to conduct a literature review and biological technical report (BTR) on the proposed Silver Sun Greenworks Solar project site located in Los Angeles County, California. The purpose of this document is to report the results of the reconnaissance-level biological survey.

1.1. PROJECT DESCRIPTION

Silverado Power plans to develop the Silver Sun Greenworks SGF (the Project). The Project facilities would operate year-round, producing electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the fourth quarter of 2014.

The proposed Project would have a generating capacity of 20 megawatts alternating current (MW-AC) located on approximately 80 acres of non-native annual grassland, disturbed, rubber rabbitbrush scrub and valley needlegrass grassland in Los Angeles County. The Project will employ photovoltaic (PV) modules to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system.

The Project would meet the increasing demand for electricity generated from clean, renewable technology. The recent legislation enacted in California recognizes the multiple benefits associated with the development of renewable energy resources. These benefits include a reduced reliance on foreign sources of fuel, promotion of national security, diversification of energy portfolios, reductions in greenhouse gas emissions, and the creation of “green” jobs within the state of California.

1.2. PROJECT LOCATION

The proposed Project site (APN: 3267-003-001) is located in the Antelope Valley area of unincorporated northeastern Los Angeles County and encompasses approximately 80 acres of fallow agricultural land. The Silver Sun Greenworks Solar Project Site is located within the city of Lancaster, CA, on the southeast corner of the intersection of 120th Street West and West Avenue I, approximately 10.7 miles west of downtown Lancaster. Silver Sun Greenworks is located within the *Del Sur* California USGS 7.5 minute quadrangle. Fallow agricultural fields surround the Project site. The Project Regional map is provided as Figure 1 and the Project Vicinity map is provided as Figure 2.

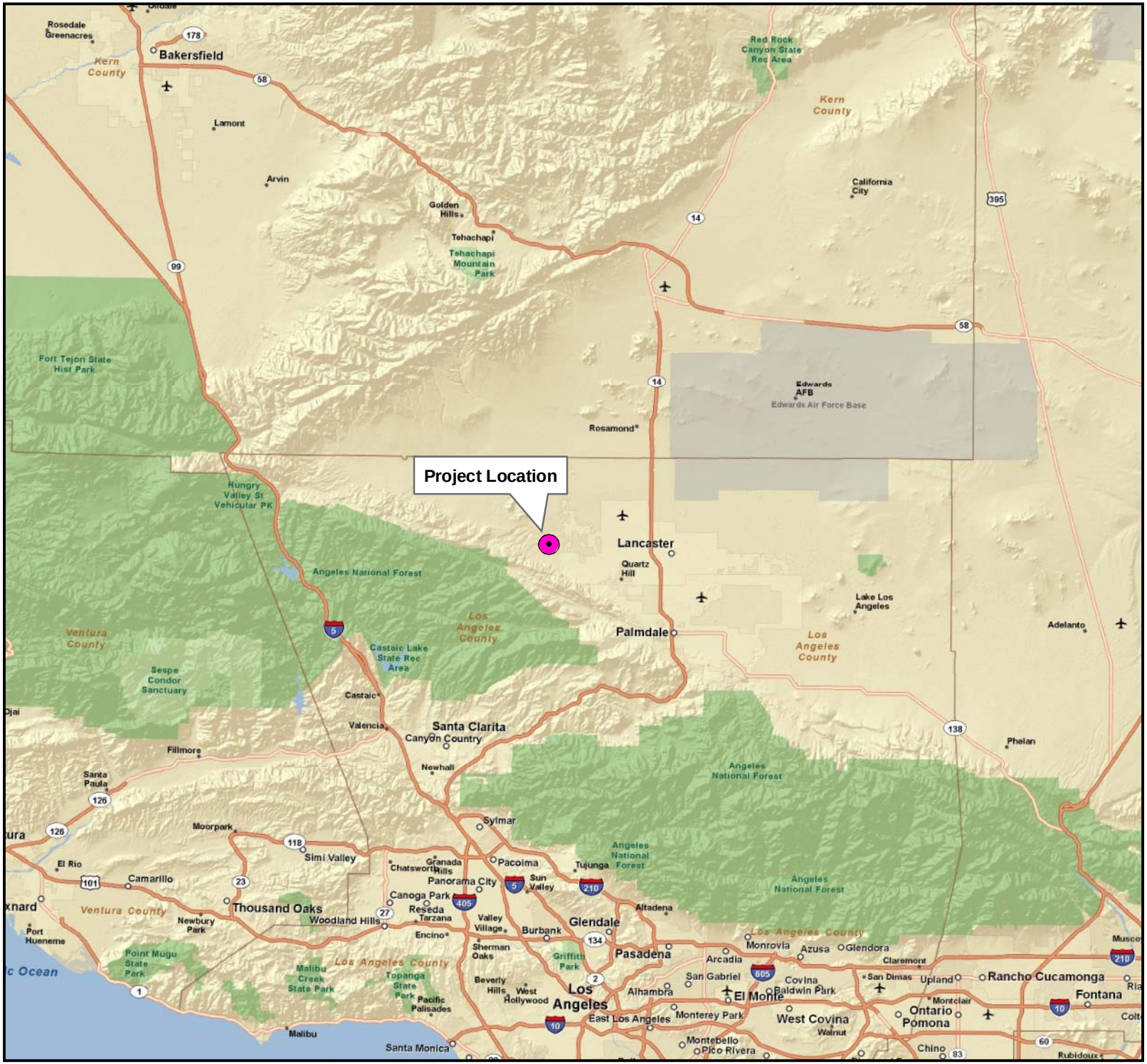

Figure 1
Regional Map
Silver Sun Greenworks

Legend

Project Location

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Chambers Group Inc.

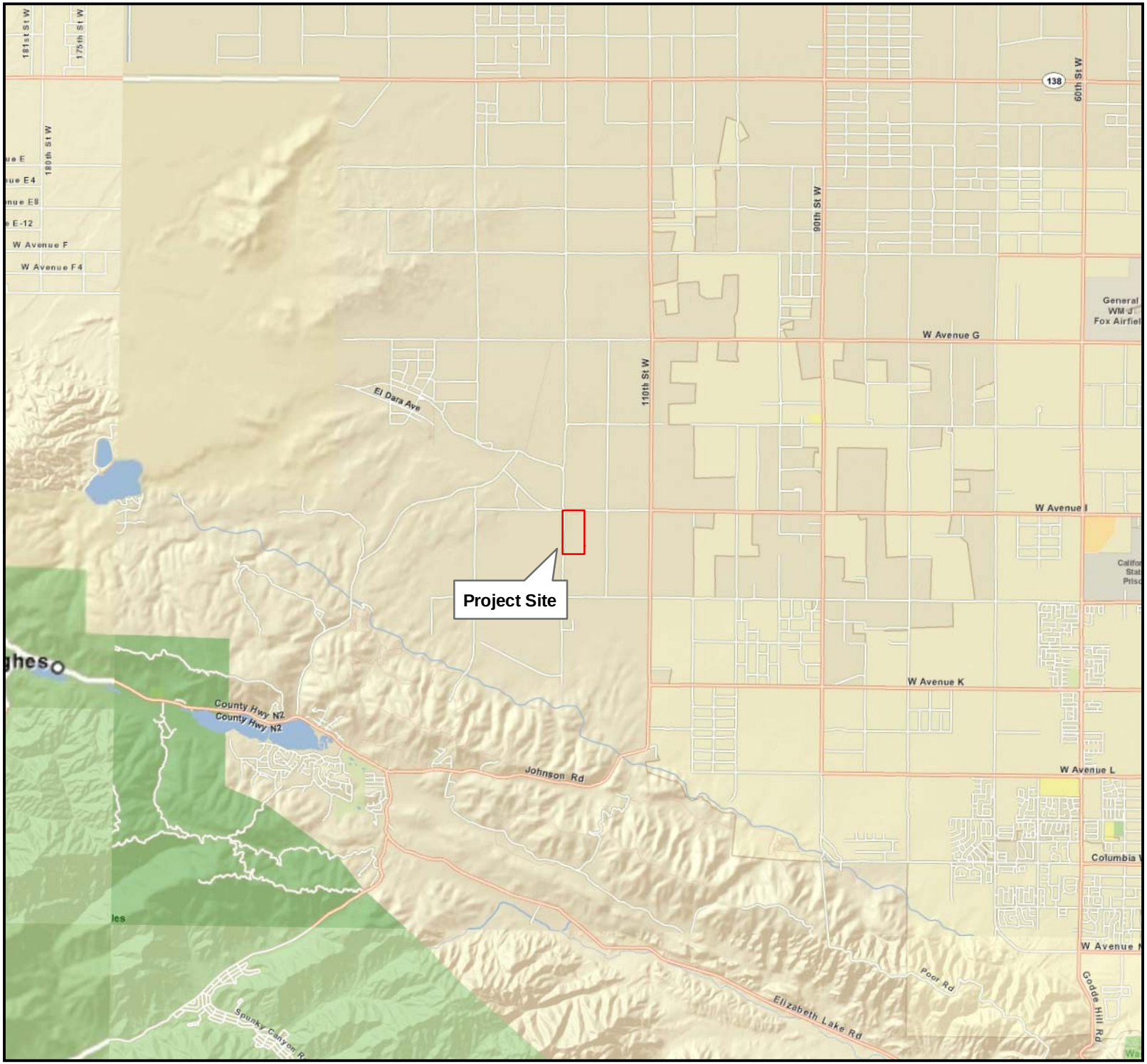

Figure 2
Vicinity Map
Silver Sun Greenworks

Legend

Project Site

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Chambers Group Inc.

SECTION 2.0 – METHODS

2.1. LITERATURE REVIEW

Prior to conducting the field surveys, existing documentation relevant to the Project site was reviewed. The most recent records of the California Department of Fish and Game California Natural Diversity Database (CNDDB 2011) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2011) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Fairmont Butte, Little Butte, Rosamond, Rosamond Lake, Redman, Alpine Butte, Lancaster East, Lancaster West, Del Sur, Lake Hughes, Burnt Peak, Little Rock, Lovejoy Buttes, El Mirage*, California USGS 7.5 minute quadrangles). These databases contain records of reported occurrences of federal- or state-listed as endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Special Concern (CSC), or otherwise sensitive species or habitats that may occur within or in the vicinity of the Project site.

2.2. BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

The field survey was conducted on the Project site in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support special status wildlife species and to identify any potential jurisdictional waters of the United States. Chambers Group biologists Heather Clayton and Tracey Valentovich conducted the general reconnaissance survey on May 19, 2011. Weather conditions during the survey included temperatures averaging approximately 75 degrees Fahrenheit with no cloud cover and no precipitation. During the survey the biologists walked the Project site documenting the native vegetation communities and took notes regarding the potential for special status species and jurisdictional waters to occur onsite.

2.3. VEGETATION

All plant species and soil types observed onsite were noted. Plant communities on the Project site were identified, qualitatively described, and mapped onto an aerial photograph (Appendix A). Plant communities were determined in accordance with the categories set forth in Holland (1986) or Gray and Bramlet (1992). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California* (Hickman 1993).

2.4. WILDLIFE

All wildlife and wildlife signs observed or detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support state- and/or federal-listed or proposed listed species. Notes were made on the general habitat types, species observed, and the conditions of the site. Photographs of the site are provided in Appendix B.

SECTION 3.0 – RESULTS

3.1. LITERATURE REVIEW

According the literature review, 19 special status plant and 31 special status wildlife species were documented to occur within the vicinity of the Project site. This list included ten wildlife species that are federal- and/or state-listed endangered or threatened. Of the 19 special status plant species listed in the literature review, none are federal- and/or state-listed endangered or threatened.

3.2. VEGETATION COMMUNITIES

The Project site is classified as Non-native Annual Grassland, Rubber Rabbitbrush Scrub, Valley Needlegrass Grassland and Developed. A map displaying the vegetation community on the Project site is included in Appendix A.

3.2.1 Non-Native Annual Grassland

Non-Native Grassland consists of a dense to sparse cover of annual grasses such as oats (*Avena* sp.), bromes (*Bromus* sp.), and ryegrass (*Lolium* sp.) with flowering culms up to 3 feet in height. This community is often associated with numerous species of showy-flowered, native annual forbs "wildflowers" such as California poppy (*Eschscholzia californica*), lupines (*Lupinus* sp.), and goldfields (*Lasthenia* sp.) especially in years of favorable rainfall (Holland 1986). Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from winter through spring. Typically plants are dead through the summer-fall dry season persisting as seeds. Non-native grasslands can be found on fine-textured usually clay soils, moist or even waterlogged during the winter rainy season and very dry during the summer and fall.

Non-native grasslands are present within the Project site. Plant species found on the Project site typical of this vegetation community include: foxtail barley (*Hordeum murinum*), sunflower (*Helianthus annuus*) and ripgut grass (*Bromus diandrus*).

3.2.2 Rubber Rabbitbrush Scrub

Rubber Rabbitbrush Scrub is dominated by rubber rabbitbrush (*Chrysothamnus nauseosus*), usually approximately 3 feet in height with regularly-spaced gray-green shrubs that bloom in late summer or early fall (Holland 1986). Rabbitbrush Scrub is a disturbance-maintained community in which fire, grazing, or soil tilling perpetuate the same species within the herb and shrub layers and the disturbance occurs with regular (less than 10 years) frequency.

Rubber Rabbitbrush Scrub is present within the Project site. Plant species found within this site typical of this vegetation community include: tumble mustard (*Sisymbrium altissimum*), redstem filaree (*Erodium cicutarium*) and rubber rabbitbrush.

3.2.3 Valley Needlegrass Grassland

Valley Needlegrass Grassland is mid-height (up to 2 feet) grassland dominated by perennial tussock-forming purple needlegrass (*Nassella pulchra*). Native and introduced annual herbaceous plants occur between the perennial grasses, often exceeding the bunchgrasses in overall vegetative cover. These

grasslands are typically found on fine-textured, often clay soils, which can be moist or even waterlogged during the winter, but are very dry in the summer (Holland 1986). Valley needlegrass grasslands are protected by the City of Lancaster and Los Angeles County. Therefore, Chambers Group recommends avoiding development in these areas. Coordination with the CDFG may be required for this community prior to project authorization.

Valley Needlegrass Grassland is present within the Project site. Plant species found within the site typical of this vegetation community include: cheatgrass (*Bromus tectorum*), minature lupine (*Lupinus bicolor*) and purple needlegrass.

3.2.4 Developed

Developed areas are areas that have been altered by humans and now display man-made structures such as houses, paved roads, buildings, parks, and other maintained areas.

Developed areas are present within the Project site.

3.3. JURISDICTIONAL FEATURES

Chambers Group conducted a preliminary assessment for jurisdictional features found on the Project site. A formal delineation was not conducted.

3.3.1 Man Made Drainage Features

Two man made drainage features were observed on the Project site. A broad gravel/sand filled drainage runs from east to west through the middle of the Project and merges with a second drainage located in the southwest corner of the Project site. Both drainages contained running water. These features may be subject to state jurisdiction.

3.4. SPECIAL STATUS SPECIES

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Project site.

CNPS

List 1A	=	Plants presumed extinct in California.
List 1B	=	Plants rare and endangered in California and throughout their range.
List 2	=	Plants rare, threatened, or endangered in California but more common elsewhere in their range.
List 3	=	Plants about which we need more information; a review list.
List 4	=	Plants of limited distribution; a watch list.

CNPS Extensions

0.1	=	Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2	=	Fairly endangered in California (20 to 80 percent occurrences threatened).

0.3 = Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE = Federally listed; Endangered
FT = Federally listed; Threatened
FC = Federal Candidate for listing
FPT = Federal Proposed listing as Threatened

State

ST = State listed; Threatened
SE = State listed; Endangered
RARE = State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC = State Species of Special Concern
WL = California Department of Fish and Game (CDFG) Watch List

3.5. SENSITIVE SPECIES DESCRIPTIONS

3.5.1 Sensitive Plants in the Los Angeles County Area

3.5.1.1 Alkali Mariposa Lily (*Calochortus striatus*) CNPS List 1B.1

Alkali mariposa lily is a CNPS List 1B.2 species. This perennial, bulbiferous herb flowers between April and June. This species occurs on alkaline and mesic soils within Chaparral, Chenopod Scrub, Mojavean Desert Scrub, and Meadows and Seeps habitats at elevations between 230 and 5,233 feet above mean sea level (amsl). Known range for this species includes: Kern, Los Angeles, San Bernardino, and Tulare counties. Threats to alkali mariposa lily include groundwater urbanization, grazing, trampling, road construction, water diversion resulting in lowering the water table, and possibly horticultural collecting.

3.5.1.2 Barstow Woolly Sunflower (*Eriophyllum mohavense*) CNPS List 1B.2

Barstow woolly sunflower is a CNPS List 1B.2 species. This annual herb flowers between March and May. Barstow woolly sunflower occurs within Chenopod Scrub, Mojavean Desert Scrub, and Playas habitats at elevations between 1,640 and 3,150 feet amsl. Known range for this species includes: Fresno, Kern, Los Angeles, and San Bernardino counties. Threats to this species include vehicles, grazing, energy development, and road improvements.

3.5.1.3 Clokey's Cryptantha (*Cryptantha clokeyi*) CNPS List 1B.2

Clokey's cryptantha is a CNPS List 1B.2 species. This annual herb flowers in April. Clokey's cryptantha occurs within Mojavean Desert Scrub habitat at elevations between 2,379 and 4,478 feet amsl. Known range for this species includes: Inyo, Los Angeles, and San Bernardino counties. Major threats to this species include military activities and alteration of fire regimes.

3.5.1.4 Darwin Rock Cress (*Arabis pulchra* var. *munciensis*) CNPS List 2.3

Darwin rock cress is a CNPS List 2.3 species. This perennial herb flowers in April. Darwin rock cress occurs in carbonate soils of Chenopod Scrub and Mojavean Desert Scrub habitats at elevations between 3,608 and 6,807 feet amsl. Known range includes Inyo, Los Angeles, and San Bernardino counties.

3.5.1.5 Davidson's Bush Mallow (*Malacothamnus davidsonii*) CNPS List 1B.2

Davidson's bush mallow is a CNPS List 1B.2 species. This perennial deciduous shrub flowers between June and January. Davidson's bush mallow occurs within chaparral, Coastal Scrub, Cismontane Woodland, and riparian woodland habitats at elevations between 607 and 2,805 feet amsl. Known ranges include: Los Angeles, Monterey, Santa Clara, San Mateo, and San Luis Obispo counties. Urbanization, maintenance activities, and erosion are the main threats to this species.

3.5.1.6 Desert Cymopterus (*Cymopterus deserticola*) CNPS List 1B.1

Desert cymopterus is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs on sandy soils within Mojavean Desert Scrub and Joshua Tree Woodland habitats at elevations between 2,066 and 4,921 feet amsl. Known range for this species includes: Kern, Los Angeles, and San Bernardino counties. Threats to desert cymopterus include military activities, sheep grazing, vehicles, utility construction, and urbanization.

3.5.1.7 Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*) CNPS List 1B.1

Horn's milk-vetch is a CNPS List 1B.1 species. This annual herb flowers between May and October. This species occurs along lake margins in poorly drained, alkaline soils of meadows and seeps and Playas habitats at elevations between 195 to 2,790 feet amsl. Known ranges include Inyo, Kern, and San Bernardino counties and Nevada. Poisonous to sheep, it was subject to eradication by farmers in the early 1900s; current threats to Horn's milk-vetch are habitat alterations.

3.5.1.8 Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*) CNPS List 1B.1

Lancaster milk-vetch is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs within Chenopod Scrub habitat. Known ranges include Kern, Los Angeles and San Bernardino counties and Nevada. Limited range, including areas only near Lancaster and Edwards Air Force Base, is the major threat to Lancaster milk-vetch.

3.5.1.9 Pale-Yellow Layia (*Layia heterotricha*) CNPS List 1B.1

Pale-yellow layia is a CNPS List 1B.1 species. This annual herb flowers between March and June. This species occurs in alkaline or clay soils within Cismontane Woodland, Coastal Scrub, Pinyon-Juniper Woodland, and Valley and Foothill Grassland habitats at elevations between 984 and 5,594 feet amsl. Known ranges include Fresno, Kern, Kings, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, San Benito, and Ventura counties. Threats to pale-yellow layia include vehicle use, non-native plants, agricultural conversion, grazing, and previous construction at San Antonio Reservoir.

3.5.1.10 Parish's Popcorn-Flower (*Plagiobothrys parishii*) CNPS List 1B.1

Parish's popcorn-flower is a CNPS List 1B.1 species. This annual herb flowers between March and November. This species occurs on alkaline and mesic soils within Great Basin scrub and Joshua tree woodland habitats at elevations between 2,460 and 4,595 feet amsl. Known range for this species includes: Inyo, Los Angeles, Mono, and San Bernardino counties. Threats to Parish's popcorn-flower include groundwater pumping.

3.5.1.11 Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) CNPS List 1B.1

Parry's spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and June. This species occurs in sandy or rocky soils and openings within Cismontane Woodland, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 902 and 4,002 feet amsl. Known ranges include Los Angeles, Riverside and San Bernardino counties. Threats to this species include development, altered flood regime, mining, vehicles, and competition from non-native plants.

3.5.1.12 Peirson's Morning-Glory (*Calystegia peirsonii*) CNPS List 4.2

Peirson's morning-glory is a CNPS List 4.2 species. This perennial, rhizomatous herb flowers between April and June. This species occurs within chaparral, Chenopod Scrub, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, and Valley and Foothill Grassland habitats at elevations between 98 and 5,085 feet amsl. Known ranges include Los Angeles county. Major threats to Peirson's morning-glory include grazing and development; possible threats include power line construction.

3.5.1.13 Recurved Larkspur (*Delphinium recurvatum*) CNPS List 1B.2

Recurved larkspur (*Delphinium recurvatum*) is a CNPS List 1B.2 species. This perennial herb flowers between March and June. This species occurs on alkaline soils within Chenopod Scrub, Cismontane Woodland, and Valley and Foothill Grassland habitats at elevations between 10 and 2,460 feet amsl. Known ranges of the recurved larkspur include: Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solana, Sutter, and Tulare counties. Conversion of habitat, grazing, and trampling are threats to the recurved larkspur.

3.5.1.14 Round-Leaved Filaree (*California macrophylla*) CNPS List 1B.1

Round-leaved filaree is a CNPS List 1B.1 species. This annual herb flowers between March and May. Round-leaved filaree occurs in clay soils within Cismontane Woodland and Valley and Foothill Grassland habitats at elevations between 50 and 3,937 feet amsl. Known ranges include Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, Santa Barbara, San Benito, Santa Clara, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Ventura, and Yolo counties and Santa Cruz Island. Threats to this species include urbanization, feral pigs, habitat alteration, pipeline construction, urbanization and competition from non-native plants.

3.5.1.15 Sagebrush Loeflingia (*Loeflingia squarrosa*) CNPS List 2.2

Sagebrush loeflingia is a CNPS List 2.2 species. This annual herb flowers between April and May. This species occurs in sandy soils of Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub habitats at

elevations between 2,295 and 5,300 feet amsl. Known range includes Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino counties and Nevada, Oregon, and Wyoming. Possible threats to sagebrush loeflingia include off-highway vehicles and grazing.

3.5.1.16 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*) CNPS List 1B.1

San Fernando Valley spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and July. This species occurs in sandy soils of Coastal Scrub and Valley and Foothill Grassland habitats at elevations between 492 and 4,002 feet amsl. Known range includes Los Angeles, Orange, and Ventura counties. Possible threats to this species include competition from non-native plants and development.

3.5.1.17 Short-Joint Beavertail (*Opuntia basilaris brachyclada*) CNPS List 1B.2

Short-joint beavertail is a CNPS List 1B.2 species. This perennial stem succulent flowers between April and June. This species occurs within chaparral, Mojavean Desert Scrub, Joshua Tree Woodland, and Pinyon-Juniper Woodland habitats at elevations between 394 and 5,905 feet amsl. Known range for this species includes Los Angeles and San Bernardino counties. Major threats to short-joint beavertail include vehicles, grazing, urbanization, mining, and horticultural collecting; possible threats include power line construction.

3.5.1.18 Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*) CNPS List 1B.1

Slender mariposa lily is a CNPS List 1B.1 species. This perennial, bulbiferous herb flowers between March and June. This species occurs within chaparral, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 1,050 and 3,280 feet amsl. Known ranges include Los Angeles and Ventura counties. Threats to slender mariposa lily include vehicles, development, mining, and competition from non-native plants.

3.5.1.19 White Pygmy-Poppy (*Canbya candida*) CNPS List 4.2

White pygmy-poppy is a CNPS List 4.2 species. This annual herb flowers between March and June. This species occurs on gravelly, sandy, or granitic soils within Joshua Tree Woodland, Mojave Desert Scrub, and Pinyon-Juniper Woodland habitats at elevations between 600 and 4,800 feet amsl. Known ranges include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino counties. This species is threatened by development, off-highway vehicles, grazing, mining, and competition from non-native plants.

3.5.2 Sensitive Wildlife Species in the Los Angeles County Area

3.5.2.1 American Badger (*Taxidea taxus*) CSC

The American badger is a California Species of Concern (CSC). This carnivorous species ranges over most of the western U.S and upper midwestern U.S. south into central Mexico. In California, the badger may occupy a variety of habitats, especially grasslands, savannas, montane meadows, sparse scrublands, and deserts. It prefers friable soils for burrowing, and relatively open, uncultivated ground. Prey items include gophers, ground squirrels, marmots, kangaroo rats, other rodents, and the occasional reptile or amphibian. The American badger may weigh up to 25 pounds and is easily recognized by its overall yellowish gray coloration, the white stripe on top of its head, white cheeks, and black feet with noticeably long front claws. It is a heavy-bodied animal with short legs and a characteristic pigeon-toed

gait. It is chiefly nocturnal, but it is often seen by day as well. It gives birth to two to five young anywhere from February to May, depending on its altitude and latitude. Threats to this species include habitat loss to agriculture, housing, and other land conversions, and illegal hunting.

3.5.2.2 Arroyo Toad (*Anaxyrus californicus*) FE, CSC

The arroyo toad is a federally endangered species and a CSC. The range of this species is within coastal California from Monterey County into northwestern Baja California, Mexico. It is found in washes, streams, and arroyos; and preferred habitats include sandy banks within riparian woodlands such as willow, cottonwood, sycamore, mulefat, and/or coast live oak. It breeds in shallow, sandy/gravelly riverine pools with low silt content and normally disperses onto adjacent uplands after breeding. Individuals have been observed up to 2 kilometers (km) from the streams in which they breed, but most often they are within 0.5 km of those streams (USFWS 1992a). During the breeding season, males call nocturnally from open areas on banks at the edges of streams. Males typically precede females at breeding sites. Females lay their eggs among gravel, leaves, or sticks, on mud or clean sand within low to moderately flowing sections of streams in areas with little or no emergent vegetation and little woody marginal growth. Newly metamorphosed individuals remain near pools for up to several weeks until the areas dry. Juveniles begin feeding primarily on ants and shift to small beetles as they grow (Sweet 1991) before moving into adjacent wintering grounds. Many spend the next 6 to 8 months overwintering in burrows up to 20 centimeters deep in sandy substrates of these habitats. Adults obtain shelter primarily by burrowing into fine, sandy soils in both adjacent and upland habitats (Sweet 1991). This small to moderately-sized species is distinguished from other toads by its chevron-shaped marking between the eyes and by the lack of a mid-dorsal stripe. Coloration may vary from light olive gray to tannish brown above, and the unmarked undersurfaces are creamy to dirty white. The iris is dark brown with scattered gold iridophores on the upper and lower portions of the iris. The primary threat to this species is habitat loss.

3.5.2.3 Bell's Sage Sparrow (*Amphispiza belli belli*) WL

The Bell's sage sparrow is a subspecies of sage sparrow and a CDFG Watch List (WL) species. It breeds primarily in chamise chaparral along the coastal side of California from the western foothills of the Sierra Nevada to San Diego County and northwest Mexico. It also breeds less commonly in coastal sage, mixed chaparral, and big sagebrush communities. Wintering birds of this subspecies may migrate to desert floors or remain in their breeding habitats. This species is distinguished from other sparrows by its gray head and back, thin white eye-ring, single dark breast spot, and heavy whisker-like pattern about the face. Populations are in decline due to habitat loss and fragmentation, frequent wildfires, grazing, invasive plants, and brood parasitism caused by the brown-headed cowbird (*Molothrus ater*).

3.5.2.4 Burrowing Owl (*Athene cunicularia*) CSC

The burrowing owl, a CSC, is broadly distributed across the western United States with populations in Florida and Central and South America. Burrowing owls use a variety of natural and modified habitats for nesting and foraging, typically characterized by low-growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrublands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. Burrowing owls typically use burrows made by mammals, such as California ground squirrels (*Spermophilus beecheyi*), foxes, or badgers. They sometimes dig their own burrows and will often utilize man-made structures such as earthen berms;

cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls often are found within, under, or in close proximity to man-made structures. Prey sources for this species include small rodents; arthropods such as spiders, crickets, centipedes, and grasshoppers; smaller birds; amphibians; reptiles; and carrion. Threats to the burrowing owl include loss of nesting burrows, habitat loss, and mortality from motor vehicles.

3.5.2.5 California Red-Legged Frog (*Rana aurora draytonii*) FT, CSC

The California red-legged frog is a federally threatened species and a CSC. It is found from Mendocino County in California south to northwestern Baja, Mexico. It may occur in a variety of habitats from near sea level to 8,000 feet in elevation and is strongly associated with permanent sources of water, including cattail and tule marshes, reservoirs, ponds, and stream sides. It prefers deep, still, or slow moving water with low salinity levels and shallow margins or riffle zones. This species may disperse far from water (up to one mile) during and after significant rain events, and other habitats may include moist woodlands and grasslands from the lowlands through the foothills. It may make seasonal movements into riparian thickets and upland habitats for foraging, where it may seek small mammal burrows, leaf litter, or other moist areas of refuge for shelter or hibernation. The metamorphosis of this species is slower than most large frog species, requiring 11 to 20 weeks of permanent water for larval development. Most individuals have a dark mask bordered by a whitish jaw stripe; a reddish-orange venter; and coarse red, yellow, black, and/or gray mottling in the groin. This subspecies of the red-legged frog has experienced dramatic population declines since the late nineteenth century; some estimates claim a 75 percent rate of disappearance from its former range. Threats to this species include habitat loss and predation by non-native species such as bullfrogs and non-native fishes. In addition, this species was historically exploited as a source of frog legs for human consumption.

3.5.2.6 Coast Horned Lizard (*Phrynosoma blainvillii*) CSC

The coast horned lizard is a CSC found along the Pacific coast of California on the western side of the Sierra Mountains to the Baja peninsular area in Mexico. This species is found in many habitats including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet amsl. It inhabits sandy washes or areas with loose, fine, sandy soils for burying and having low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native species of ants. Populations of this species have been reduced due to development, agriculture, and the introduction of Argentine ants that heavily compete with native ant species (Stebbins 2003). This species is approximately 2 to 4 inches in snout to vent length (adult) with numerous elongated and pointed scales (spines) on the dorsal side and two rows of enlarged scales along the flank. This species is brown, yellowish, reddish, or gray with several dark bands that cross the back with highlighted white areas along the rear of the bands (Sherbrooke 2003).

3.5.2.7 Cooper's Hawk (*Accipiter cooperii*) WL

The Cooper's hawk (nesting) is a CDFG WL species. This species occurs as a migrant and/or resident over most of the U.S. from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known to breed in suburban and urban areas with similar tree structure to native habitats. This medium-sized (14 to 20 inches) hawk is well-adapted for hunting birds as prey with its long tail and short, rounded wings; these features allow maneuverability in pursuit and on the ambush. It is similar in appearance to the sharp-shinned hawk (*Accipiter striatus*) but is distinguished by its larger size, more rounded tail, and

darker crown. In addition to birds, it may also take amphibians, reptiles, and small mammals as supplemental prey items. Historic population losses resulted from the widespread use of DDT. Other threats include habitat loss and illegal hunting (Remsen 1978).

3.5.2.8 Desert Tortoise (*Gopherus agassizzi*) FT, ST

The desert tortoise is a federal- and state-listed threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo Counties, as well as most of San Bernardino, Riverside, and Imperial Counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. It is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark gray-brown. Besides range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

3.5.2.9 Ferruginous Hawk (*Buteo regalis*) WL

The ferruginous hawk (wintering) is a CDFG WL species. This species nests from the Canadian prairie provinces south to Oregon, Nevada, Arizona, and Oklahoma and winters in the southern half of its breeding range as well as the southwestern states from California to west Texas, then south into Mexico. It requires large, open areas of grassland, sparse shrub, or desert habitats interspersed with trees. It roosts in open areas, usually on lone trees, cliff ledge, or hill scarps. It winters in open terrain from grasslands to deserts where pocket gophers, ground squirrels, or rabbits are abundant, and it nests in either natural or human-made structures or on cliffs, buttes, cut banks, shrubs, or trees. In addition to pocket gophers, ground squirrels, and rabbits, it also eats prairie dogs, snakes, lizards, birds, large insects, and other rodents. The ferruginous hawk has distinct light and dark morphs. Light morphs are reddish or light brown above and whitish below, with rusty leg feathers and a pale tail. Dark morphs are uncommon in about less than 10 percent of the population and are a deep rufous to brown above and below with very bright white on the underside of the flight feathers and a narrow, white crescent on the underside of the wrist (Sibley 2003). This species is the largest of the buteos. The biggest threat to the ferruginous hawk is habitat loss, fragmentation, or degradation resulting from land use practices including conversion of native habitat to agriculture, urbanization, improper grazing practices, and conversion of shrubland to grassland (Collins and Reynolds 2005). Other threats include illegal shooting and collisions with cars.

3.5.2.10 Least Bell's Vireo (*Vireo bellii pusillus*) FE, SE

The least Bell's vireo was state-listed as an endangered subspecies of Bell's vireo by the CDFG in 1980 and federally listed as endangered by the U.S. Fish and Wildlife Service (USFWS) in 1986. Critical habitat

for the least Bell's vireo was designated in 1994 (USFWS 1986). The least Bell's vireo subspecies is restricted to coastal and inland southern California and Baja California, Mexico. Its winter range extends along the Pacific coast from northern Mexico south to northern Nicaragua. The two major factors in the decline of least Bell's vireo populations are loss of habitat and nest parasitism by the brown headed-cowbird. Habitat loss, fragmentation, and degradation, especially along streams and rivers, due to development, agriculture, flood control projects, logging operations, and intensive cattle grazing practices, are the greatest threats to the continued existence of the least Bell's vireo. The least Bell's vireo is a small, gray songbird with pale yellow wash on its sides, two faint wing bars, and a faint eye ring. Preferred nesting habitat is low, dense, scrubby vegetation in early successional areas that are particularly dependent on riparian areas. Habitats may include willow woodlands and dense mule fat, scrub oak, coastal chaparral, and mesquite patches with dense early successional understories.

3.5.2.11 Le Conte's Thrasher (*Toxostoma lecontei*) CSC

The Le Conte's thrasher is a CSC in the San Joaquin Valley area. It occurs in deserts of the southwest U.S., southwestern Utah, southern Arizona, and northwestern Mexico (Weigand and Fitton 2008). Habitat includes open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; and in Joshua tree habitat with scattered shrubs. Le Conte's thrasher is a medium-sized songbird with a long dark tail, black decurved bill, and a plain grayish or sandy-colored body. It is distinguished from other thrashers by its unspotted breast, deep buff crissum, dark eye, and dark tail that contrasts sharply with its body. Le Conte's thrashers forage as generalists on bare ground and in vegetation litter under shrubs by scratching the soil and overturning objects (Weigand and Fitton 2008). In some parts of its range, this thrasher has lost extensive habitat to development; irrigated lawns, groves, and fields have been created over valuable xeric habitat. Development, wild burros, off-road vehicle recreation, and invasive plant species threaten this species (Weigand and Fitton 2008).

3.5.2.12 Loggerhead Shrike (*Lanius ludovicianus*) CSC

The loggerhead shrike (nesting) is a CSC. Its range includes most of the U.S. from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua tree woodlands, and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other structures that serve as lookout posts for potential prey. They prefer dense, thorny shrubs and trees, brush piles, and tumbleweeds for nesting (Seattle Audubon 2008). Both adults gather nesting materials, including twigs, grass, hair, feathers, and green vegetation; but only females build the cup-shaped nests. They lay between 5 and 6 eggs, which are incubated for 15 to 17 days; and nestlings will leave the nest after 17 to 20 days but won't fly for another week (Seattle Audubon 2008). The loggerhead shrike is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. This bird has a habit of caching its food for later consumption by impaling its prey on thorns, sharp twigs, or barbed wire; hence the term "butcher bird." It is recognized by its black facial mask; overall gray, black, and white color pattern; relatively big head; and hook-tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988, Scott and Morrison 1990).

3.5.2.13 Merlin (*Falco columbarius*) WL

The merlin (wintering) is a CDFG WL species. This species breeds in the northern parts of the Northern Hemisphere and winters in northern South America and northern Africa. In California, it occurs as a winter resident. Breeding habitats include open woodlands, savannas, cliffs near grasslands, and tundra. Migratory habitats include foothills, marshes, and open coastlines. Wintering habitats include open grasslands, semi-open forests, and coastal areas (i.e. beach dunes, marshes, and tidal flats). The merlin is a small falcon, slightly larger than the American kestrel (*Falco sparverius*), and appears heavier and bulkier in flight than the kestrel. The adult male merlin has a gray-blue back and crown and rufous washes on the sides of the breast. The adult female may be up to 30 percent larger than the male and has a brown back. The merlin mainly feeds on other birds, especially migrating and over-wintering waterfowl and shorebirds. Threats to its populations include habitat loss, pesticide use, and heavy metal poisoning.

3.5.2.14 Mohave Ground Squirrel (*Spermophilus mohavensis*) ST

The Mohave ground squirrel is a state-listed threatened species. The Mohave ground squirrel is specific to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Johnson 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 1998). They inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils. They will also feed in annual grasslands (Johnson 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study showed that most of their diet includes seeds from winter fat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and saltbush (Laabs 1998). Mohave ground squirrels are active in spring and early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (Johnson 1990).

3.5.2.15 Mountain Plover (*Charadrius montanus*) CSC, FPT

The mountain plover (wintering) is a CSC and a federally Proposed Threatened Species. This species breeds from the prairie and sagebrush country of north-central Montana, eastern Wyoming, and the area around southeastern Colorado. It winters from central California along the southern border states southward to northern Mexico (Udvardy 1977). Breeding habitats include semi-arid plains, grasslands, and plateaus. Common wintering habitats consist of dry, barren ground, smooth dirt fields, agricultural fields, and shortgrass prairies. This species tends to form small flocks in the winter. It is one of the few shorebird species that prefers habitats away from water. It is an insectivore that eats flies, beetles, grasshoppers, crickets, and other insects. The mountain plover is a relatively non-descript shorebird with a short tail, long legs, plain brown plumage above, and whiter plumage below. Males develop a black patch on the forehead during the breeding season. This species is sometimes confused with the American golden plover; but unlike that species, the belly and under-wing is a clean, white color and the legs are pale. Populations are in decline due to overgrazing practices and are also linked to declining prairie dog populations; mountain plovers often use prairie dog mounds as nest sites. The continued loss and alteration of habitats on breeding and wintering grounds are the primary threats to the mountain plover.

3.5.2.16 Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*) ST

The Nelson's antelope squirrel is a state threatened species. Nelson's antelope squirrels are restricted to the central and western areas of the San Joaquin Valley and inner coast ranges from 165 to 3,608 feet amsl. This species is found in alkali desert scrub and annual grasslands habitats on a variety of soil types including alluvial, loamy, sandy, gravely, or fine-textured sands. This species rarely digs its own burrows, preferring instead to use burrows made by other small mammals. Nelson's antelope squirrels are diurnally active, with most activity occurring in the early morning or late afternoon. This species is buff and yellow-brown above with a white stripe on each side and white under its tail. It can reach up to 10 inches in length. Nelson's ground squirrels feed primarily on grass and forb seeds, insects, and other green vegetation. The primary threats to this species include loss of habitat due to agriculture, urbanization, petroleum extraction, and rodent control poisons (Whitaker et al. 2008).

3.5.2.17 Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*) CSC

The pallid San Diego pocket mouse is a CSC. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican border. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus; and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or course gravel (Grinnell 1933, Miller and Stebbins 1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and pinyon-juniper woodlands. Pallid San Diego pocket mouse densities have been recorded as high as 39 per hectare (Lackey 1996). This species is similar in appearance to *C.f. fallax* but is lighter in overall coloration. Population declines may be due to urban and agricultural development.

3.5.2.18 San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE, CSC

The San Bernardino kangaroo rat is a federally endangered species and a CSC. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside Counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about 7 distinct populations. It prefers gravelly and sandy soils in alluvial habitats where it constructs underground burrows, and it rarely occurs in dense vegetation. This species is a small, nocturnally active rodent with pale yellow and dusky brown fur, and dark brown tail stripes, footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in is burrows for later consumption. It also consumes some green vegetation and insects when available. The primary threats to the continued existence of this species include habitat loss, degradation, and fragmentation due to developments related to housing, mining, and flood control (CDPR 1998).

3.5.2.19 Sierra Madre Yellow-Legged Frog (*Rana muscosa*) FE, SCE, CSC

The Sierra Madre yellow-legged frog is a federal-listed endangered, state candidate for listing as endangered, and a CSC. This species is found in the Sierra Nevadas from Fresno County to Kern County, and isolated populations are found in the San Gabriel, San Bernardino, and San Jacinto mountains of

southern California, ranging in elevation from 4,500 to 11,980 feet amsl. This species was previously known as the mountain yellow-legged frog but is now considered a separate species from those found north of the Kings River north and middle forks, known as the Sierra Nevada yellow-legged frog (*Rana sierrae).* They range in size from 1.5 to 3.5 inches snout to vent length; and coloration is highly variable with olive, yellow, or brown with black or brown speckling above and pale yellow to orange below and on the hind legs (Calherps 2011b). They can be distinguished from *Rana sierra* by having slightly longer hind legs and a different mating call; both smell like garlic when handled (Calherps 2011b). Sierra Nevada populations occur in montane riparian, lodgepole pine, subalpine conifer, and wet meadows in association with lakes, ponds, and streams; southern California populations are found in lakes, ponds, and streams of montane conifer-hardwood, montane riparian, and ponderosa pine habitats. Adults feed on aquatic and terrestrial invertebrates; tadpoles feed on algae and diatoms. Sierra Madre yellow-legged frogs are closely associated with aquatic environments and can be found in vegetation or on perching rocks within a few feet of water, diving into the water when threatened. They lay their eggs in shallow water and attach them to gravel or rocks; tadpoles can take up to two over-wintering periods to complete their aquatic development. They are diurnally active and will hibernate over the winter under the ice, and southern populations may estivate. Threats to this species include bullfrogs, non-native trout, cattle grazing, mining, off-road vehicles, public dumping, chytrid fungus, fires, and excessive flooding (Calherps 2011b).

3.5.2.20 Short-Eared Owl (*Asio flammeus*) CSC

The short-eared owl (nesting) is a CSC. The range of this species is nearly worldwide; and in North America, it breeds in northern Canada and Alaska as well as in large portions of the western U.S. and the Great Lakes area. In California, this species is an uncommon winter migrant in the Central Valley, Sierra Nevada, and southern California; and it is known to breed from the San Francisco area north. Migrants arrive in California in September to October and leave in April. Habitats include grasslands, prairies, dunes, tundra, meadows, irrigated fields, wetlands, and fresh and saltwater marshes. Within these open habitat types, it prefers denser areas where it can seek cover along the ground. Short-eared owls nest in depressions on dry ground where vegetation provides cover; nests are built with grasses, sticks, feathers, and forbs. Clutch size ranges from 3 to 14 eggs. Eggs are laid in April and incubated for 24 to 37 days, and the young fledge after 21 to 36 days. This owl is mostly active at night, but it may forage by day in late afternoons or on cloudy days. Although it feeds mostly on voles and other small mammals, it will also eat birds, amphibians, reptiles, and arthropods. It characteristically flies in an erratic and buoyant manner, low over open areas, before plunging feet first to catch prey. The short-eared owl is a relatively medium-sized owl with an overall tawny brown color and buffy wing patches. It has bold, yellow eyes that contrast sharply with its dark facial discs. Predators include golden eagles, great horned owls, snowy owls, and peregrine falcons. Small predatory mammals and large reptiles prey on eggs. Competitors include gulls, northern harriers, barn owls, and other owls. Overgrazing, destruction, and fragmentation of grasslands and wetland habitats, increased nest predation, and illegal shooting are all factors in the decline of this species.

3.5.2.21 Silvery Legless Lizard (*Anniella pulchra pulchra*) CSC

The silvery legless lizard is a CSC. Its range extends from the San Francisco Bay in California to northwestern Baja California, Mexico; and it can also be found on a few offshore islands of California. This species is found in chaparral, pine-oak woodlands, riparian woodlands, and also on beaches from sea level to around 5,100 feet. It occurs less commonly in desert scrub. Within these habitats, it prefers loose soils or sand for burrowing, moisture, warmth, and plant cover (Stebbins 2003). It forages in leaf

litter during the day for insects such as termites, spiders, beetles, and larvae. On warm evenings, it may emerge to forage during the night. This legless lizard has a silver, gray, or beige dorsal coloration with a dark mid-dorsal line and is yellow below. The primary threats to the continued existence of this species include habitat loss due to agriculture and urban sprawl, overabundant non-native vegetation (i.e. iceplant on sand dunes), sand mining operations, off-road vehicle use, and other anthropogenic disturbances, including trampling and over-collecting for the pet trade.

3.5.2.22 Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) WL

The southern California rufous-crowned sparrow is a CDFG WL species. It is one of 17 recognized subspecies of the rufous–crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico; however, this sub-species is a resident of southwest California on the slopes of the Transverse and Coast ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martin Island. Habitats include broken sage scrub and chaparral; native grasslands with sparse shrubs; and rocky, brush-laden hillsides and canyons with open patches. It is a small non-descript sparrow with a rusty crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

3.5.2.23 Southern Grasshopper Mouse (*Onychomys torridus ramona*) CSC

The southern grasshopper mouse is a CSC. It occurs throughout desert and semi-arid habitats in the southwestern United States and much of Mexico, including western Nevada; the southern portions of California, Arizona, and New Mexico; northern Baja California; western Texas; and south to central Mexico (Hall 1981). The subspecies *ramona* is restricted to coastal southern California, with marginal records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley (Hall 1981). The grasshopper mouse rangewide is often found in low, arid scrub and semi-scrub vegetation; but this subspecies is found in grasslands and sparse sage scrub habitats. It nests in burrows often dug by kangaroo rats and pocket gophers, but it may dig its own burrows in sandy or other friable substrates (Baily and Sperry 1929, Stapp 1997). Specific habitat requirements of the southern grasshopper mouse generally are unknown, but Stapp (1997) found that grasshopper mice use open areas and microhabitats dominated by gopher mounds and burrows. Stapp suggests that grasshopper mice selected these microhabitats because of greater prey availability (i.e., arthropods using burrows for refuge), greater mobility in open areas, and dust bathing sites. It prefers low to moderate shrub cover and is active year-round. Unlike most other mice, this species is primarily carnivorous. It feeds nocturnally on a variety of arthropods, including grasshoppers, beetles, and scorpions. It will also feed on frogs, salamanders, lizards, small mammals, and, occasionally, seeds. It has been known to kill species larger than itself, such as kangaroo rats. Prey items are stalked, rushed, seized, and typically killed with a bite in the head. Curiously, it emits a howl on occasion, perhaps in defense of its territory. Home ranges can be as large as four hectares; and, consistent with its carnivorous nature, population densities are normally low. It breeds from May to June; and after about 30 days, it gives birth to an average of 4 young. Predators include snakes, raptors, and a variety of mammals, including coyotes, owls, and foxes. Habitat loss and degradation are the primary threats to this species.

3.5.2.24 Swainson's Hawk (*Buteo swainsoni*) ST

The Swainson's hawk (nesting) is a state-listed threatened species. This species breeds from southwest Canada through the western U.S. into northern Mexico, with isolated breeding populations also observed in northern Illinois and the Sacramento and San Joaquin valleys of California. This species winters to South America. The Swainson's hawk forages in open stands of grass-dominated vegetation; sparse shrublands; and small, open woodlands. It typically nests in scattered trees within these grassland, shrubland, or agricultural landscapes. The Swainson's hawk feeds largely on insects, and thus is affected by pesticide use, particularly DDT and organophosphate pesticides currently used in South America (England et al. 1997).

3.5.2.25 Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*) CSC

The Tehachapi pocket mouse is a CSC. This species occurs in the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos, and east to the lower San Gabriel Mountains to Lake Elizabeth (Laabs 1998). The Tehachapi pocket mouse is one of two subspecies of *Perognathus alticola*; the second subspecies, *P. a. alticola,* occurs in the San Bernardino Mountains and has not been observed in over 50 years. Male Tehachapi pocket mice can reach up to 6.5 inches in length; while females are significantly smaller, reaching only 5.9 inches. Both sexes are yellowish-brown with a heavy overlay of black dorsally and white ventrally; facial markings are fainter, and the inside of the ears are white; its tail is bicolored and is slightly longer than head to body length (Laabs 1998). This species occurs in native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland, oak savanna, chaparral, coastal sage scrub, fallow grain fields, and rangeland at elevations ranging from 3,500 to 6,000 feet amsl, preferring loose, sandy soils for burrowing (Laabs 1998). They are nocturnal, feeding on seeds of grasses and forbs but will eat green vegetation and insects. Threats to this species include surface disturbance like mineral extraction and conversion of habitat to urban development.

3.5.2.26 Tricolored Blackbird (*Agelaius tricolor*) CSC

The tricolored blackbird (nesting colony) is a CSC that occurs primarily in California, with smaller populations in northern Mexico. This species is locally common in parts of the Central Valley and along the coast in Sonoma County but is not found commonly over most parts of its range. This species breeds near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds. Breeding season usually takes place from mid-April into late July, but Orians (1960) also reported active breeding in October and November in Sacramento Valley. Over the past few decades, numbers have been declining in California (DeHaven 1975). Reasons for the decline include the conversion of marshland habitats and agricultural poisoning.

3.5.2.27 Two-Striped Garter Snake (*Thamnophis hammondii*) CSC

The two-striped garter snake is a CSC. It is found in disjunct populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may

surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. The historic range of this species has been lost to housing, urban development, and other human impacts by an estimated 40 percent (Stebbins 2003).

3.5.2.28 Western Pond Turtle (*Actinemys marmorata pallida*) CSC

The western pond turtle is a CSC. This species occurs along the coast of North America from Baja California up to San Francisco Bay and occurs from sea level to 5,900 feet in elevation (Calherps 2011a). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (Calherps 2011a). The western pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Basking sites are necessary for thermoregulation. Reptile body temperature is dependent upon the environment the air, the substratum, and solar radiation. Basking is absorption of the sun's radiation and/or through the substratum. This species occurs in a variety of habitat types including woodland, grassland, and open forest (Calherps 2011a). Although this species is considered aquatic, this species usually leaves the aquatic site to reproduce, to estivate, and to overwinter. Pond turtles hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (Calherps 2011a). The species is highly sensitive to disturbance and will quickly slide into water when they feel threatened. Pond turtles are diurnal and are most active from February to November; however, if water temperatures remain warm, this species may be active year long (Bury 2008). Mating takes place in April or May, and females will deposit eggs in a vegetated upland location that may be a considerable distance (400 m or more) from the aquatic habitat to the nest. Eggs are generally deposited in grassy, upland areas adjacent to streams during May and June, although some individuals may deposit eggs as early as April and as late as August. Hatchlings will stay at the nest location and will emerge in the early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and occasionally frogs and fish (Calherps 2011a). Habitat destruction is the primary threat to this species. Dams also cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury 2008).

3.5.2.29 Western Mastiff Bat (*Eumops perotis*) CSC

The western mastiff bat is listed as a CSC. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown (TPWD 2008).

3.5.2.30 Western Snowy Plover (*Charadruis alexandrinus nivosus*) FT, CSC

The western snowy plover (nesting, coastal populations) is federally listed as threatened and is also a CSC. The Pacific coastal population breeds primarily on beaches from southern Washington to southern Baja California, Mexico. Interior populations can be found in the Central Valley of California, Oregon, Nevada, and other western states. The western snowy plover nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitats, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds, and infrequently on bluff-backed beaches (USFWS 2001). This small plover has a pale tan back, rump, and tail; white underparts; and dark patches on the sides of its neck that reach around onto the top of its chest. Habitat alteration and recreational beach use have led to a serious decline in nesting habitat and populations over the last 40 years (USFWS 2001, Page et al. 1995).

3.5.2.31 White-Faced Ibis (*Plegadis chihi*) WL

The white-faced ibis (nesting colony) is a CDFG WL species. It breeds across the western United States northward to Montana, eastward to western Louisiana, and southward to South America. It winters from southern California and Louisiana southward. The white-faced ibis usually nests in low trees and shrubs over shallow water. It inhabits primarily freshwater wetlands, especially cattail and bulrush marshes. It feeds in flooded hay meadows, agricultural fields, and estuarine wetlands. The white-faced ibis is a dark bronze-colored wader with a long, decurved bill. During the breeding season, adults have distinctive white feathers along the edges of their bare facial skin. Erosion and flood-control measures and irrigation projects have eliminated or degraded traditional nesting colony sites, leading to nest abandonment. Other losses of wetland habitat can also negatively affect populations (Ryder and Manry 1994).

3.6. SPECIES OBSERVED

The following plant species were observed while habitat assessments were conducted on the Project site: tumbling pigweed (*Amaranthus albus*), pineapple weed (*Chamomilla suaveolens*), rubber rabbitbrush (*Chrysothamnus nauseosus*), horseweed (*Conyza canadensis*), common sunflower, prickly lettuce (*Lactuca serriola*), coast goldfields (*Lasthenia californica*), cudweed aster (*Lessingia filaginifolia*), grassy tarweed (*Madia gracilis*), wreathplant (*Stephanomeria* sp.), silver puff (*Uropappus lindleyi*), common fiddleneck (*Amsinckia menziesii*), popcornflower (*Plagiobothyrs* sp.), tumble mustard, Russian thistle (*Salsola tragus*), rattlesnake weed (*Chamaesyce albomarginata*), miniature lupine, redstem filaree, horehound (*Marrubium vulgare*), woolly bluecurls (*Trichostema lanceolatum*), desert four o'clock (*Mirabilis multiflora* var. *pubescens*), four spot (*Clarkia purpurea* ssp. *quadrivulnera*), California poppy, annual buckwheat (*Eriogonum* sp.), common knotweed (*Polygonum arenastrum*), jimson weed (*Datura wrightii*), slender wild oat (*Avena barbata*), ripgut grass, cheatgrass, squirreltail (*Elymus elemoides*), foxtail barley, purple needlegrass and fescue (*Vulpia myuros*).

The following wildlife species were observed while habitat assessments were conducted on the Project site: domestic sheep (*Ovis aries*), domestic goat (*Capra hircus*), western diamond-backed rattlesnake (*Crotalus atrox*), California ground squirrel (*Spermophilus beecheyi*), common raven (*Corvus corax*), Cassin's kingbird (*Tyrannus vociferans*), horned lark (*Eremophila alepestris*), chipping sparrow (*Spizella passerine*), European starling (*Sturnus vulgaris*), turkey vulture (*Cathartes aura*), lesser goldfinch (*Carduelis psaltria*), house sparrow (*Passer domesticus*), western tanager (*Piranga ludoviciana*), tri-

colored blackbird (*Agelaius tricolor*), red-winged blackbird (*Agelauis phoeniceus*), gopher snake (*Pituophis* sp.), gopher (burrows; *Thomomys* sp.), black phoebe (*Sayornis nigricans*), red-tailed hawk (*Buteo jamaicensis*), hawk (*Buteo* sp.), Brewer's blackbird (*Euphagus cynanocephalus*), northern mocking bird (*Mimus polyglottos*) and western side-blotched lizard (*Uta stansburiana elegans*).

3.7. SENSITIVE SPECIES

The following 19 special status plant species are considered absent from both Project sites due to a lack of suitable habitat or the Project site occurs outside the elevation range or historic range of the species:

- Alkali mariposa lily
- Barstow woolly sunflower
- Clokey's cryptantha
- Davidson's bush mallow
- Darwin rock cress
- desert cymopterus
- Horn's milk-vetch
- Lancaster milk-vetch
- pale-yellow layia
- Parish's popcorn-flower
- Parry's spineflower
- Peirson's morning-glory
- recurved larkspur
- round-leaved filaree
- sagebrush loeflingia
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa lily
- white pygmy-poppy

The following 27 special status wildlife species are considered **absent** from the Project site due to a lack of suitable habitat:

- arroyo toad
- Bell's sage sparrow
- California red-legged frog
- Cooper's hawk
- desert tortoise
- least Bell's vireo
- Le Conte's thrasher
- loggerhead shrike
- merlin
- Mohave ground squirrel
- mountain plover
- Nelson's antelope squirrel
- Pallid San Diego pocket mouse
- San Bernardino kangaroo rat
- Sierra Madre yellow-legged frog

- silvery legless lizard
- short-eared owl
- southern California rufous-crowned sparrow
- southern grasshopper mouse
- Swainson's hawk
- Tehachapi pocket mouse
- tricolored blackbird
- two-striped garter snake
- western pond turtle
- western mastiff bat
- western snowy plover
- white-faced ibis

The following two special status wildlife species have a **low** potential to occur onsite due to the presence of low quality suitable habitat on the Project site, the quality of adjacent habitat, and historical records of these species occurring within five miles of the Project site:

- American badger
- ferruginous hawk

The following special status wildlife species has a **moderate** potential to occur on the Project site due to the presence of low quality suitable habitat and historical records of these species occurring within three miles of the Project site:

- Coast horned lizard. The project site consists of areas of valley needlegrass grasslands which may provide suitable habitat for the coast horned lizard. In addition, there are historical records of this species occurring within three miles of the Project site. Therefore, the coast horned lizard has a moderate potential to occur on the Project site.

The following special status wildlife species has a **high** potential to occur on the Project site due to the presence of high quality suitable habitat and historical records of these species occurring within one mile of the Project site:

- Burrowing owl. The Project site consists of native and non-native grasslands which could provide suitable habitat for burrowing owls. Several burrows with white-wash and possible prey species were also observed within the Project site. In addition, burrowing owls have been recorded to occur within one mile of the Project site. Therefore, the burrowing owl has a high potential for occurrence on the Project site.

SECTION 4.0 – CONCLUSIONS

4.1. SPECIAL STATUS SPECIES

Of the 19 special status plant species known to occur within the vicinity of the Project site, all are considered absent or have a low potential to occur due to lack of suitable habitat; therefore, no further surveys for these special status plant species are recommended at this time.

4.2. SPECIAL STATUS VEGETATION COMMUNITY

Valley Needlegrass Grasslands were identified on portions of the Project site. Valley Needlegrass Grasslands are considered a sensitive vegetation community by CDFG and protected by the City of Lancaster and Los Angeles County.

Of the 31 special status wildlife species known to occur within the vicinity of the Project site, 29 are considered absent or have a low potential to occur due to lack of suitable habitat; therefore, no further surveys for these special status wildlife species are recommended at this time. The remaining special status wildlife species have a moderate or high potential to occur on the Project site.

4.2.1 Coast Horned Lizard

The coast horned lizard has a moderate potential to occur on the Project site. Although this species is not federal- and/or state-listed as endangered or threatened, it is listed as a CSC.

4.2.2 Burrowing Owl

The burrowing owl has a high potential to occur on the Project site. Although burrowing owls are not federal- and/or state-listed as endangered or threatened, this species is listed as a CSC. While the majority of CSC listed species do not typically require focused surveys, specific focused survey protocol for the burrowing owl has been developed by the California Burrowing Owl Consortium and adopted by the CDFG (The California Burrowing Owl Consortium 1993).

4.3. JURISDICTIONAL FEATURES

A formal delineation of the Project site was not conducted. Based on the observation of the biologists, the man-made agricultural irrigation basins and canals located onsite do not support riparian vegetation or riparian habitats. These features may fall subject to state jurisdiction.

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APPENDIX A – VEGETATION COMMUNITIES MAP

Vegetation Map
Silver Sun Greenworks

Legend

- Project Site
- Disturbed or Barren
- Drainage Feature
- Needlegrass Grassland
- Non-Native Annual Grassland
- Rubber Rabbitbrush Scrub

N
W E
S

0 137.5 275 550
Feet

8-6-11
20327

Chambers Group Inc.

CHAMBERS GROUP

APPENDIX B – SITE PHOTOGRAPHS

APPENDIX B – SITE PHOTOGRAPHS

	Photo 1- Silver Sun Greenworks. Photo is taken looking east across the Project site from the southwest corner.
	Photo 2- Silver Sun Greenworks. Photo is taken looking north at the open fields from the eastern boundary of the Project site.
	Photo 3- Silver Sun Greenworks. Photo is taken looking south from the northwest corner.

BIOLOGICAL TECHNICAL REPORT

DRAFT

For

SILVER SUN GREENWORKS PROJECT
LANCASTER, CALIFORNIA

Prepared by

August 2013

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1.0 INTRODUCTION AND BACKGROUND

This report documents the findings of a baseline biological resources[1] survey for the Silverado Power, LLC (Silverado) Silver Sun Greenworks Project in Lancaster, California (hereafter be referred to as the Project, Figure 1). The intended use of this document is to disclose and evaluate habitat conditions and determine the potential for occurrence of common and special-status species[2], and their habitats[3] within study area limits. For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint (Project Site) and a buffer (Figure 2).

The Project can be found on the Del Sur United States Geological Survey 7.5-Minute Topographic Quadrangle Map– Township 7 North, Range 14 West, Sections 10, 11, 12, 13, 14, 15, 23 and 24; (USGS 1978). More specifically, it is located south of West Avenue I and north of West Avenue J at an approximate elevation of 2,520 ft above mean sea level. The majority of the study area consists of non-native grasslands, disturbed, and developed lands. Given the extent of disturbance present (e.g., high levels of non-native species, historical agricultural operations, residential dwellings on and off highway vehicle related traffic), any animals/plants currently using these lands are assumed to be acclimated to this depauperate ecosystem.

[1] For the purposes of this analysis, "biological resources" refers to the plants, wildlife, and habitats that occur, or have the potential to occur, within the study area.

[2] For the purposes of this analysis, "special-status species" refers to any species that has been afforded special protection by federal, state, or local resource agencies (e.g., U.S. Fish and Wildlife Service, California Department of Fish and Wildlife) or resource conservation organizations [I.e., California Native Plant Society]). The term "special-status species" excludes those avian species solely identified under Section 10 of the Migratory Bird Treaty Act (MBTA) for federal protection. Nonetheless, MBTA Section 10 protected species are afforded avoidance and minimization measures per state and federal requirements.

[3] A "habitat" is defined as the place or type of locale where a plant or animal naturally or normally lives and grows.

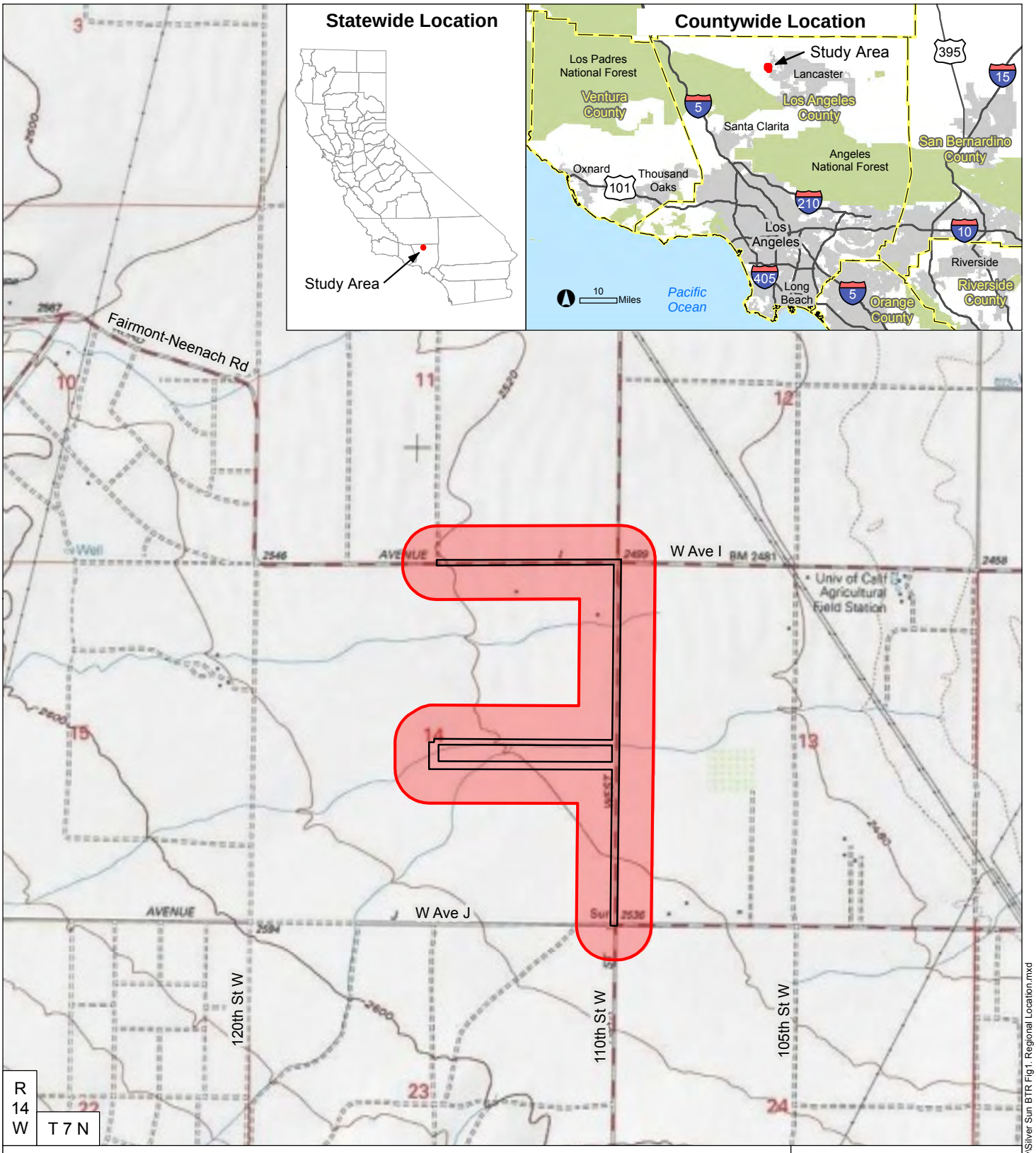
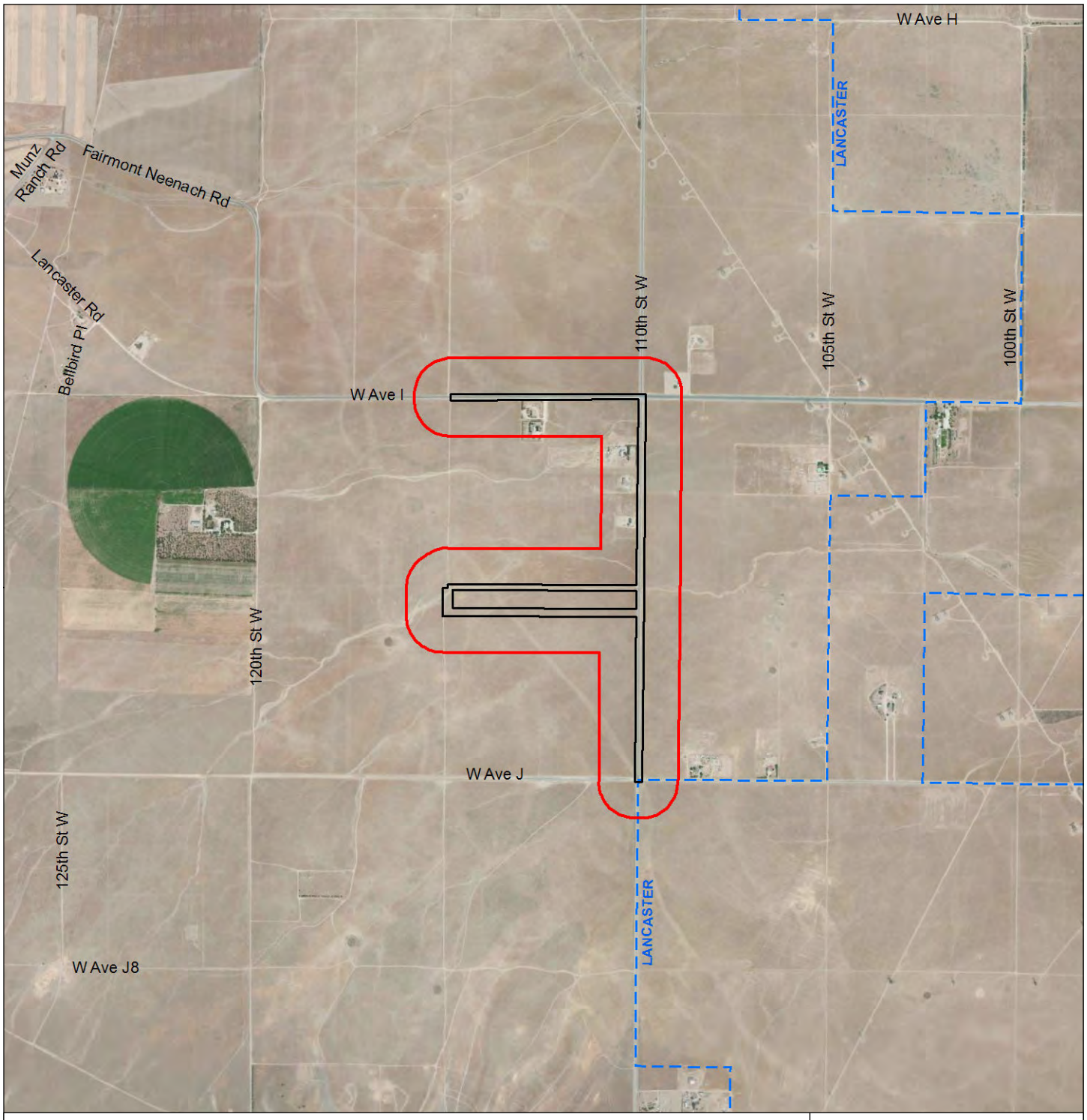


Figure 1. Regional Location



Study Area (307 acres)

Project Site (30 acres)

Lancaster City Limit

0 1,000 2,000 Feet

1 inch = 2,000 feet

Data Source:
- BingMaps accessed Aug 2013, image date range: May 2010 - Oct 2011

Map Prepared: 8-6-13

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\LA County\Silver Sun BTR Fig2. Site Vicinity.mxd

Figure 2. Site Vicinity

2.0 METHODS

Prior to beginning field surveys, resource specialists were consulted and available information from resource management plans and relevant documents were reviewed to determine the locations and types of biological resources that have the potential to exist within and adjacent to the study area; resources were evaluated within several miles of the Project Site.

The materials reviewed included, but were not limited to, the following:

- U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper and File Data (USFWS 2013a);
- USFWS Ventura Field Office Species List for Los Angeles County (2013b);
- California Natural Diversity Database maintained by the California Department of Fish and Wildlife (CDFW 2013);
- California Native Plant Society (CNPS) Electronic Inventory (CNPS 2013);
- Biological Technical Review for the Silver Sun Greenworks Solar Sites (Tetra Tech 2012);
- Burrowing Owl Survey Report for the Silver Sun Greenworks Project (NOREAS 2013), and
- Aerial Photographs (Microsoft Corporation 2013).

Pedestrian-based field surveys were performed to assess general and dominant vegetation community types, community sizes, habitat types, and species present within communities[4]. Community type descriptions were based on observed dominant vegetation composition and derived from the criteria and definitions of widely accepted vegetation classification systems (i.e., Holland 1986; and Sawyer et al. 2009). Plants were identified to the lowest taxonomic level sufficient to determine whether the plant species observed were non-native, native, or special-status. Plants of uncertain identity were subsequently identified from taxonomic keys (Baldwin et al. 2012). Scientific and common species names were recorded according to Baldwin et al. (2012). The presence of a wildlife species was based on direct observation, and wildlife sign (e.g., tracks, burrows, nests, scat, or vocalization). Field data compiled for wildlife species included scientific name, common name, and evidence of sign when no direct observations were made. Wildlife of uncertain identity was documented and subsequently identified from specialized field guides and related literature (Burt and Grossenheider 1980; Halfpenny 2000; Sibley 2000; Elbroch 2003, and Stebbins 2003).

The Project Site was also assessed for its potential to support special-status species based on habitat suitability comparisons with reported occupied habitats.

The following definitions were utilized:

- **Absent [A] –** Species distribution is restricted by substantive habitat requirements, which do not occur within the Project Site and no further surveys or studies are necessary to determine likely presence or absence of this species;

[4] Where 100% pedestrian coverage of the study area was not possible due to limited access (e.g., physical barriers [vegetative cover, health and safety concerns, etc.]), field observations were made from the nearest appropriate vantage points via public right-of-ways with binoculars.

- **Low [L] –** Species distribution is restricted by substantive habitat requirements, which are negligible within the Project Site and no further surveys or studies are necessary to determine likely presence or absence of this species;
- **Habitat Present [HP]** – Species distribution is restricted by substantive habitat requirements, which occur within the Project Site. Further survey or study may be necessary to determine likely presence or absence of species;
- **Present [P]** – Species or species sign were observed, or have historically been documented in the Project Site; and
- **Critical Habitat [CH]** – The Project Site is located within a USFWS-designated critical habitat unit.

3.0 RESULTS

Weather conditions during the 11 April, 08 May, 06 June, 01 and 30 July 2013 surveys included clear skies, temperatures ranging from 51–87 °F, and winds ranging from 0 to 20 miles per hour.

3.1 Vegetation Communities and Land Cover Types

Four vegetation communities/land cover types were observed within the study area: Developed/disturbed, Native Grassland, Non-Native Annual Grassland, and Rabbitbrush Scrub, (Figure 3). Vegetation communities/land cover types are described below. Over 99% of the study area consists of developed or disturbed lands, and non-native vegetation. Representative photos of the study area are provided in Appendix A.

Disturbed and Developed Lands

Developed or disturbed lands include locales that have been disked, cleared, or otherwise altered by human activities. This cover type within the study area includes roadways (paved and unpaved), existing buildings, houses, and ranches.

Native Grassland

Native grasslands are found in one discrete location within the northwestern portion of the study area. This community is dominated by needlegrass[5] (*Nassella* sp.). Native and introduced annual herbaceous plants also occur between the perennial grasses including doveweed (*Eremocarpus setigerus*), and vinegar weed (*Trichostema lanceolatum*). These grasslands are typically found on fine-textured, often clay soils, which can be moist or even waterlogged during the winter but are very dry in the summer (Holland 1986).

Non-Native Annual Grassland

Non-native Grasslands within the study area are dominated by non-native annual grass species including filaree (*Erodium cicutarium*), foxtail chess (*Bromus madtritensis* ssp*. rubens*), tumble mustard (*Sisymbrium altissimum*), Russian thistle (*Salsola tragus*), ripgut brome (*Bromus diandrus*), and soft chess (*Bromus hordeaceus*). Subdominant species include grasses and forbes as follows: Italian annual rye grass (*Lolium multiflorum*), schismus (*Schismus barbatus*), and dove weed (*Eremocarpus setigerus*). This cover type also included numerous small, non-vegetated, ephemeral, and intermittent water conveyance features.

Rabbitbrush Scrub

Rabbitbrush Scrub within the study area is limited to one isolated patch of vegetation which was dominated by rabbitbrush (*Chrysothamnus nauseosus*) (Holland 1986), usually 3 ft in height, . Subdominant species within this community included rattlesnake weed (*Chamaesyce albomarginata*), and fescue (*Vulpia myuros*). Rabbitbrush Scrub is a disturbance-maintained community in which fire, grazing, or soil tilling perpetuate the same species within the herb and shrub layers and the disturbance occurs with regular frequency (i.e., less than 10 years). Rabbitbrush Scrub was detected in the northwestern portions of the study area; north of West Avenue I.

[5] Identification to specific epitaph was not possible as a consequence of survey timing. Neither florets nor awns were apparent on the species of *Nassella* documented within the study area. Valley needlegrass (*Nassella pulchra*) grasslands are protected by the City of Lancaster and Los Angeles County.

3.2 Wildlife

Wildlife species observed within the study area consisted of commonly-occurring species, including but not limited to Mourning Dove (*Zenaida macroura*) Common Raven (*Corvus corax*), House Finch (*Carpodacus mexicanus*), Horned Lark (*Eremophila alpestris*), California ground squirrel (*Otospermophilus beecheyi*) and Desert spiny lizard (*Sceloporus magister*).

3.3 Special-Status Plants

No special-status plants were detected within the Study Area and none have been documented within 1 mile (Figure 4). Special-status plant species known to occur within 10 miles of the Project Site and their potential for occurrence are detailed within Appendix B. The study area includes no USFWS-critical habitat for plants (Figure 5), and all plant species observed during the surveys are identified within Appendix C.

3.4 Special-Status Wildlife

One special-status wildlife species was observed within the study area - Burrowing Owl (*Athene cunicularia*); however, it was not detected in the Project Site. Historically, the Ferruginous Hawk (*Buteo regalis),* and Burrowing Owl have been documented within the study area (Figure 4). Special-status wildlife species known to occur within 10 miles of the Project Site and their potential for occurrence are detailed within Appendix B. The Study Area includes no USFWS critical habitat for wildlife species (Figure 5), and all wildlife observed during the surveys are identified within Appendix D.

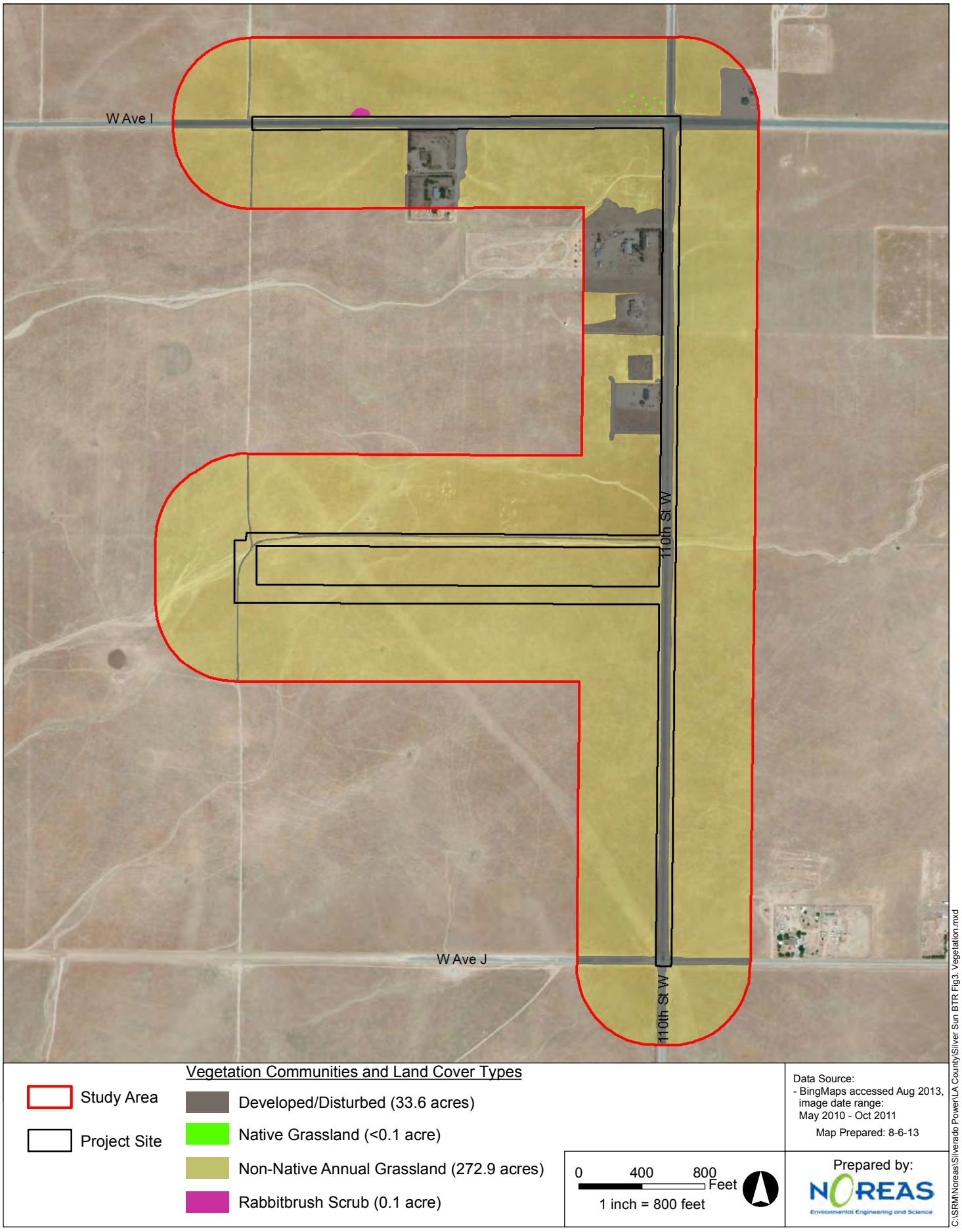


Figure 3. Vegetation Communities and Land Cover Types

Study Area
Project Site
10-Mile Radius Around the Study Area

Major Road
Forest, Golf Course or Park
Water Body

Special-Status Species Occurrences

Map Code	Common Name (Scientific Name)
	Plants
1	Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*)
2	Lincoln Rockcress (*Boechera lincolnensis*)
3	Round-Leaved Filaree (*California macrophylla*)
4	Slender Mariposa-Lily (*Calochortus clavatus* var. *gracilis*)
5	Alkali Mariposa-Lily (*Calochortus striatus*)
6	Peirson's Morning-Glory (*Calystegia peirsonii*)
7	White Pygmy-Poppy (*Canbya candida*)
8	San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*)
9	Parry's Spineflower (*Chorizanthe parryi* var. *parryi*)
10	Clokey's Cryptantha (*Cryptantha clokeyi*)
11	Pale-Yellow Layia (*Layia heterotricha*)
12	Sagebrush Loeflingia (*Loeflingia squarrosa* var. *artemisiarum*)
13	Short-Joint Beavertail (*Opuntia basilaris* var. *brachyclada*)
	Amphibians
14	California Red-Legged Frog (*Rana draytonii*)
	Reptiles
15	Coast Horned Lizard (*Phrynosoma blainvillii*)
16	Silvery Legless Lizard (*Anniella pulchra pulchra*)
17	Two-Striped Garter Snake (*Thamnophis hammondii*)
18	Western Pond Turtle (*Emys marmorata*)
	Birds
19	Bell's Sage Sparrow (*Amphispiza belli belli*)
20	Burrowing Owl (*Athene cunicularia*)
21	Ferruginous Hawk (*Buteo regalis*)
22	Least Bell's Vireo (*Vireo bellii pusillus*)
23	Loggerhead Shrike (*Lanius ludovicianus*)
24	Merlin (*Falco columbarius*)
25	Mountain Plover (*Charadrius montanus*)
26	Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*)
27	Swainson's Hawk (*Buteo swainsoni*)
	Mammals
28	American Badger (*Taxidea taxus*)
29	Hoary Bat (*Lasiurus cinereus*)
30	Lodgepole Chipmunk (*Neotamias speciosus speciosus*)
31	Mohave Ground Squirrel (*Xerospermophilus mohavensis*)
32	Tehachapi Pocket Mouse (*Perognathus alticolus inexpectatus*)
	Fish
33	Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*)
34	Southern California Threespine Stickleback Stream

0 0.5 1 1.5 2 Miles
1:150,000

Data Sources:
- BingMaps accessed Aug 2013
- California Department of Fish and Wildlife, Natural Diversity Database (CNDDB), Aug 2013 data release

Prepared by:
NOREAS
Environmental Engineering and Science

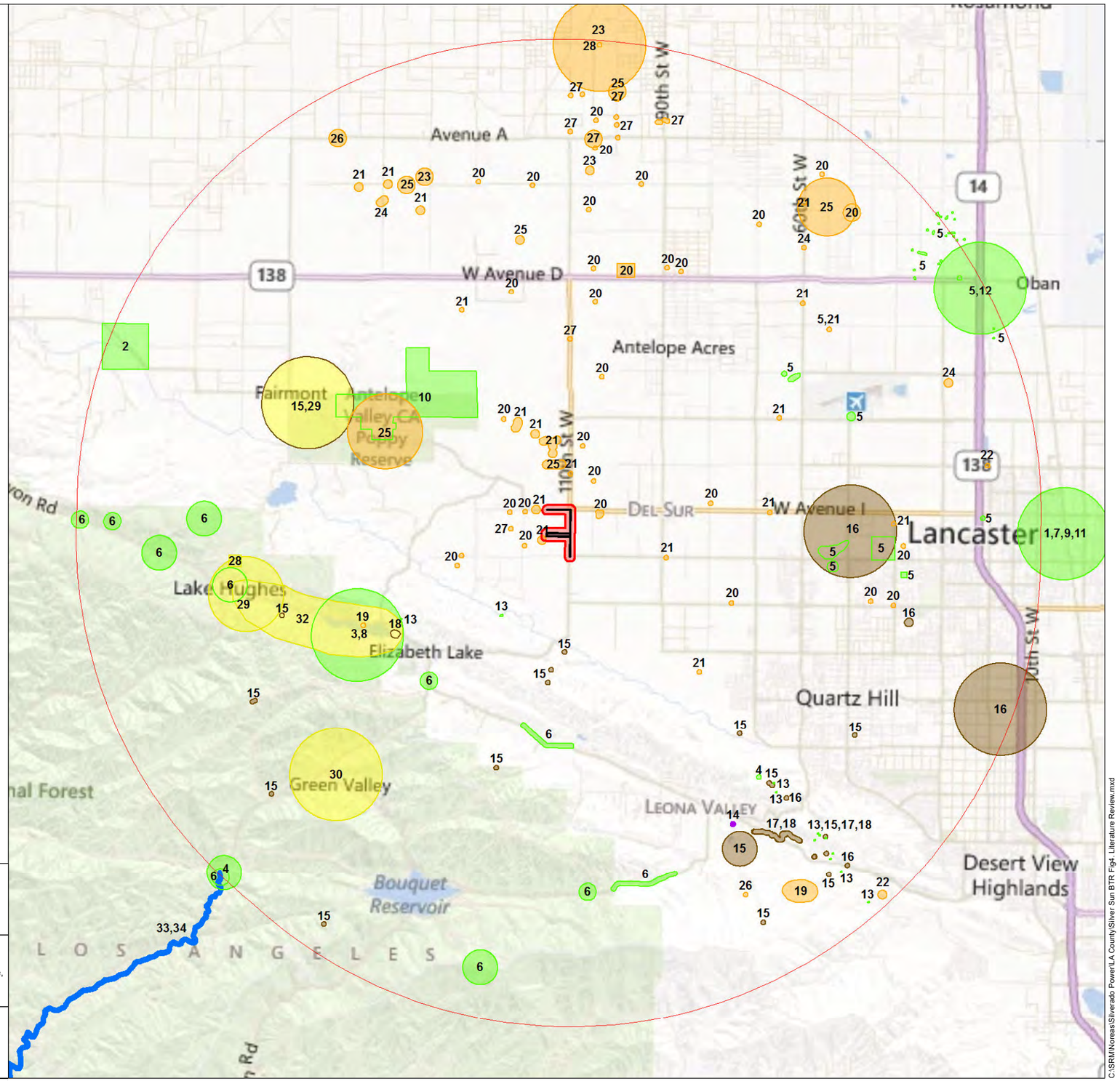
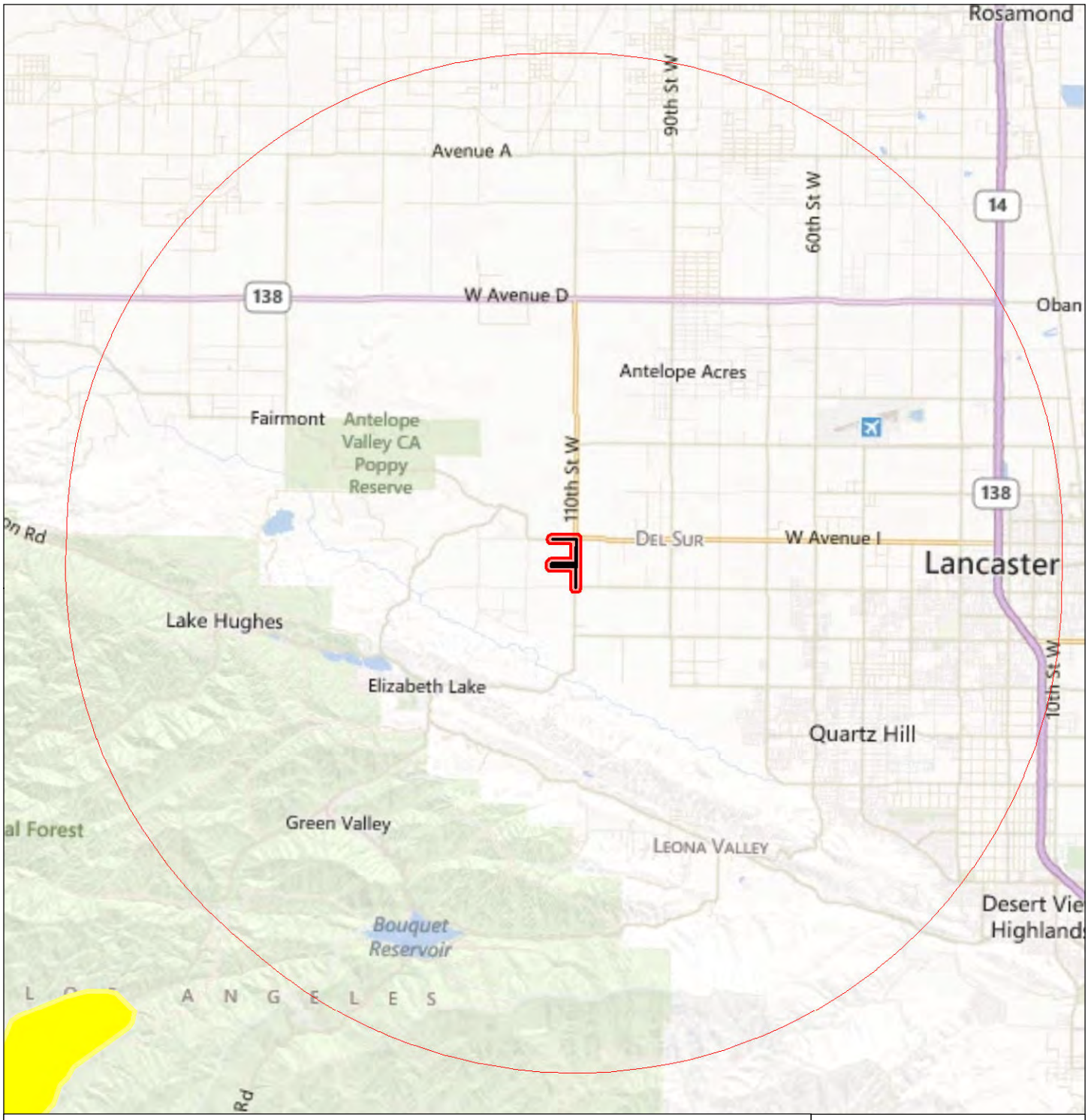


Figure 4. Literature Review



Study Area

Project Site

10-Mile Radius Around the Study Area

Critical Habitat

California Red-legged Frog *(Rana draytonii)*

Freeway

Major Road

Golf Course, National Forest or Park

Water Body

0 1 2 3 Miles

1 inch = 3 miles

Data Sources:
- BingMaps accessed Aug 2013
- US Fish and Wildlife Service critical habitat accessed Apr 2013.

Map Prepared: 8-6-13

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\LA County\Silver Sun BTR Fig5. Critical Habitat.mxd

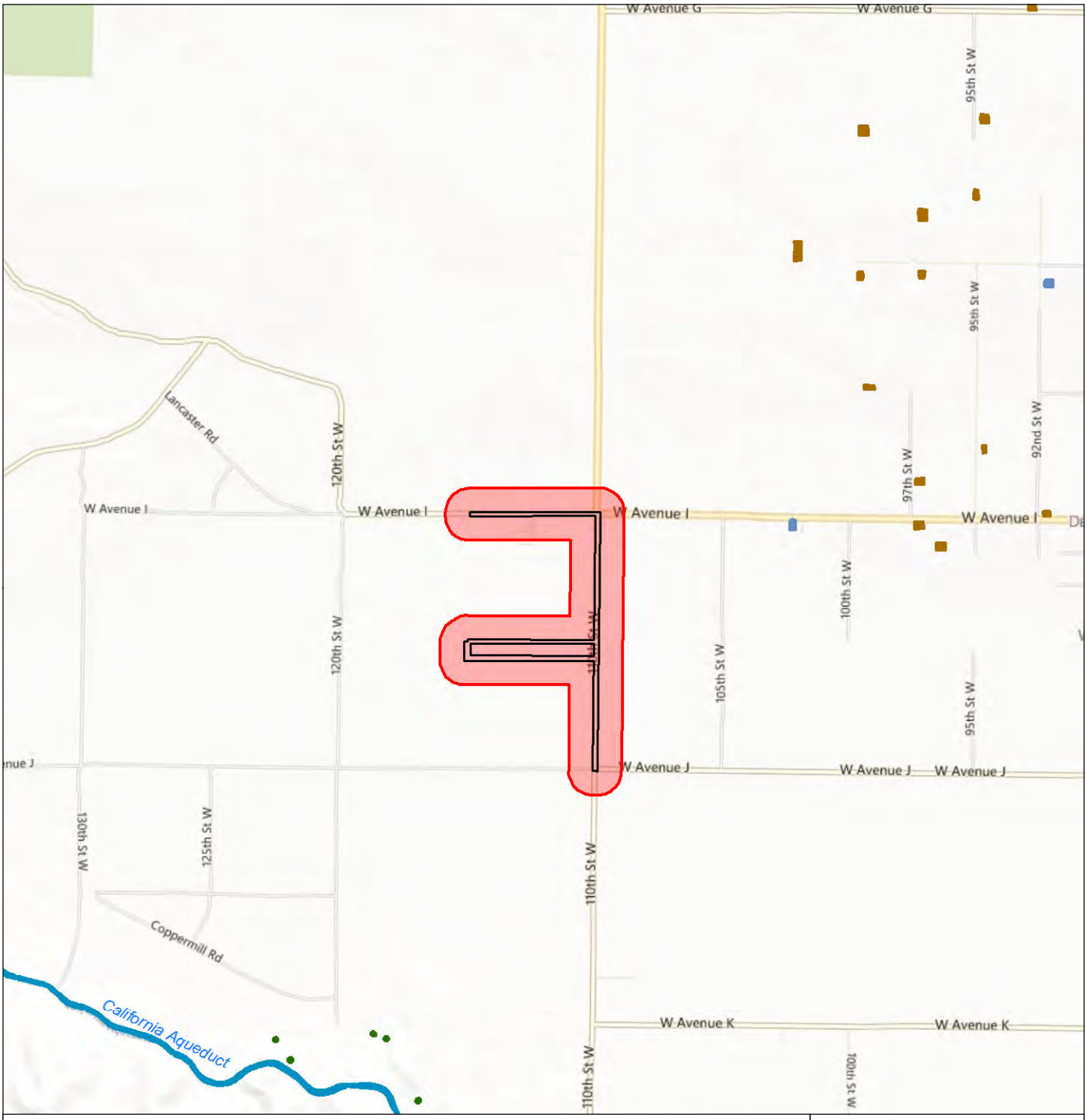
Figure 5. Critical Habitat

4.0 CONCLUSIONS

The majority of the Project Site consists of non-native vegetation, and developed or disturbed lands. Given the extent of anthropogenic disturbance, any species currently using these lands are presumed to be acclimated to the disturbance regime present. Nonetheless, there is evidence to suggest that Burrowing Owl and other species of raptors and passerines could utilize the Project Site as nesting, roosting, refuge, and foraging habitats – albeit small, as a result of the amount of similar and higher quality habitats available within the region. The Project Site does not include any USFWS-designated critical habitat for plants or animals. The National Wetland Inventory data, managed by the USFWS, suggests that the Project Site does not include any regulated wetlands or waterways either (Figure 6), and over 99% of the study area consists of non-native species and disturbed lands.

1. In order to comply with Section 10 of the Migratory Bird Treaty Act and relevant sections of the California Department of Fish and Game Code, any vegetation clearing within the Project Site should take place outside of the typical avian nesting season, March 15th until September 1st – to the maximum extent practical. If work needs to take place between March 15th and September 1st, a pre-construction survey for nesting birds and a protocol-level Burrowing Owl survey by a qualified biologist should be completed prior to Project activities. To the maximum extent practicable, a buffer zone from occupied passerine and raptor nests should be maintained during physical ground-disturbing activities. Once nesting has ended, the buffer may be removed.

The services performed and documented in this report have been conducted in a manner consistent with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances. No other representations are either expressed or implied, and no warranty or guarantee is included or intended in this report. Opinions relating to presence, absence, or potential for occurrence of biological resources are based on limited data and actual conditions may vary from those encountered at the times and locations where the data were obtained despite due professional care.



Study Area

Project Site

Major Road

National Wetland Inventory (NWI)

Freshwater Forested/Shrub Wetland

Freshwater Pond

Other

0 1,000 2,000 3,000 Feet

1 inch = 3,000 feet

Data Sources:
- BingMaps accessed Aug 2013
- US Fish and Wildlife Service National Wetland Inventory shapefile downoaded Aug 2013 (Data Date: Mar 2013).

Map Prepared: 8-6-13

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\LA County\Silver Sun BTR Fig6. NWI.mxd

Figure 6. National Wetland Inventory

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APPENDIX A

PHOTOGRAPH LOG

APPENDIX A

PHOTOGRAPH LOG

	Photograph: 1, facing north east.
	Photograph: 2, facing west.

APPENDIX B

SPECIAL-STATUS SPECIES POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT SITE

APPENDIX B

SPECIAL-STATUS SPECIES POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT SITE

Potential for occurrence	Common name (Scientific name)	Federal listing status	State listing status	Global rank [a]	State rank [b]	CNPS list [c]	Number of records within 10 miles	Year(s) sighted	Distance from site to nearest occurrence (miles)
L	Ferruginous Hawk (*Buteo regalis*)	None	None	G4	S3S4		16	1998-2011	0.1
HP	Burrowing Owl (*Athene cunicularia*)	None	None	G4	S2		31	1993-2013	0.3
L	Swainson's Hawk (*Buteo swainsoni*)	None	Threatened	G5	S2		10	1999-2011	0.6
A	Mountain Plover (*Charadrius montanus*)	None	None	G2	S2		7	1999-2011	0.8
L	Short-Joint Beavertail (*Opuntia basilaris var. brachyclada*)	None	None	G5T3	S3	1B.2	7	2005-2010	1.8
L	Coast Horned Lizard (*Phrynosoma blainvillii*)	None	None	G4G5	S3S4		17	1958-2010	2.3
A	Clokey's Cryptantha (*Cryptantha clokeyi*)	None	None	G2	S2	1B.2	1	2003	2.4
L	Round-Leaved Filaree (*California macrophylla*)	None	None	G2	S2	1B.1	1	1888	3.5
L	San Fernando Valley Spineflower (*Chorizanthe parryi var. fernandina*)	Candidate	Endangered	G2T1	S1	1B.1	1	1990s	3.5
A	Tehachapi Pocket Mouse (*Perognathus alticolus inexpectatus*)	None	None	G1G2T1T2	S1S2		1	1981	3.5
A	Western Pond Turtle (*Emys marmorata*)	None	None	G3G4	S3		3	1990-1999	3.7
L	Peirson's Morning-Glory (*Calystegia peirsonii*)	None	None	G3	S3.2	4.2	11	1972-1982	3.7
A	Bald Eagle (*Haliaeetus leucocephalus*)	Delisted	Endangered	G5	S2		1	2009	4.2
A	American Badger (*Taxidea taxus*)	None	None	G5	S4		2	1904-1988	4.6
A	Silvery Legless Lizard (*Anniella pulchra pulchra)*	None	None	G3G4T3T4Q	S3		5	1988-2009	4.9
A	Alkali Mariposa-Lily (*Calochortus striatus)*	None	None	G2	S2	1B.2	13	1988-2011	5.2
A	Hoary Bat (*Lasiurus cinereus*)	None	None	G5	S4		1	1938	5.7
A	Lodgepole Chipmunk (*Neotamias speciosus speciosus*)	None	None	G4T2T3	S2S3		1	1974	5.7
L	Slender Mariposa-Lily (*Calochortus clavatus var. gracilis*)	None	None	G4T2	S2	1B.2	2	1922-2010	6.5
A	California Red-Legged Frog (*Rana draytonii*)	Threatened	None	G4T2T3	S2S3		1	1995	7.0
L	Loggerhead Shrike (*Lanius ludovicianus*)	None	None	G4	S4		1	2009	7.1
L	Merlin (*Falco columbarius*)	None	None	G5	S3		3	1998-2011	7.3
A	Golden Eagle (*Aquila chrysaetos*)	None	None	G5	S3		2	1998-2010	7.3
A	Two-Striped Garter Snake (*Thamnophis hammondii*)	None	None	G3	S2		2	1995-1999	7.4
L	Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*)	None	None	G5T2T4	S2S3		1	2005	8.5
L	Bell's Sage Sparrow (*Artemisiospiza belli belli*)	None	None	G5T2T4	S2		1	2005	8.8
A	Least Bell's Vireo (*Vireo bellii pusillus*)	Endangered	Endangered	G5T2	S2		1	2006	8.9
A	Sagebrush Loeflingia (*Loeflingia squarrosa var. artemisiarum*)	None	None	G5T2T3	S2.2	2.2	1	unknown	8.9

APPENDIX B

SPECIAL-STATUS SPECIES POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT SITE

Potential for occurrence	Common name (Scientific name)	Federal listing status	State listing status	Global rank [a]	State rank [b]	CNPS list [c]	Number of records within 10 miles	Year(s) sighted	Distance from site to nearest occurrence (miles)
A	Lincoln Rockcress (*Boechera lincolnensis*)	None	None	G4	S2	2.3	1	2005	9.0
A	Lancaster Milk-Vetch (*Astragalus preussii var. laxiflorus*)	None	None	G4T2	S1	1B.1	1	1902	9.5
A	White Pygmy-Poppy (*Canbya candida*)	None	None	G3	S3.2	4.2	1	unknown	9.5
L	Parry's Spineflower (*Chorizanthe parryi var. parryi*)	None	None	G2T2	S2	1B.1	1	1896	9.5
L	Pale-Yellow Layia (*Layia heterotricha*)	None	None	G2	S2	1B.1	1	1895	9.5
A	Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*)	Endangered	Endangered	G5T1	S1		1	2008	9.9
A	Southern California Threespine Stickleback Stream	None	None	GNR	SNR		1	1990	9.9

[a] GLOBAL RANKING

The global rank (G-rank) is a reflection of the overall condition of an element throughout its global range.

SPECIES OR NATURAL COMMUNITY LEVEL

G1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals OR less than 2,000 acres.
G2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres.
G3 = 21-100 EOs OR 3,000-10,000 individuals OR 10,000-50,000 acres.
G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.

SUBSPECIES LEVEL

Subspecies receive a T-rank attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety. For example: Chorizanthe robusta var. hartwegii. This plant is ranked G2TI. The G-rank refers to the whole species range i.e., Chorizanthe robusta. The T-rank refers only to the global condition of var. hartwegii.

[b] STATE RANKING

The state rank is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank.

S1 = Less than 6 EOs OR less than 1,000 individuals OR less than 2,000 acres
S1.1 = very threatened
S1.2 = threatened
S1.3 = no current threats known
S2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres
S2.1 = very threatened
S2.2 = threatened
S2.3 = no current threats known
S3 = 21-100 EOs or 3,000-10,000 individuals OR 10,000-50,000 acres
S3.1 = very threatened
S3.2 = threatened
S3.3 = no current threats known
S4 - Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat. NO THREAT RANK.
S5 - Demonstrably secure to ineradicable in California. NO THREAT RANK.

[c] CNPS LIST - Indicates the California Native Plant Society (CNPS) list to which the taxon is assigned (plants only).

List 1A: Plants presumed extinct in California
List 1B.1: Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California
List 1B.2: Plants rare, threatened, or endangered in California and elsewhere, fairly threatened in California
List 1B.3: Plants rare, threatened, or endangered in California and elsewhere, not very threatened in California
List 2.1: Plants rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California
List 2.2: Plants rare, threatened, or endangered in California, but more common elsewhere; fairly threatened in California
List 2.3: Plants rare, threatened, or endangered in California, but more common elsewhere; not very threatened in California
List 3.1: Plants about which we need more information; seriously threatened in California
List 3.2: Plants about which we need more information; fairly threatened in California
List 3.3: Plants about which we need more information; not very threatened in California
List 4.1: Plants of limited distribution; seriously threatened in California
List 4.2: Plants of limited distribution; fairly threatened in California
List 4.3: Plants of limited distribution; not very threatened in California

APPENDIX C

PLANT SPECIES OBSERVED WITHIN THE STUDY AREA

APPENDIX C

PLANT SPECIES OBSERVED WITHIN THE STUDY AREA

Scientific name	Common name
Amaranthus albus	Prostrate pigweed
Ambrosia acanthicarpa	Bur-sage
Amaranthus albus	Tumbling pigweed
Bromus diandrus	Ripgut brome
Bromus hordeaceus	Soft chess
Bromus madtritensis rubens	Foxtail chess
Bromus tectorum	Cheatgrass
Conyza Canadensis	Horseweed
Chamaesyce albomarginata	Rattlesnake weed
Chamomilla suavelens	Pineapple weed
Chrysothamnus nauseosus	Rabbitbrush
Croton setigerus	Turkey mullen
Datura wrightii	Jimson weed
Eremocarpus setigerus	Doveweed
*Erodium cicutarium**	Red stem filaree
Filago gallica	Narrow leaved filago
Gnaphalium luteo-album	Cudweed
Heterotheca grandiflora	Telegraph weed
Hirschfeldia incana	Summer mustard
Lactuca serriola	Prickly lettuce
Lessinggia filaginifolia	Cudweed aster
Nassella sp.	Nassella
Salsola australis	Tumbleweed
Salsola trajus	Russian thistle
Schismus barbatus	Mediterranean grass
Sisymbrium altissmum	Tumble mustard
Trichostema lanceolatum	Vinegar weed
*Vulpia myuros**	Fescue

APPENDIX D

WILDLIFE SPECIES OBSERVED WITHIN THE STUDY AREA

APPENDIX D

WILDLIFE SPECIES OBSERVED WITHIN THE STUDY AREA

Scientific name	Common name
Reptiles	
Crotalus atrox	Western Rattlesnake
Sceloporus magister	Desert spiny Lizard
Birds	
Athene cunicularia	Burrowing Owl
Buteo jamaicensis	Red tail Hawk
Carpodacus mexicanus	House Finch
Corvus brachyrhynchos	American Crow
Corvus corax	Common Raven
Eremophila alpestris	Horned Lark
Euphagus cyanocephalus	Brewer's Blackbird
Mimus polyglottos	Northern Mocking bird
Sturnella neglecta	Western Meadowlark
Sturnus vulgaris	European Starling
Zenaida macroura	Mourning Dove
Mammals	
Lepus californicus	Black-tailed Jackrabbit
Spermophilus beecheyi	California Ground Squirrel
Sylvilagus audubonii	Desert Cottontail

APPENDIX B.3-7 PROJECT 6 LANCASTER WAD

2013 BURROWING OWL SURVEY BIOLOGICAL TECHNICAL REPORT

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2013 BURROWING OWL SURVEY

For

LANCASTER WAD PROJECT
LOS ANGELES COUNTY, CALIFORNIA

Prepared by

August 2013

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Appendix B Photographic Log

1.0 INTRODUCTION

This report provides the methods, assumptions, and results of focused surveys for Burrowing Owl (*Athene cunicularia*) conducted within the limits of the proposed Lancaster WAD Project (here after referred to as the Project). The surveys were performed by NOREAS Inc., (NOREAS), on behalf of Silverado Power, LLC (Silverado). The Project is located within Los Angeles County, California (Fig.1). The Project can be found on the Rosamond United States Geological Survey (USGS 1980) 7.5-minute quadrangle map, San Bernardino Base and Meridian, Township 8 North, Range 12 West, Sections 18 and 19. For the purposes of this report, the "study area" includes the Project's proposed ground disturbance footprint (Project Site), plus a 500-ft buffer where practical. The Project Site is south of West Avenue C, and north of West Avenue D at an approximate elevation of 2,310 ft above mean sea level. The study area is heavily disturbed and supports mostly ruderal vegetation with substantial inclusions of bare ground.

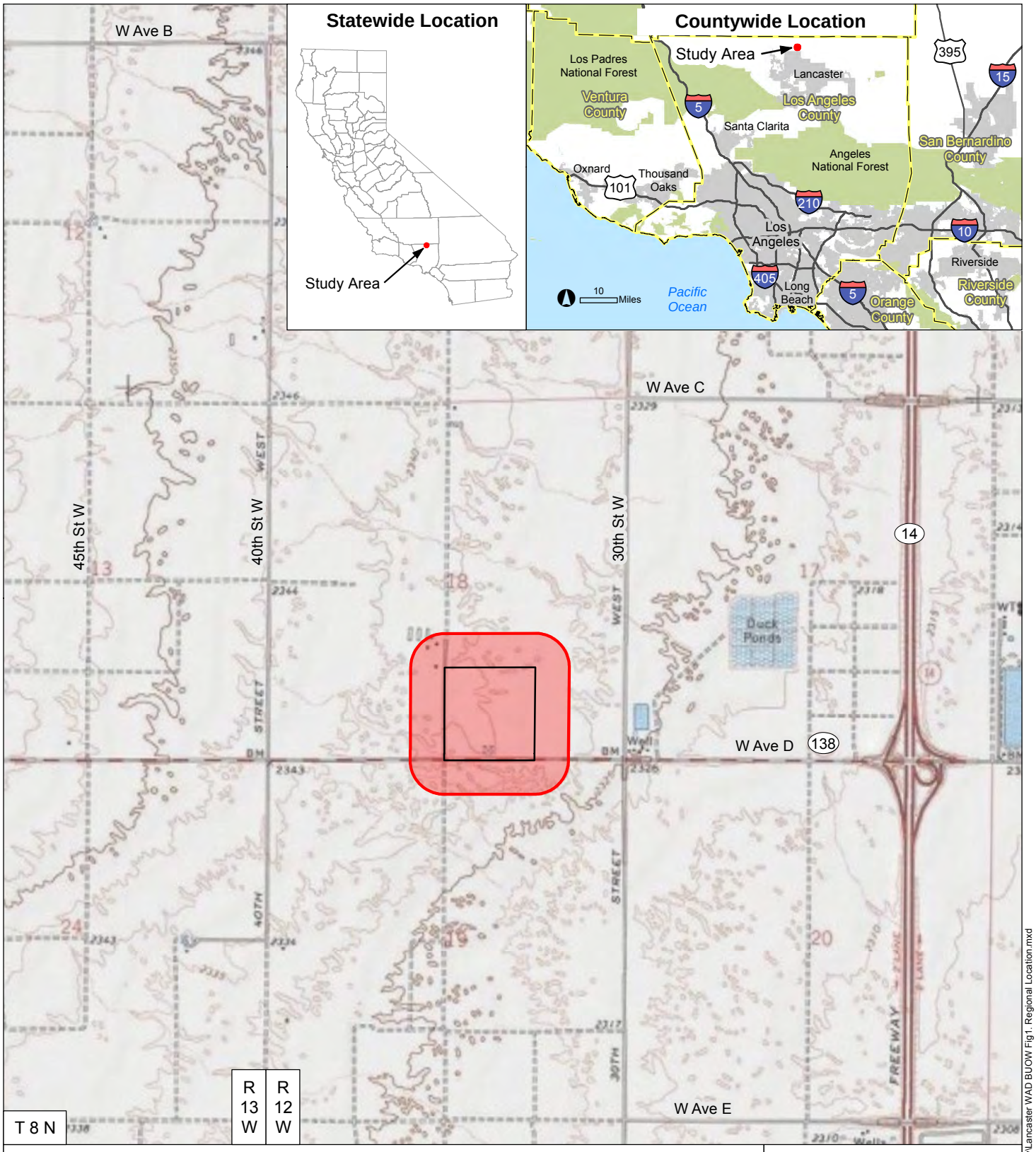


Figure 1. Regional Location

2.0 BURROWING OWL BACKGROUND

The Burrowing Owl has been designated by the California Department of Fish and Wildlife (CDFW) as a species of special concern. "State Species of Special Concern" status applies to animals not listed for protection under the federal Endangered Species Act or the California Endangered Species Act. The designation denotes that a species is declining at a rate that could result in State listing or that a species has historically occurred in low numbers and known threats to their persistence currently exist. In essence, the designation is intended to result in "special consideration" for these animals during the environmental review and discretionary permitting processes. In addition, the designation is also intended to focus research and management attention on poorly-known, potentially at-risk species by stimulating the collection of additional information on their biology, distribution, and status.

Burrowing Owls prefer open, dry annual or perennial grasslands, agricultural and rangelands, deserts, and scrublands characterized by low-growing vegetation. Burrowing Owls also prefer areas inhabited by small mammals as they predominately depend on mammal burrows (particularly ground squirrels) for subterranean nesting. Owls can be found at elevations ranging from 200 ft below sea level to 9,000 ft above (CDFG 1995). Burrowing Owls commonly perch on fence posts or on mounds outside their burrows. Northern populations of Burrowing Owls are usually migratory, while more southern populations may move short distances or not at all (Haug et al. 1993, Botelho 1996). Little is known about the winter ranges of migratory populations, although migratory Burrowing Owls are believed to mix with resident populations in California during the winter months (Coulombe 1971, Haug et al. 1993).

Burrowing Owls tend to be resident where food sources are stable and available year-round (Rosenberg et al. 1998). Typically, they disperse or migrate south in areas when food becomes seasonally scarce. Burrowing Owls tend to be opportunistic feeders. Large arthropods, mainly beetles and grasshoppers, comprise a substantial portion of their diet (Rosenberg et al. 1998). Small mammals, especially mice, rats, gophers, and ground squirrels, are also important food items. Other prey animals include reptiles and amphibians, scorpions, young cottontail rabbits, bats, and birds such as sparrows and Horned Larks. Consumption of insects increases during the breeding season. Burrowing Owls hover while hunting; after catching their prey they return to perches on fence posts or the ground. Burrowing Owls are primarily active at dusk and dawn, but if necessary will hunt at any time of day (CBOC 1993, CDFG 1995; Rosenberg et al. 1998).

The breeding season for Burrowing Owls is March to late August; the season tends to last later in the northern part of the range (CBOC 1993, CDFG 1995, Klute et al. 2003). Clutch size (number of birds hatched at the same time) ranges from 1 to 12 and averages about 7 (Ehrlich 1988). The incubation period is 28–30 days (Ehrlich 1988). The female performs all the incubation and brooding (sitting on eggs to hatch them by the warmth of the body) and is believed to remain continually in the burrow while the male does all the hunting (Rosenberg et al. 1998). The young fledge (take their first flight out of the nest) at 44 days but remain near the burrow and join the adults in foraging flights at dusk (Ehrlich 1988). The maximum life span recorded for a banded bird in the wild is approximately 8.5 years (Rosenberg et al. 1998).

In resident populations, nest site fidelity is common, with many adults nesting each year in their previous year's burrow; young from the previous year often establish nest sites near (<900 ft) their natal sites (Trulio 1997,Rosenberg et al. 1998). Burrowing Owls in migratory populations

also often nest in the same burrow, particularly if the previous year's breeding was successful (Belthoff and King 1997). Other birds in the same population may move to burrows near their previous year's burrow. The species is threatened primarily by loss, degradation, and fragmentation of habitat, although they do readily inhabit anthropogenic landscapes such as agricultural fields, golf courses, and airport grasslands (Korfanta et al. 2005).

3.0 METHODS

Prior to field surveys, natural resource databases, local resource management plans, aerial photos, and other readily available commercial data associated with the Project were reviewed to determine the locations and types of avian species that have the potential to exist within the study area. Primary data sources included, but were not limited to, the following:

- U.S. Fish and Wildlife Service Critical Habitat Mapper and File Data (USFWS 2013);
- California Burrowing Owl Consortium. 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines;
- California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation; and
- 2013 California Natural Diversity Database maintained by the CDFW (CDFW 2013).

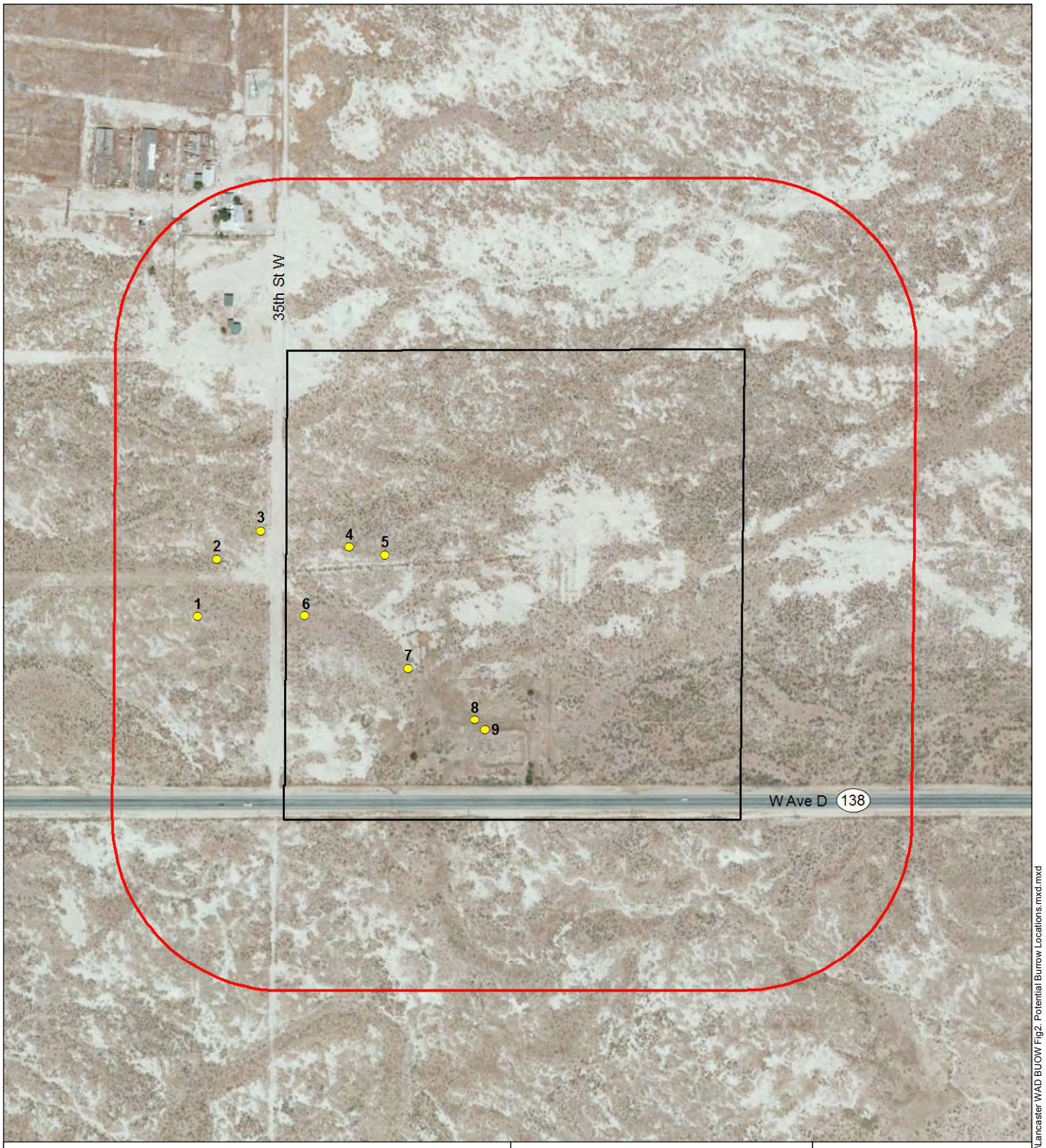
Survey methods were derived from generally accepted professional standards including the 1993 California Burrowing Owl Consortium Survey Protocol and Mitigation Guidelines (CBOC 1993), the 1995 and 2012 California Department of Fish and Game Staff Reports on Burrowing Owl Mitigation (CDFG 1995 and 2012). Accordingly, a methodical pedestrian-survey for owl burrows and sign was conducted by walking through areas of suitable habitat within study area limits (including evaluations of man-made structures, debris piles, etc.). Survey transects were spaced at approximately 100-ft intervals to allow for complete visual coverage of the study area. Where necessary, transect spacing was reduced or expanded to account for differences in terrain, vegetation density, and visibility. The presence of each observed species was based on direct observations of individual(s), sign, and/or vocalization. Avian scientific nomenclature and common names follows Sibley (2000).

Field surveys were conducted when weather conditions were conducive to observing birds. Surveys were not performed during rain, extreme temperatures, high winds (> 25 miles per hour), or dense fog. Where access was limited, observations were made from the nearest appropriate vantage points with the use of binoculars and spotting scopes. Surveys were conducted from approximately 1 hr before sunrise to 2 hr after sunset, when weather conditions were conducive to observing owls outside of burrows.

4.0 RESULTS

Field surveys were performed on 12 April, 08 May, 07 June, and 01 July 2013. Weather conditions during the surveys were sunny and clear, ambient temperature ranged from 46 to 85 degrees Fahrenheit, with wind speeds between 0-15 miles per hour. The study area is heavily disturbed and supports mostly ruderal vegetation dominated by non-native annual grass species. There is also evidence of historical agricultural practices.

Several low quality potential burrows were observed within the southern western portions the study area (Fig. 2). Nonetheless, no sign or Burrowing Owls were observed nesting, foraging, dispersing, or utilizing refuge habitats during any field surveys. Appendix A includes a list of avian species observed. Appendix B includes representative photographs of the study area as well.



Study Area (122-acres which includes a 500-ft buffer and the Project Site)

Project Site (42 acres)

Potential Burrow Locations

Inactive

0 200 400 Feet

1 inch = 400 feet

Data Sources:
- BingMaps accessed Jul 2013
- Silverado Power 2013

Map Prepared: 7-5-13

Prepared by:

NOREAS
Environmental Engineering and Science

C:\SRM\Noreas\Silverado Power\LA County\Lancaster WAD BUOW Fig2. Potential Burrow Locations.mxd

Figure 2. Potential Burrow Locations

5.0 CONCLUSIONS

No sign or Burrowing Owls were observed within the study area. Given the low quality habitat and extent of anthropogenic disturbance, the Project Site seems unlikely to support Burrowing Owls. The survey data suggests that no Burrowing Owls would be adversely affected by the Project.

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APPENDIX A

AVIAN COMPENDIUM

APPENDIX A

AVIAN COMPENDIUM

Scientific name	Common name
Amphispiza belli	Sage Sparrow
Callipepla californica	California Quail
Carpodacus mexicanus	House Finch
Columba livia	Rock Pigeon
Corvus corax	Raven
Eremophila alpestris	Horned Lark
Mimus polyglottos	Northern Mockingbird
Passer domesticus	House Sparrow
Tyrannus verticalis	Western Kingbird
Zenaida macroura	Mourning Dove

APPENDIX B

PHOTOGRAPHIC LOG

APPENDIX B

PHOTOGRAPHIC LOG

	Photograph: 1 **Facing South**
	Photograph: 2 **Facing South West**

Photograph: 3

Potential Burrow

BIOLOGICAL TECHNICAL REVIEW
FOR THE LANCASTER WAD SOLAR PROJECT SITE (CUP 15)
IN THE ANTELOPE VALLEY,
LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

TETRATECH

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September 2011

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SECTION 1.0 – INTRODUCTION

Silverado Power, LLC (Silverado Power) is an independent solar power producer and developer of distributed solar power assets utilities that are both municipally and investor owned. Silverado Power strives to be a leader in wholesale solar power generation, and the process of developing, building, and operating solar generation facilities (SGFs). As a leader in the solar industry, Silverado Power would generate renewable solar electricity at a competitive cost with minimal environmental impacts.

Chambers Group, Inc. (Chambers Group) was retained by Tetratech (for Silverado Power) to conduct a literature review and biological technical report (BTR) on the proposed Lancaster WAD solar project site located in Lancaster, California. The purpose of this document is to report the results of the reconnaissance-level biological survey.

1.1. PROJECT DESCRIPTION

Silverado Power plans to develop the Lancaster WAD SGF (Project). The Project facilities would operate year-round, producing electric power during daytime hours. The tentative schedule has proposed to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the fourth quarter of 2014.

The proposed Project would have a generating capacity of 5 megawatts alternating current (MW-AC). The Project will employ photovoltaic (PV) modules to convert sunlight into electrical energy without the use of heat transfer fluid or cooling water. The facilities will deliver the electrical output to the existing regional transmission system.

The Project would meet the increasing demand for electricity generated from clean, renewable technology. Recent legislation enacted in California recognizes the multiple benefits associated with the development of renewable energy resources. These benefits include a reduced reliance on foreign sources of fuel, promotion of national security, diversification of energy portfolios, reductions in greenhouse gas emissions, and the creation of “green” jobs within the state of California.

1.2. PROJECT LOCATION

The proposed Project site is located in the Antelope Valley area in unincorporated northeastern Los Angeles County, approximately four and a half miles north of Lancaster; it comprises approximately 38.5 acres of mainly open space, with OHV roads and an old agricultural/farming area. It is surrounded by residential property to the west/northwest, with the remaining areas being mainly open space (comprised mostly of desert saltbush scrub). The site is located within the *Rosamond* California USGS 7.5-minute quadrangle. Lancaster WAD is located on the southwest corner of the intersection of West Avenue D and 35th Street West. The Project Regional Map is provided as Figure 1 and the Project Vicinity Map is provided as Figure 2.

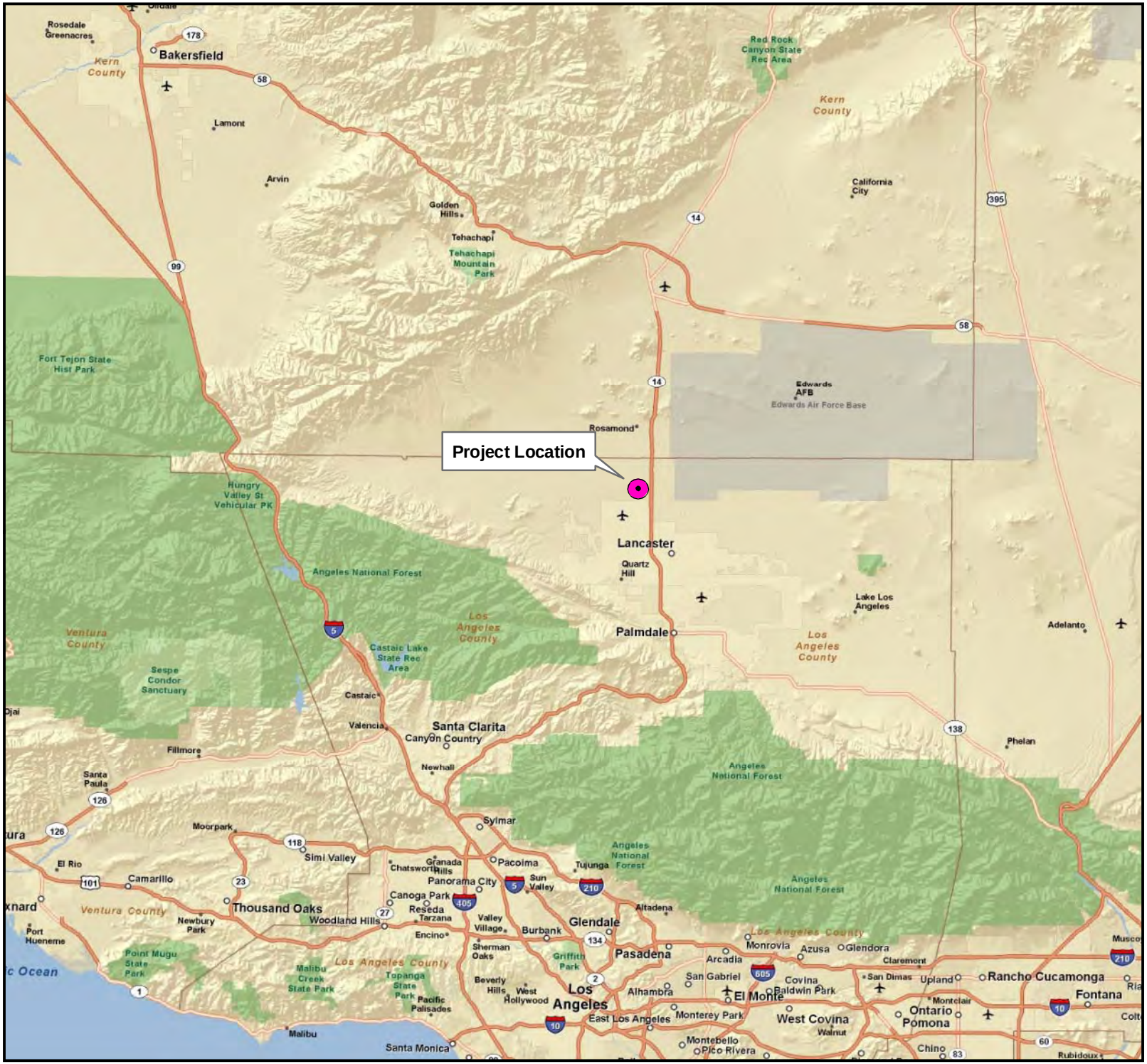

Figure 1
Regional Map
Lancaster WAD

Legend

Project Location

N
W E
S

0 4 8 16
Miles

9-16-11
20327

Chambers Group Inc.

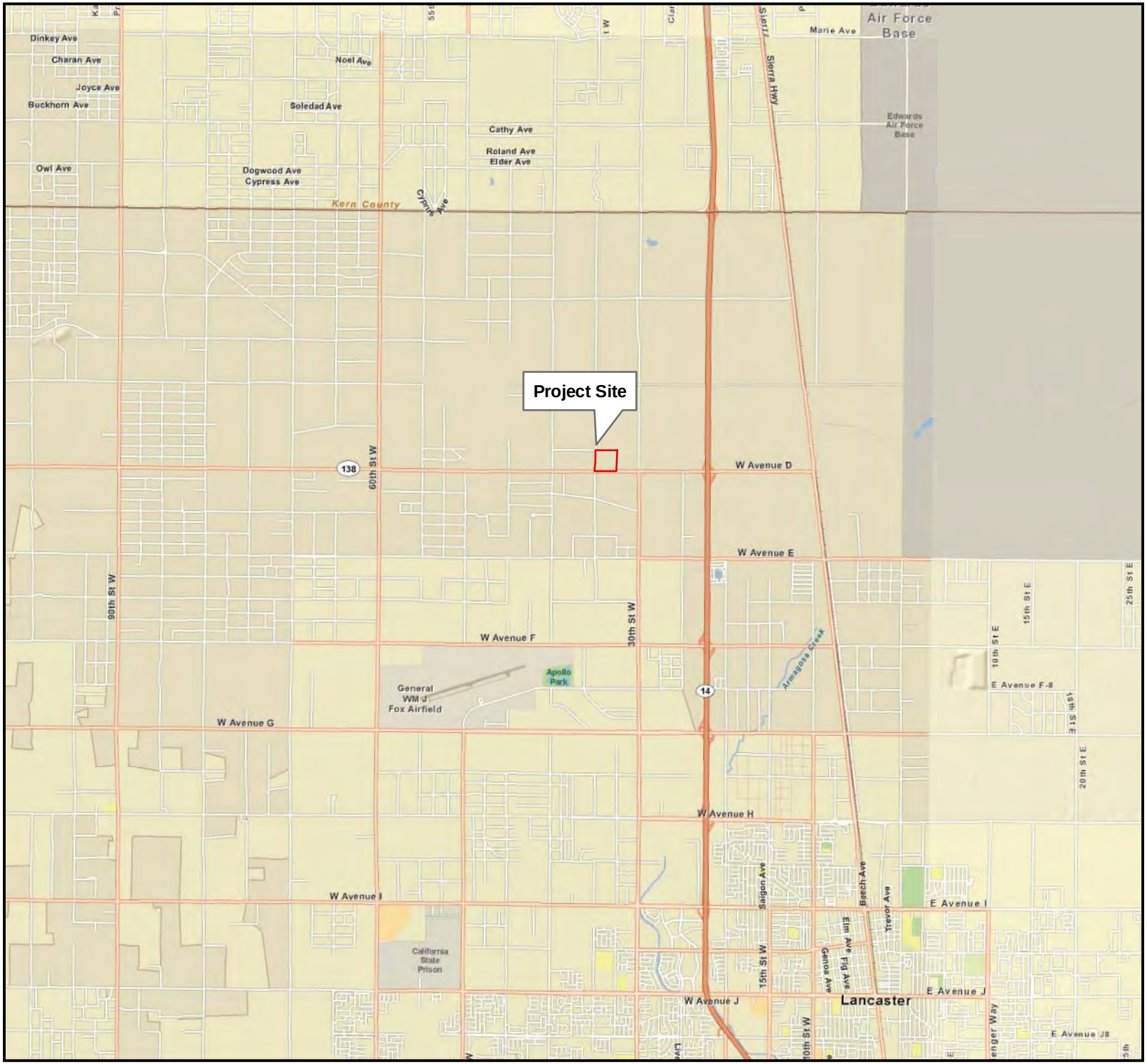

Figure 2
Vicinity Map
Lancaster WAD

Legend

Project Site

N
W E
S

0 0.5 1 2
Miles

9-16-11
20327

Chambers Group Inc.

SECTION 2.0 – METHODS

2.1. LITERATURE REVIEW

Prior to conducting the reconnaissance-level field survey, existing documentation relevant to the Project site was reviewed. The most recent records of the California Department of Fish and Game California Natural Diversity Database (CNDDB 2011) and the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPSEI 2011) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Rosamond, Fairmont Butte, Little Butte, Rosamond Lake, Redman, Alpine Butte, Lancaster East, Lancaster West, Del Sur, Lake Hughes, Burnt Peak, Little Rock, Lovejoy Buttes, El Mirage*, California USGS 7.5-minute quadrangles). These databases contain records of reported occurrences of federal- or state-listed endangered or threatened species, proposed endangered or threatened species, former Federal Species of Concern (FSC), California Species of Special Concern (CSC), or otherwise sensitive species or habitats that may occur within or in the vicinity of the Project site.

2.2. BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

The field survey was conducted on the Project site in order to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support special status wildlife species, and to identify any potential jurisdictional waters of the United States. Chambers Group biologists Nicole Cervin and Sean Vogt conducted the general reconnaissance survey on September 13, 2011, between 1030 and 1230 hours. Weather conditions during the survey included temperatures ranging from approximately 83 to 92 degrees Fahrenheit, with 60 percent cloud cover, a calm breeze (less than 1 mph) and no precipitation. During the survey, the biologists walked the Project site to document the vegetation communities, and took notes regarding the potential for special status species and jurisdictional waters to occur onsite. Photographs of the Project site were also taken to document existing conditions.

2.3. VEGETATION

All plant species and soil types observed onsite were noted. Plant communities on the Project site were identified, qualitatively described, and mapped onto an aerial photograph (Appendix A). Plant communities were determined in accordance with the categories set forth in Holland (1986) or Gray and Bramlet (1992). Plant nomenclature follows that of *The Jepson Manual: Higher Plants of California* (Hickman 1993).

2.4. WILDLIFE

All wildlife and wildlife signs including tracks, scat, carcasses, burrows, excavations and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (undisturbed native habitat, near wildlife trails, etc.), or in habitats with the potential to support state- and/or federal-listed or proposed listed species. Notes were made on the general habitat types, species observed and the conditions of the site. Photographs of the Project site are provided in Appendix B.

SECTION 3.0 – RESULTS

3.1. LITERATURE REVIEW

According the literature review, 20 special status plant and 31 special status wildlife species were documented to occur within the vicinity of the Project site. This list included 10 wildlife species that are federal- and/or state-listed as endangered or threatened. Of the 20 special status plant species listed in the literature review, none is federal- and/or state-listed as endangered or threatened.

3.2. VEGETATION COMMUNITIES

The Project site consists of Desert Saltbush Scrub, Disturbed Desert Saltbush Scrub and Saltgrass Grassland vegetation communities. Within the Distrubed Desert Saltbush Scrub near the agricultural/farming basin, scattered Tamarisks (*Tamarix ramosissima*) were present. The Lancaster WAD solar Project site is surrounded by native desert shrub communities, non-native grasslands and active agricultural fields. A map displaying the location of these vegetation communities on the Project site is included in Appendix A.

3.2.1 Desert Saltbush Scrub

Desert Saltbush Scrub is typically characterized by low, grayish, microphyllous shrubs 1 to 3 feet in height dominated by saltbush (*Atriplex* sp.) with some other shrub and succulent species. Cover in this community is often low with much bare ground between the widely spaced shrubs. Microhabitat consists of fine-textured, poorly drained soils with high alkalinity and/or salinity surrounding playas on slightly higher ground at elevations below 4,000 feet above mean sea level (Holland 1986).

Desert Saltbush Scrub is present throughout the majority of the Project site. Plant species found within this site typical of this vegetation community include spiny saltbush (*Atriplex confertiflora*) and four-wing saltbush (*Atriplex canescens*).

3.2.2 Disturbed Desert Saltbush Scrub

Disturbed Desert Saltbush Scrub is typically characterized by low, grayish, microphyllous shrubs 1 to 3 feet in height dominated by saltbush (*Atriplex* sp.) with some other shrub and succulent species, and over 25 percent cover of non-native plant species. Native cover in this community is still often low with some of the bare ground between the widely spaced shrubs inhabited by non-native annual grasses. Microhabitat consists of fine-textured, poorly drained soils with high alkalinity and/or salinity surrounding playas on slightly higher ground at elevations below 4,000 feet above mean sea level (Holland 1986).

Disturbed Desert Saltbush Scrub is present in the southern area of the Project site, in and around the abandoned agricultural/farming basin. Plant species found within this site typical of this vegetation community include spiny saltbush (*Atriplex confertiflora*), four-wing saltbush (*Atriplex canescens*) and non-native annual grass species belonging to the *Bromus* genus.

3.2.3 Saltgrass Grassland

Saltgrass Grassland is typically characterized by low, green to yellow, grasses 1 to 2 feet in height dominated by desert saltgrass (*Distichlis spicata*) with other grasses and annual species mixed in at lower abundances. Cover in this community is often high, with some smaller patches of bare ground between the creeping grass patches. Microhabitat consists of fine-textured, poorly drained soils with high alkalinity, moisture and/or salinity on grounds near marshes, temporary pools or playas at elevations below 4,000 feet above mean sea level (Holland 1986).

Saltgrass grassland is present in two main locations within the Project site in moderately sized patches near areas that show recent evidence of pooling. Plant species found within this site typical of this vegetation community include desert saltgrass.

3.3. JURISDICTIONAL FEATURES

Chambers Group biologists conducted a preliminary assessment to potentially identify jurisdictional features on the Project site. Several desert playa features were observed throughout the Project site during the survey; cracked clay soils and evidence of pooling (dehydrated algal mats/cyrptobiotic crusts/salt deposits) were present. Furthermore, a man-made irrigation ditch runs through the center of the site (east to west), and an abandoned agricultural or farming basin is located along the southern edge of the site (along Avenue D). These features may be subject to state and federal jurisdiction. A formal delineation was not conducted.

3.4. SPECIAL STATUS SPECIES

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Project site.

CNPS

List 1A	=	Plants presumed extinct in California.
List 1B	=	Plants rare and endangered in California and throughout their range.
List 2	=	Plants rare, threatened, or endangered in California but more common elsewhere in their range.
List 3	=	Plants about which we need more information; a review list.
List 4	=	Plants of limited distribution; a watch list.

CNPS Extensions

0.1	=	Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2	=	Fairly endangered in California (20 to 80 percent occurrences threatened).
0.3	=	Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE	=	Federally listed; Endangered
FT	=	Federally listed; Threatened
FC	=	Federal Candidate for listing
FPT	=	Federal Proposed listing as Threatened

State

ST	=	State listed; Threatened
SE	=	State listed; Endangered
RARE	=	State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
CSC	=	State Species of Special Concern
WL	=	California Department of Fish and Game (CDFG) Watch List

3.5. SENSITIVE SPECIES DESCRIPTIONS

3.5.1 Sensitive Plant Species in the Los Angeles County Area

3.5.1.1 Alkali Mariposa Lily (*Calochortus striatus*) CNPS List 1B.1

Alkali mariposa lily is a CNPS List 1B.2 species. This perennial, bulbiferous herb flowers between April and June. This species occurs on alkaline and mesic soils within Chaparral, Chenopod Scrub, Mojavean Desert Scrub, and Meadow and Seep habitats at elevations between 230 and 5,233 feet above mean sea level (amsl). Known range for this species includes: Kern, Los Angeles, San Bernardino, and Tulare

counties. Threats to alkali mariposa lily include urbanization, grazing, trampling, road construction, water diversion resulting in lowering the water table, and possibly horticultural collecting.

3.5.1.2 Barstow Woolly Sunflower (*Eriophyllum mohavense*) CNPS List 1B.2

Barstow woolly sunflower is a CNPS List 1B.2 species. This annual herb flowers between March and May. Barstow woolly sunflower occurs within Chenopod Scrub, Mojavean Desert Scrub, and Playas habitats at elevations between 1,640 and 3,150 feet amsl. Known range for this species includes: Fresno, Kern, Los Angeles, and San Bernardino counties. Threats to this species include vehicles, grazing, energy development, and road improvements.

3.5.1.3 Clokey's Cryptantha (*Cryptantha clokeyi*) CNPS List 1B.2

Clokey's cryptantha is a CNPS List 1B.2 species. This annual herb flowers in April. Clokey's cryptantha occurs within Mojavean Desert Scrub habitat at elevations between 2,379 and 4,478 feet amsl. Known range for this species includes: Inyo, Los Angeles, and San Bernardino counties. Major threats to this species include military activities and alteration of fire regimes.

3.5.1.4 Darwin Rock Cress (*Arabis pulchra* var. *munciensis*) CNPS List 2.3

Darwin rock cress is a CNPS List 2.3 species. This perennial herb flowers in April. Darwin rock cress occurs in carbonate soils of Chenopod Scrub and Mojavean Desert Scrub habitats at elevations between 3,608 and 6,807 feet amsl. Known range includes Inyo, Los Angeles, and San Bernardino counties. Threats to this species include urbanization and off-road vehicles.

3.5.1.5 Davidson's Bush Mallow (*Malacothamnus davidsonii*) CNPS List 1B.2

Davidson's bush mallow is a CNPS List 1B.2 species. This perennial deciduous shrub flowers between June and January. Davidson's bush mallow occurs within Chaparral, Coastal Scrub, Cismontane Woodland, and Riparian Woodland habitats at elevations between 607 and 2,805 feet amsl. Known ranges include: Los Angeles, Monterey, Santa Clara, San Mateo, and San Luis Obispo counties. Urbanization, maintenance activities, and erosion are the main threats to this species.

3.5.1.6 Desert Cymopterus (*Cymopterus deserticola*) CNPS List 1B.1

Desert cymopterus is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs on sandy soils within Mojavean Desert Scrub and Joshua Tree Woodland habitats at elevations between 2,066 and 4,921 feet amsl. Known range for this species includes: Kern, Los Angeles, and San Bernardino counties. Threats to desert cymopterus include military activities, sheep grazing, vehicles, utility construction, and urbanization.

3.5.1.7 Horn's Milk-Vetch (*Astragalus hornii* var. *hornii*) CNPS List 1B.1

Horn's milk-vetch is a CNPS List 1B.1 species. This annual herb flowers between May and October. This species occurs along lake margins in poorly drained, alkaline soils of Meadow and Seep and Playas habitats at elevations between 195 to 2,790 feet amsl. Known ranges include Inyo, Kern, and San Bernardino counties and Nevada. Poisonous to sheep, it was subject to eradication by farmers in the early 1900s; current threats to Horn's milk-vetch are habitat alterations.

3.5.1.8 Lancaster Milk-Vetch (*Astragalus preussii* var. *laxiflorus*) CNPS List 1B.1

Lancaster milk-vetch is a CNPS List 1B.1 species. This perennial herb flowers between March and May. This species occurs within Chenopod Scrub habitat. Known ranges include: Kern, Los Angeles and San Bernardino counties and Nevada. However, having a limited range, which is currently restricted to areas near Lancaster and Edwards Air Force Base, is the major threat to Lancaster milk-vetch.

3.5.1.9 Mojave Spineflower (*Chorizanthe spinosa*) CNPS List 4.2

Mojave spineflower is a CNPS List 4.2 species. This annual herb flowers between March and July in sandy to gravelly soils in Chenopod Scrub, Joshua Tree Woodland, and Mojavean Desert Scrubs at elevations upwards to 4,000 feet amsl. Known ranges include: Kern, Los Angeles, San Bernardino, and San Luis Obispo counties. Mojave spineflower is threatened by vehicles, development, and illegal dumping.

3.5.1.10 Pale-Yellow Layia (*Layia heterotricha*) CNPS List 1B.1

Pale-yellow layia is a CNPS List 1B.1 species. This annual herb flowers between March and June. This species occurs in alkaline or clay soils within Cismontane Woodland, Coastal Scrub, Pinyon-Juniper Woodland, and Valley and Foothill Grassland habitats at elevations between 984 and 5,594 feet amsl. Known ranges include Fresno, Kern, Kings, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, San Benito, and Ventura counties. Threats to pale-yellow layia include vehicle use, non-native plants, agricultural conversion, grazing, and previous construction at San Antonio Reservoir.

3.5.1.11 Parish's Popcorn-Flower (*Plagiobothrys parishii*) CNPS List 1B.1

Parish's popcorn-flower is a CNPS List 1B.1 species. This annual herb flowers between March and November. This species occurs on alkaline and mesic soils within Great Basin scrub and Joshua Tree Woodland habitats at elevations between 2,460 and 4,595 feet amsl. Known range for this species includes: Inyo, Los Angeles, Mono, and San Bernardino counties. Threats to Parish's popcorn-flower include groundwater pumping.

3.5.1.12 Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) CNPS List 1B.1

Parry's spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and June. This species occurs in sandy or rocky soils and openings within Cismontane Woodland, Coastal Scrub, and Valley and Foothill Grassland habitats at elevations between 902 and 4,002 feet amsl. Known ranges include Los Angeles, Riverside and San Bernardino counties. Threats to this species include development, altered flood regime, mining, vehicles, and competition with non-native plants.

3.5.1.13 Peirson's Morning-Glory (*Calystegia peirsonii*) CNPS List 4.2

Peirson's morning-glory is a CNPS List 4.2 species. This perennial, rhizomatous herb flowers between April and June. This species occurs within Chaparral, Chenopod Scrub, Cismontane Woodland, Coastal Scrub, Lower Montane Coniferous Forest, and Valley and Foothill Grassland habitats at elevations between 98 and 5,085 feet amsl. Known ranges include Los Angeles county. Major threats to Peirson's morning-glory include grazing and development.

3.5.1.14 Recurved Larkspur (*Delphinium recurvatum*) CNPS List 1B.2

Recurved larkspur (*Delphinium recurvatum*) is a CNPS List 1B.2 species. This perennial herb flowers between March and June. This species occurs on alkaline soils within Chenopod Scrub, Cismontane Woodland, and Valley and Foothill Grassland habitats at elevations between 10 and 2,460 feet amsl. Known ranges of the recurved larkspur include: Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Madera, Merced, Monterey, San Joaquin, San Luis Obispo, Solana, Sutter, and Tulare counties. Conversion of habitat, grazing, and trampling are threats to the recurved larkspur.

3.5.1.15 Round-Leaved Filaree (*California macrophylla*) CNPS List 1B.1

Round-leaved filaree is a CNPS List 1B.1 species. This annual herb flowers between March and May. Round-leaved filaree occurs in clay soils within Cismontane Woodland and Valley and Foothill Grassland habitats at elevations between 50 and 3,937 feet amsl. Known ranges include Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kings, Kern, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, Santa Barbara, San Benito, Santa Clara, San Diego, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Ventura, and Yolo counties and Santa Cruz Island. Threats to this species include urbanization, feral pigs, habitat alteration, pipeline construction, urbanization and competition with non-native plants.

3.5.1.16 Sagebrush Loeflingia (*Loeflingia squarrosa*) CNPS List 2.2

Sagebrush loeflingia is a CNPS List 2.2 species. This annual herb flowers between April and May. This species occurs in sandy soils of Desert Dunes, Great Basin Scrub, and Sonoran Desert Scrub habitats at elevations between 2,295 and 5,300 feet amsl. Known range includes Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino counties and Nevada, Oregon, and Wyoming. Possible threats to sagebrush loeflingia include off-highway vehicles and grazing.

3.5.1.17 San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*) CNPS List 1B.1

San Fernando Valley spineflower is a CNPS List 1B.1 species. This annual herb flowers between April and July. This species occurs in sandy soils of Coastal Scrub and Valley and Foothill Grassland habitats at elevations between 492 and 4,002 feet amsl. Known range includes Los Angeles, Orange, and Ventura counties. Possible threats to this species include competition with non-native plants and development.

3.5.1.18 Short-Joint Beavertail (*Opuntia basilaris* var. *brachyclada*) CNPS List 1B.2

Short-joint beavertail is a CNPS List 1B.2 species. This perennial stem succulent flowers between April and June. This species occurs within Chaparral, Mojavean Desert Scrub, Joshua Tree Woodland, and Pinyon-Juniper Woodland habitats at elevations between 394 and 5,905 feet amsl. Known range for this species includes Los Angeles and San Bernardino counties. Major threats to short-joint beavertail include vehicles, grazing, urbanization, mining, and horticultural collecting; possible threats include power line construction.

3.5.1.19 Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*) CNPS List 1B.1

Slender mariposa lily is a CNPS List 1B.1 species. This perennial, bulbiferous herb flowers between March and June. This species occurs within Chaparral, Coastal Scrub, and Valley and Foothill Grassland

habitats at elevations between 1,050 and 3,280 feet amsl. Known ranges include Los Angeles and Ventura counties. Threats to slender mariposa lily include vehicles, development, mining, and competition with non-native plants.

3.5.1.20 White Pygmy-Poppy (*Canbya candida*) CNPS List 4.2

White pygmy-poppy is a CNPS List 4.2 species. This annual herb flowers between March and June. This species occurs on gravelly, sandy, or granitic soils within Joshua Tree Woodland, Mojave Desert Scrub, and Pinyon-Juniper Woodland habitats at elevations between 600 and 4,800 feet amsl. Known ranges include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino counties. This species is threatened by development, off-highway vehicles, grazing, mining, and competition with non-native plants.

3.5.2 Sensitive Wildlife Species in the Los Angeles County Area

3.5.2.1 American Badger (*Taxidea taxus*) CSC

The American badger is a California Species of Concern (CSC). This carnivorous species ranges over most of the western U.S and upper midwestern U.S. south into central Mexico. In California, the badger may occupy a variety of habitats, especially grasslands, savannas, montane meadows, sparse scrublands, and deserts. It prefers friable soils for burrowing, and relatively open, uncultivated ground. Prey items include gophers, ground squirrels, marmots, kangaroo rats, other rodents, and the occasional reptile or amphibian. The American badger may weigh up to 25 pounds and is easily recognized by its overall yellowish gray coloration, the white stripe on top of its head, white cheeks, and black feet with noticeably long front claws. It is a heavy-bodied animal with short legs and a characteristic pigeon-toed gait. It is chiefly nocturnal, but it is often seen by day as well. It gives birth to two to five young anywhere from February to May, depending on its altitude and latitude. Threats to this species include habitat loss to agriculture, housing, and other land conversions, and illegal hunting.

3.5.2.2 Arroyo Toad (*Anaxyrus californicus*) FE, CSC

The arroyo toad is a federally endangered species and a CSC. The range of this species is within coastal California from Monterey County into northwestern Baja California, Mexico. It is found in washes, streams, and arroyos; and preferred habitats include sandy banks within riparian woodlands such as willow, cottonwood, sycamore, mulefat, and/or coast live oak. It breeds in shallow, sandy/gravelly riverine pools with low silt content and normally disperses onto adjacent uplands after breeding. Individuals have been observed up to 2 kilometers (km) from the streams in which they breed, but most often they are within 0.5 km of those streams (USFWS 1992a). During the breeding season, males call nocturnally from open areas on banks at the edges of streams. Males typically precede females at breeding sites. Females lay their eggs among gravel, leaves, or sticks, on mud or clean sand within low to moderately flowing sections of streams in areas with little or no emergent vegetation and little woody marginal growth. Newly metamorphosed individuals remain near pools for up to several weeks until the areas dry. Juveniles begin feeding primarily on ants and shift to small beetles as they grow (Sweet 1991) before moving into adjacent wintering grounds. Many spend the next 6 to 8 months overwintering in burrows up to 20 centimeters deep in sandy substrates of these habitats. Adults obtain shelter primarily by burrowing into fine, sandy soils in both adjacent and upland habitats (Sweet 1991). This small to moderately-sized species is distinguished from other toads by its chevron-shaped marking between the eyes and by the lack of a mid-dorsal stripe. Coloration may vary from light olive gray to tannish brown above, and the unmarked undersurfaces are creamy to dirty white. The iris is dark brown with scattered

gold iridophores on the upper and lower portions of the iris. The primary threat to this species is habitat loss.

3.5.2.3 Bell's Sage Sparrow (*Amphispiza belli belli*) WL

The Bell's sage sparrow is a subspecies of sage sparrow and a CDFG Watch List (WL) species. It breeds primarily in chamise chaparral along the coastal side of California from the western foothills of the Sierra Nevada to San Diego County and northwest Mexico. It also breeds less commonly in coastal sage, mixed chaparral, and big sagebrush communities. Wintering birds of this subspecies may migrate to desert floors or remain in their breeding habitats. This species is distinguished from other sparrows by its gray head and back, thin white eye-ring, single dark breast spot, and heavy whisker-like pattern about the face. Populations are in decline due to habitat loss and fragmentation, frequent wildfires, grazing, invasive plants, and brood parasitism caused by the brown-headed cowbird (*Molothrus ater*).

3.5.2.4 Burrowing Owl (*Athene cunicularia*) CSC

The burrowing owl, a CSC, is broadly distributed across the western United States with populations in Florida and Central and South America. Burrowing owls use a variety of natural and modified habitats for nesting and foraging, typically characterized by low-growing vegetation. Burrowing owl habitat includes, but is not limited to, native and non-native grassland, interstitial grassland within shrublands with low density shrub cover, golf-courses, drainage ditches, earthen berms, unpaved airfields, pastureland, dairies, fallow fields, and agricultural use areas. Burrowing owls typically use burrows made by mammals, such as California ground squirrels (*Spermophilus beecheyi*), foxes, or badgers. They sometimes dig their own burrows and will often utilize man-made structures such as earthen berms; cement culverts; cement, asphalt, rock, or wood debris piles; or openings beneath cement or asphalt pavement. Burrowing owls often are found within, under, or in close proximity to man-made structures. Prey sources for this species include small rodents; arthropods such as spiders, crickets, centipedes, and grasshoppers; smaller birds; amphibians; reptiles; and carrion. Threats to the burrowing owl include loss of nesting burrows, habitat loss, and mortality from motor vehicles.

3.5.2.5 California Red-Legged Frog (*Rana aurora draytonii*) FT, CSC

The California red-legged frog is a federally threatened species and a CSC. It is found from Mendocino County in California south to northwestern Baja, Mexico. It may occur in a variety of habitats from near sea level to 8,000 feet in elevation and is strongly associated with permanent sources of water, including cattail and tule marshes, reservoirs, ponds, and stream sides. It prefers deep, still, or slow moving water with low salinity levels and shallow margins or riffle zones. This species may disperse far from water (up to one mile) during and after significant rain events, and other habitats may include moist woodlands and grasslands from the lowlands through the foothills. It may make seasonal movements into riparian thickets and upland habitats for foraging, where it may seek small mammal burrows, leaf litter, or other moist areas of refuge for shelter or hibernation. The metamorphosis of this species is slower than most large frog species, requiring 11 to 20 weeks of permanent water for larval development. Most individuals have a dark mask bordered by a whitish jaw stripe; a reddish-orange venter; and coarse red, yellow, black, and/or gray mottling in the groin. This subspecies of the red-legged frog has experienced dramatic population declines since the late nineteenth century; some estimates claim a 75 percent rate of disappearance from its former range. Threats to this species include habitat loss and predation by non-native species such as bullfrogs and non-native fishes. In addition, this species was historically exploited as a source of frog legs for human consumption.

3.5.2.6 Coast Horned Lizard (*Phrynosoma blainvillii*) CSC

The coast horned lizard is a CSC found along the Pacific coast of California on the western side of the Sierra Mountains to the Baja peninsular area in Mexico. This species is found in many habitats including oak woodlands, chaparral, coastal sage scrub, grasslands, valleys, foothills, riparian wetlands, conifer forests, and semiarid mountains up to 8,000 feet amsl. It inhabits sandy washes or areas with loose, fine, sandy soils for burying and having low brush for cover and open areas for basking. It feeds primarily on harvester ants and other native species of ants. Populations of this species have been reduced due to development, agriculture, and the introduction of Argentine ants that heavily compete with native ant species (Stebbins 2003). This species is approximately 2 to 4 inches in snout to vent length (adult) with numerous elongated and pointed scales (spines) on the dorsal side and two rows of enlarged scales along the flank. This species is brown, yellowish, reddish, or gray with several dark bands that cross the back with highlighted white areas along the rear of the bands (Sherbrooke 2003).

3.5.2.7 Cooper's Hawk (*Accipiter cooperii*) WL

The Cooper's hawk (nesting) is a CDFG WL species. This species occurs as a migrant and/or resident over most of the U.S. from southern Canada to northern Mexico. Favored habitats include open woodlands, mature forests, woodland edges, and river groves. More recently, the Cooper's hawk has been known to breed in suburban and urban areas with similar tree structure to native habitats. This medium-sized (14 to 20 inches) hawk is well-adapted for hunting birds as prey with its long tail and short, rounded wings; these features allow maneuverability in pursuit and on the ambush. It is similar in appearance to the sharp-shinned hawk (*Accipiter striatus*) but is distinguished by its larger size, more rounded tail, and darker crown. In addition to birds, it may also take amphibians, reptiles, and small mammals as supplemental prey items. Historic population losses resulted from the widespread use of DDT. Other threats include habitat loss and illegal hunting (Remsen 1978).

3.5.2.8 Desert Tortoise (*Gopherus agassizzi*) FT, ST

The desert tortoise is a federal- and state-listed threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo Counties, as well as most of San Bernardino, Riverside, and Imperial Counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. It is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark gray-brown. Besides range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

3.5.2.9 Ferruginous Hawk (*Buteo regalis*) WL

The ferruginous hawk (wintering) is a CDFG WL species. This species nests from the Canadian prairie provinces south to Oregon, Nevada, Arizona, and Oklahoma and winters in the southern half of its breeding range as well as the southwestern states from California to west Texas, then south into Mexico. It requires large, open areas of grassland, sparse shrub, or desert habitats interspersed with trees. It roosts in open areas, usually on lone trees, cliff ledge, or hill scarps. It winters in open terrain from grasslands to deserts where pocket gophers, ground squirrels, or rabbits are abundant, and it nests in either natural or human-made structures or on cliffs, buttes, cut banks, shrubs, or trees. In addition to pocket gophers, ground squirrels, and rabbits, it also eats prairie dogs, snakes, lizards, birds, large insects, and other rodents. The ferruginous hawk has distinct light and dark morphs. Light morphs are reddish or light brown above and whitish below, with rusty leg feathers and a pale tail. Dark morphs are uncommon in about less than 10 percent of the population and are a deep rufous to brown above and below with very bright white on the underside of the flight feathers and a narrow, white crescent on the underside of the wrist (Sibley 2003). This species is the largest of the buteos. The biggest threat to the ferruginous hawk is habitat loss, fragmentation, or degradation resulting from land use practices including conversion of native habitat to agriculture, urbanization, improper grazing practices, and conversion of shrubland to grassland (Collins and Reynolds 2005). Other threats include illegal shooting and collisions with cars.

3.5.2.10 Least Bell's Vireo (*Vireo bellii pusillus*) FE, SE

The least Bell's vireo is a federal-listed endangered subspecies of the Bell's vireo. This small passerine subspecies has a breeding range that is restricted to lower elevation coastal California and northwestern Baja California, Mexico, with a few inland populations (Franzreb 1989); its winter range extends into southern Baja California, Mexico (R. Hutto, pers. comm., cited in Franzreb 1989). This bird is small (approximately 4.3 to 4.7 inches in length), with an overall drab appearance (brownish grey upperparts, with a whitish underside), and a faint white eye-ring; it is most easily identified by its unique song. The least Bell's vireo typically nests in willows (*Salix* spp.) and other riparian trees/shrubs, and requires densely vegetated riparian habitat along streams and rivers during the spring and summer months to breed; for the most part, it forages in habitat adjacent to its nesting territory, which is typically riparian or chaparral (Gray and Greaves 1984; Franzreb 1989; USFWS 1994). Least Bell's vireos typically glean insects from the leaves of trees and shrubs. While adult vireos have few natural predators, nest predation by mammals (several of them introduced) and other birds occurs. The two major threats and subsequent factors in the decline of least Bell's vireo populations are loss of riparian habitat from urban and agricultural development, overgrazing, flood control projects and logging operations, and nest parasitism by the brown headed-cowbird (Franzreb 1989; CBD 2011). Despite historic least Bell's vireo population losses (followed by federal protection in the 1980's), recent trends indicate that populations are increasing, with populations returning to parts of its former range and colonizing some new areas (USFWS 1998).

3.5.2.11 Le Conte's Thrasher (*Toxostoma lecontei*) CSC

The Le Conte's thrasher is a CSC in the San Joaquin Valley area. It occurs in deserts of the southwest U.S., southwestern Utah, southern Arizona, and northwestern Mexico (Weigand and Fitton 2008). Habitat includes open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; and in Joshua tree habitat with scattered shrubs. Le Conte's thrasher is a medium-sized songbird with a long dark tail, black decurved bill, and a plain grayish or sandy-colored body. It is distinguished from other

thrashers by its unspotted breast, deep buff crissum, dark eye, and dark tail that contrasts sharply with its body. Le Conte's thrashers forage as generalists on bare ground and in vegetation litter under shrubs by scratching the soil and overturning objects (Weigand and Fitton 2008). In some parts of its range, this thrasher has lost extensive habitat to development; irrigated lawns, groves, and fields have been created over valuable xeric habitat. Development, wild burros, off-road vehicle recreation, and invasive plant species threaten this species (Weigand and Fitton 2008).

3.5.2.12 Loggerhead Shrike (*Lanius ludovicianus*) CSC

The loggerhead shrike (nesting) is a CSC. Its range includes most of the U.S. from southern Canada to southern Mexico. The U.S. population is largely resident to the south and migratory to the north, but migrants and residents frequently overlap throughout its range. Habitats may include oak savannas, open chaparral, desert washes, juniper woodlands, Joshua tree woodlands, and other semi-open areas. It can occupy a variety of semi-open habitats with scattered trees, large shrubs, utility poles, and other structures that serve as lookout posts for potential prey. They prefer dense, thorny shrubs and trees, brush piles, and tumbleweeds for nesting (Seattle Audubon 2008). Both adults gather nesting materials, including twigs, grass, hair, feathers, and green vegetation; but only females build the cup-shaped nests. They lay between 5 and 6 eggs, which are incubated for 15 to 17 days; and nestlings will leave the nest after 17 to 20 days but won't fly for another week (Seattle Audubon 2008). The loggerhead shrike is a carnivorous species that preys primarily upon insects but also takes lizards, mice, birds, carrion, and other opportunistic items. This bird has a habit of caching its food for later consumption by impaling its prey on thorns, sharp twigs, or barbed wire; hence the term "butcher bird." It is recognized by its black facial mask; overall gray, black, and white color pattern; relatively big head; and hook-tipped bill not unlike that of a small raptor. Habitat loss and pesticides are the two dominant factors in the decline of this species (Ehrlich et al. 1988, Scott and Morrison 1990).

3.5.2.13 Merlin (*Falco columbarius*) WL

The merlin (wintering) is a CDFG WL species. This species breeds in the northern parts of the Northern Hemisphere and winters in northern South America and northern Africa. In California, it occurs as a winter resident. Breeding habitats include open woodlands, savannas, cliffs near grasslands, and tundra. Migratory habitats include foothills, marshes, and open coastlines. Wintering habitats include open grasslands, semi-open forests, and coastal areas (i.e. beach dunes, marshes, and tidal flats). The merlin is a small falcon, slightly larger than the American kestrel (*Falco sparverius*), and appears heavier and bulkier in flight than the kestrel. The adult male merlin has a gray-blue back and crown and rufous washes on the sides of the breast. The adult female may be up to 30 percent larger than the male and has a brown back. The merlin mainly feeds on other birds, especially migrating and over-wintering waterfowl and shorebirds. Threats to its populations include habitat loss, pesticide use, and heavy metal poisoning.

3.5.2.14 Mohave Ground Squirrel (*Spermophilus mohavensis*) ST

The Mohave ground squirrel is a state-listed threatened species. The Mohave ground squirrel is specific to the Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Johnson 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 1998). They inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils. They will also feed in annual grasslands (Johnson 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study

showed that most of their diet includes seeds from winter fat (*Krascheninnikovia lanata*), spiny hopsage (*Grayia spinosa*), and saltbush (Laabs 1998). Mohave ground squirrels are active in spring and early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (Johnson 1990).

3.5.2.15 Mountain Plover (*Charadrius montanus*) CSC, FPT

The mountain plover (wintering) is a CSC and a federally Proposed Threatened Species. This species breeds from the prairie and sagebrush country of north-central Montana, eastern Wyoming, and the area around southeastern Colorado. It winters from central California along the southern border states southward to northern Mexico (Udvardy 1977). Breeding habitats include semi-arid plains, grasslands, and plateaus. Common wintering habitats consist of dry, barren ground, smooth dirt fields, agricultural fields, and shortgrass prairies. This species tends to form small flocks in the winter. It is one of the few shorebird species that prefers habitats away from water. It is an insectivore that eats flies, beetles, grasshoppers, crickets, and other insects. The mountain plover is a relatively non-descript shorebird with a short tail, long legs, plain brown plumage above, and whiter plumage below. Males develop a black patch on the forehead during the breeding season. This species is sometimes confused with the American golden plover; but unlike that species, the belly and under-wing is a clean, white color and the legs are pale. Populations are in decline due to overgrazing practices and are also linked to declining prairie dog populations; mountain plovers often use prairie dog mounds as nest sites. The continued loss and alteration of habitats on breeding and wintering grounds are the primary threats to the mountain plover.

3.5.2.16 Nelson's Antelope Squirrel (*Ammospermophilus nelsoni*) ST

The Nelson's antelope squirrel is a state threatened species. Nelson's antelope squirrels are restricted to the central and western areas of the San Joaquin Valley and inner coast ranges from 165 to 3,608 feet amsl. This species is found in alkali desert scrub and annual grasslands habitats on a variety of soil types including alluvial, loamy, sandy, gravely, or fine-textured sands. This species rarely digs its own burrows, preferring instead to use burrows made by other small mammals. Nelson's antelope squirrels are diurnally active, with most activity occurring in the early morning or late afternoon. This species is buff and yellow-brown above with a white stripe on each side and white under its tail. It can reach up to 10 inches in length. Nelson's ground squirrels feed primarily on grass and forb seeds, insects, and other green vegetation. The primary threats to this species include loss of habitat due to agriculture, urbanization, petroleum extraction, and rodent control poisons (Whitaker et al. 2008).

3.5.2.17 Pallid San Diego Pocket Mouse (*Chaetodipus fallax pallidus*) CSC

The pallid San Diego pocket mouse is a CSC. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican border. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus; and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or course gravel (Grinnell 1933, Miller and Stebbins 1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and

pinyon-juniper woodlands. Pallid San Diego pocket mouse densities have been recorded as high as 39 per hectare (Lackey 1996). This species is similar in appearance to *C.f. fallax* but is lighter in overall coloration. Population declines may be due to urban and agricultural development.

3.5.2.18 San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE, CSC

The San Bernardino kangaroo rat is a federally endangered species and a CSC. Its historic range included over 300,000 acres of alluvial sage scrub in San Bernardino and Riverside Counties in California. Its current range includes approximately 3,240 acres of suitable habitat, fragmented in about 7 distinct populations. It prefers gravelly and sandy soils in alluvial habitats where it constructs underground burrows, and it rarely occurs in dense vegetation. This species is a small, nocturnally active rodent with pale yellow and dusky brown fur, and dark brown tail stripes, footpads, and tail hairs. Unlike most kangaroo rats, it is active year-round. It can live indefinitely without water, subsisting on dry seeds that it often stores in is burrows for later consumption. It also consumes some green vegetation and insects when available. The primary threats to the continued existence of this species include habitat loss, degradation, and fragmentation due to developments related to housing, mining, and flood control (CDPR 1998).

3.5.2.19 Sierra Madre Yellow-Legged Frog (*Rana muscosa*) FE, SCE, CSC

The Sierra Madre yellow-legged frog is a federal-listed endangered, state candidate for listing as endangered, and a CSC. This species is found in the Sierra Nevadas from Fresno County to Kern County, and isolated populations are found in the San Gabriel, San Bernardino, and San Jacinto mountains of southern California, ranging in elevation from 4,500 to 11,980 feet amsl. This species was previously known as the mountain yellow-legged frog but is now considered a separate species from those found north of the Kings River north and middle forks, known as the Sierra Nevada yellow-legged frog (*Rana sierrae).* They range in size from 1.5 to 3.5 inches snout to vent length; and coloration is highly variable with olive, yellow, or brown with black or brown speckling above and pale yellow to orange below and on the hind legs (Calherps 2011b). They can be distinguished from *Rana sierra* by having slightly longer hind legs and a different mating call; both smell like garlic when handled (Calherps 2011b). Sierra Nevada populations occur in montane riparian, lodgepole pine, subalpine conifer, and wet meadows in association with lakes, ponds, and streams; southern California populations are found in lakes, ponds, and streams of montane conifer-hardwood, montane riparian, and ponderosa pine habitats. Adults feed on aquatic and terrestrial invertebrates; tadpoles feed on algae and diatoms. Sierra Madre yellow-legged frogs are closely associated with aquatic environments and can be found in vegetation or on perching rocks within a few feet of water, diving into the water when threatened. They lay their eggs in shallow water and attach them to gravel or rocks; tadpoles can take up to two over-wintering periods to complete their aquatic development. They are diurnally active and will hibernate over the winter under the ice, and southern populations may estivate. Threats to this species include bullfrogs, non-native trout, cattle grazing, mining, off-road vehicles, public dumping, chytrid fungus, fires, and excessive flooding (Calherps 2011b).

3.5.2.20 Short-Eared Owl (*Asio flammeus*) CSC

The short-eared owl (nesting) is a CSC. The range of this species is nearly worldwide; and in North America, it breeds in northern Canada and Alaska as well as in large portions of the western U.S. and the Great Lakes area. In California, this species is an uncommon winter migrant in the Central Valley, Sierra Nevada, and southern California; and it is known to breed from the San Francisco area north. Migrants

arrive in California in September to October and leave in April. Habitats include grasslands, prairies, dunes, tundra, meadows, irrigated fields, wetlands, and fresh and saltwater marshes. Within these open habitat types, it prefers denser areas where it can seek cover along the ground. Short-eared owls nest in depressions on dry ground where vegetation provides cover; nests are built with grasses, sticks, feathers, and forbs. Clutch size ranges from 3 to 14 eggs. Eggs are laid in April and incubated for 24 to 37 days, and the young fledge after 21 to 36 days. This owl is mostly active at night, but it may forage by day in late afternoons or on cloudy days. Although it feeds mostly on voles and other small mammals, it will also eat birds, amphibians, reptiles, and arthropods. It characteristically flies in an erratic and buoyant manner, low over open areas, before plunging feet first to catch prey. The short-eared owl is a relatively medium-sized owl with an overall tawny brown color and buffy wing patches. It has bold, yellow eyes that contrast sharply with its dark facial discs. Predators include golden eagles, great horned owls, snowy owls, and peregrine falcons. Small predatory mammals and large reptiles prey on eggs. Competitors include gulls, northern harriers, barn owls, and other owls. Overgrazing, destruction, and fragmentation of grasslands and wetland habitats, increased nest predation, and illegal shooting are all factors in the decline of this species.

3.5.2.21 Silvery Legless Lizard (*Anniella pulchra pulchra*) CSC

The silvery legless lizard is a CSC. Its range extends from the San Francisco Bay in California to northwestern Baja California, Mexico; and it can also be found on a few offshore islands of California. This species is found in chaparral, pine-oak woodlands, riparian woodlands, and also on beaches from sea level to around 5,100 feet. It occurs less commonly in desert scrub. Within these habitats, it prefers loose soils or sand for burrowing, moisture, warmth, and plant cover (Stebbins 2003). It forages in leaf litter during the day for insects such as termites, spiders, beetles, and larvae. On warm evenings, it may emerge to forage during the night. This legless lizard has a silver, gray, or beige dorsal coloration with a dark mid-dorsal line and is yellow below. The primary threats to the continued existence of this species include habitat loss due to agriculture and urban sprawl, overabundant non-native vegetation (i.e. iceplant on sand dunes), sand mining operations, off-road vehicle use, and other anthropogenic disturbances, including trampling and over-collecting for the pet trade.

3.5.2.22 Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) WL

The southern California rufous-crowned sparrow is a CDFG WL species. It is one of 17 recognized subspecies of the rufous–crowned sparrow, whose overall range includes parts of California, Arizona, New Mexico, Texas, Oklahoma, and Arkansas as well as Mexico; however, this sub-species is a resident of southwest California on the slopes of the Transverse and Coast ranges from Los Angeles County south to Baja California Norte; it can also be found on San Martin Island. Habitats include broken sage scrub and chaparral; native grasslands with sparse shrubs; and rocky, brush-laden hillsides and canyons with open patches. It is a small non-descript sparrow with a rusty crown, white eye-ring, dark whisker marks, and a flat-headed appearance. It is a secretive species that is more often heard than seen as it forages among the shrubs. Habitat loss is the primary factor in the decline of the southern California rufous-crowned sparrow.

3.5.2.23 Southern Grasshopper Mouse (*Onychomys torridus ramona*) CSC

The southern grasshopper mouse is a CSC. It occurs throughout desert and semi-arid habitats in the southwestern United States and much of Mexico, including western Nevada; the southern portions of California, Arizona, and New Mexico; northern Baja California; western Texas; and south to central

Mexico (Hall 1981). The subspecies *ramona* is restricted to coastal southern California, with marginal records for Mint Canyon west of Palmdale, San Fernando, Riverside, Valle Vista, Warner Pass, La Puerta Valley, Jacumba, Santee Mountains, and the mouth of the Tijuana River Valley (Hall 1981). The grasshopper mouse rangewide is often found in low, arid scrub and semi-scrub vegetation; but this subspecies is found in grasslands and sparse sage scrub habitats. It nests in burrows often dug by kangaroo rats and pocket gophers, but it may dig its own burrows in sandy or other friable substrates (Baily and Sperry 1929, Stapp 1997). Specific habitat requirements of the southern grasshopper mouse generally are unknown, but Stapp (1997) found that grasshopper mice use open areas and microhabitats dominated by gopher mounds and burrows: Stapp suggests that grasshopper mice selected these microhabitats because of greater prey availability (i.e., arthropods using burrows for refuge), greater mobility in open areas, and dust bathing sites. It prefers low to moderate shrub cover and is active year-round. Unlike most other mice, this species is primarily carnivorous. It feeds nocturnally on a variety of arthropods, including grasshoppers, beetles, and scorpions. It will also feed on frogs, salamanders, lizards, small mammals, and, occasionally, seeds. It has been known to kill species larger than itself, such as kangaroo rats. Prey items are stalked, rushed, seized, and typically killed with a bite in the head. Curiously, it emits a howl on occasion, perhaps in defense of its territory. Home ranges can be as large as four hectares; and, consistent with its carnivorous nature, population densities are normally low. It breeds from May to June; and after about 30 days, it gives birth to an average of 4 young. Predators include snakes, raptors, and a variety of mammals, including coyotes, owls, and foxes. Habitat loss and degradation are the primary threats to this species.

3.5.2.24 Swainson's Hawk (*Buteo swainsoni*) ST

The Swainson's hawk (nesting) is a state-listed threatened species. This species breeds from southwest Canada through the western U.S. into northern Mexico, with isolated breeding populations also observed in northern Illinois and the Sacramento and San Joaquin valleys of California. This species winters to South America. The Swainson's hawk forages in open stands of grass-dominated vegetation, sparse shrublands, and small, open woodlands. It typically nests in scattered trees within these grassland, shrubland, or agricultural landscapes. The Swainson's hawk feeds largely on insects, and thus is affected by pesticide use, particularly DDT and organophosphate pesticides currently used in South America (England et al. 1997).

3.5.2.25 Tehachapi Pocket Mouse (*Perognathus alticola inexpectatus*) CSC

The Tehachapi pocket mouse is a CSC. This species occurs in the Tehachapi Mountains from Tehachapi Pass southwest towards Gorman, west to Cuddy Valley near Mount Pinos, and east to the lower San Gabriel Mountains to Lake Elizabeth (Laabs 1998). The Tehachapi pocket mouse is one of two subspecies of *Perognathus alticola*; the second subspecies, *P. a. alticola,* occurs in the San Bernardino Mountains and has not been observed in over 50 years. Male Tehachapi pocket mice can reach up to 6.5 inches in length; while females are significantly smaller, reaching only 5.9 inches. Both sexes are yellowish-brown with a heavy overlay of black dorsally and white ventrally; facial markings are fainter, and the inside of the ears are white; its tail is bicolored and is slightly longer than head to body length (Laabs 1998). This species occurs in native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland, oak savanna, chaparral, coastal sage scrub, fallow grain fields, and rangeland at elevations ranging from 3,500 to 6,000 feet amsl, preferring loose, sandy soils for burrowing (Laabs 1998). They are nocturnal, feeding on seeds of grasses and forbs but will eat green vegetation and insects. Threats to this species include surface disturbance like mineral extraction and conversion of habitat to urban development.

3.5.2.26 Tricolored Blackbird (*Agelaius tricolor*) CSC

The tricolored blackbird (nesting colony) is a CSC that occurs primarily in California, with smaller populations in northern Mexico. This species is locally common in parts of the Central Valley and along the coast in Sonoma County, but is not found commonly over most parts of its range. This species breeds near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbirds forage on the ground in croplands, grassy fields, flooded land, and along edges of ponds. Breeding season usually takes place from mid-April into late July, but Orians (1960) also reported active breeding in October and November in Sacramento Valley. Over the past few decades, numbers have been declining in California (DeHaven 1975). Reasons for the decline include the conversion of marshland habitats and agricultural poisoning.

3.5.2.27 Two-Striped Garter Snake (*Thamnophis hammondii*) CSC

The two-striped garter snake is a CSC. It is found in disjunct populations from the San Francisco area in California to northwest Baja California, Mexico. Additional populations occur several hundred miles further to the south in Baja California. The two-striped garter snake is found in or near permanent and intermittent freshwater habitats, including streams, rivers, ponds, and small lakes from sea level to around 8,000 feet. Oak woodlands, brushlands, sparse coniferous forests, and riparian forests may surround its freshwater habitat. It is recognized by its lack of a mid-dorsal stripe, and its coloration is usually olive or brownish above and dull yellow to orange-red or salmon below. Intergrading color morphs are common. This highly aquatic snake is most active at dusk or at night, but it may also forage by day. Its diet includes tadpoles, toads, frogs, small fish, earthworms, California newt (*Taricha torosa torosa*) larvae, and aquatic eggs. The two-striped garter snake is a live-bearing species that gives birth to up to 36 young at a time. The historic range of this species has been lost to housing, urban development, and other human impacts by an estimated 40 percent (Stebbins 2003).

3.5.2.28 Western Pond Turtle (*Actinemys marmorata pallida*) CSC

The western pond turtle is a CSC. This species occurs along the coast of North America from Baja California up to San Francisco Bay and occurs from sea level to 5,900 feet in elevation (Calherps 2011a). It inhabits permanent or nearly permanent bodies of water in many habitat types including ponds, marshes, rivers, and streams that typically have a rocky or muddy bottom and extensive aquatic vegetation along water body margins (Calherps 2011a). The western pond turtle requires basking sites such as partially submerged logs, vegetation mats, or open mud banks. Basking sites are necessary for thermoregulation. This species occurs in a variety of habitat types including woodland, grassland, and open forest (Calherps 2011a). Although this species is considered aquatic, this species usually leaves the aquatic site to reproduce, to estivate, and to overwinter. Pond turtles hibernate under water in mud and will estivate during dry summers in soft mud, leaf litter, or wood rat nests (Calherps 2011a). The species is highly sensitive to disturbance and will quickly slide into water when they feel threatened. Pond turtles are diurnal and are most active from February to November; however, if water temperatures remain warm, this species may be active year long (Bury 2008). Mating takes place in April or May, and females will deposit eggs in a vegetated upland location that may be a considerable distance (400 m or more) from the aquatic habitat to the nest. Eggs are generally deposited in grassy, upland areas adjacent to streams during May and June, although some individuals may deposit eggs as early as April and as late as August. Hatchlings will stay at the nest location and will emerge in the early fall. Pond turtles feed on aquatic plants, invertebrates, worms, frog and salamander eggs and larvae, crayfish, carrion, and

occasionally frogs and fish (Calherps 2011a). Habitat destruction is the primary threat to this species. Dams also cause cooler water temperatures, fast flows below the dams, and human disturbance due to fishing in reservoirs behind the dams. Reservoirs also tend to have decreased vegetation cover, which decreases invertebrates (Bury 2008).

3.5.2.29 Western Mastiff Bat (*Eumops perotis*) CSC

The western mastiff bat is listed as a CSC. It is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural substrates such as cliff faces, large boulders, and exfoliating rock surfaces. It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown (TPWD 2008).

3.5.2.30 Western Snowy Plover (*Charadruis alexandrinus nivosus*) FT, CSC

The western snowy plover (nesting, coastal populations) is federally listed as threatened and is also a CSC. The Pacific coastal population breeds primarily on beaches from southern Washington to southern Baja California, Mexico. Interior populations can be found in the Central Valley of California, Oregon, Nevada, and other western states. The western snowy plover nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitats, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds, and infrequently on bluff-backed beaches (USFWS 2001). This small plover has a pale tan back, rump, and tail; white underparts; and dark patches on the sides of its neck that reach around onto the top of its chest. Habitat alteration and recreational beach use have led to a serious decline in nesting habitat and populations over the last 40 years (USFWS 2001, Page et al. 1995).

3.5.2.31 White-Faced Ibis (*Plegadis chihi*) WL

The white-faced ibis (nesting colony) is a CDFG WL species. It breeds across the western United States northward to Montana, eastward to western Louisiana, and southward to South America. It winters from southern California and Louisiana southward. The white-faced ibis usually nests in low trees and shrubs over shallow water. It inhabits primarily freshwater wetlands, especially cattail and bulrush marshes. It feeds in flooded hay meadows, agricultural fields, and estuarine wetlands. The white-faced ibis is a dark bronze-colored wader with a long, decurved bill. During the breeding season, adults have distinctive white feathers along the edges of their bare facial skin. Erosion and flood-control measures and irrigation projects have eliminated or degraded traditional nesting colony sites, leading to nest abandonment. Other losses of wetland habitat can also negatively affect populations (Ryder and Manry 1994).

3.6. SPECIES OBSERVED

The following plant species were observed while the habitat assessment was conducted on the Project site: pineapple weed (*Chamomilla discoidea*), rubber rabbitbrush (*Chrysothamnus nauseosus*), shortpod mustard (*Hirschfeldia incana*), salt heliotrope (*Heliotropium curassavicum*), four-wing saltbush, spiny

saltbrush, leafcover saltweed (*Atriplex phyllostegia*), cattle spinach (*Atriplex polycarpa*), *sea-blite (Suaeda moquinii),* filaree (*Erodium* sp.), Mojave spineflower (*Chorizanthe spinosa*), Mediterranean tamarisk, western ragweed (*Ambrosia psilostachya*), doveweed (*Croton setigerus*), soft chess (*Bromus hordeaceus*), foxtail chess (*Bromus madritensis* ssp. *rubens*), cheat grass (*Bromus tectorum*), desert saltgrass, Russian thisle (*Salsola tragus*), puncturevine (*Tribulus terrestris*), popcorn flower (*Plagiobothrys* sp.), eriastrum (*Eriastrum* sp.), seaside barley (*Hordeum marinum*), Mediterranean schismus (*Schismus barbatus*), and Nevada ephedra (*Ephedra nevadensis*).

The following wildlife species were observed or detected while the habitat assessment was conducted on the Project site: common raven (*Corvus corax*), sage sparrow (*Amphispiza belli*), loggerhead shrike, western meadowlark (Sturnella neglectta), desert cottontail (*Sylvilagus audubonii*; scat), black-tailed jackrabbit (*Lepus californicus*; scat), coyote (*Canis latrans*; scat), desert woodrat (*Neotoma lepida*; midden), and Great Basin whiptail (*Aspidoscelis tigris tigris*).

The following 17 special status plant species are considered absent from the Project site due to a lack of suitable habitat and/or they were not observed during the reconnaissance-level field survey:

- Barstow woolly sunflower
- Clokey's cryptantha
- Davidson's bush mallow
- Darwin rock cress
- desert cymopterus
- Horn's milk-vetch
- Lancaster milk-vetch
- pale-yellow layia
- Parish's popcorn-flower
- Parry's spineflower
- Peirson's morning-glory
- recurved larkspur
- round-leaved filaree
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa lily
- white pygmy-poppy

The following special status plant species has a **moderate** potential to occur on the Project site due the presence of suitable habitat, and historical records of this species occurring within three miles of the Project site:

- Sagebrush loeflingia. Undisturbed suitable habitat (saltbush scrub) for the sagebrush loeflingia was observed on the site. In addition, sagebrush loeflingia has been recorded to occur within three miles of the Project site; therefore, sagebrush loeflingia has a moderate potential to occur on the Project site.

The following special status plant species has a **high** potential to occur on the Project site due to the presence of high quality suitable habitat, and historical records of this species occurring within one mile of the Project site:

- Alkali mariposa lily. High quality alkali playa habitat suitable for the alkali mariposa lily was observed on the Project site. In addition, alkali mariposa lily has been recorded to occur within one mile of the Project site; therefore, the alkali mariposa lily has a high potential to occur on the Project site.

The following special status plant species was **present** on the Project site:

- Mojave spineflower. The Mojave spineflower is a CNPS List 4.2 species that was observed during the site visit.

The following 20 special status wildlife species are considered **absent** from the Project site due to a lack of suitable habitat:

- American badger
- Arroyo toad
- California red-legged frog
- desert tortoise
- merlin
- Nelson's antelope squirrel
- pallid San Diego pocket mouse
- San Bernardino kangaroo rat
- Sierra Madre yellow-legged frog
- short-eared owl
- silvery legless lizard
- southern California rufous-crowned sparrow
- southern grasshopper mouse
- Tehachapi pocket mouse
- tricolored blackbird
- two-striped garter snake
- western pond turtle
- western mastiff bat
- western snowy plover
- white-faced ibis

The following nine special status wildlife species have **low** potential to occur on the Project site due to the presence of habitat that meets some of the species habitat requirements (i.e., contains prey items, but lacks nesting habitat), and/or historical records of these species occurring within five miles of the Project site:

- Bell's sage sparrow
- coast horned lizard
- Cooper's hawk

- ferruginous hawk
- least Bell's vireo
- Le Conte's thrasher
- Mohave ground squirrel
- mountain plover
- Swainson's hawk

The following special status wildlife species has a **moderate** potential to occur on the Project site due the presence of suitable quality habitat, and historical records of this species occurring within five miles of the Project site:

- Burrowing owl. Several burrows suitable for the burrowing owl were observed on the Project site. Several potential prey species were also observed or detected (i.e., presence of burrows and scat). In addition, burrowing owls have been recorded to occur within three miles of the Project site; therefore, the burrowing owl has a moderate potential to occur on the Project site.

The following special status animal species was **present** on the Project site:

- Loggerhead shrike. The loggerhead shrike was observed on the Project site during the reconnaissance-level survey. An adult shrike was seen foraging with two juveniles. This site offers high quality habitat preferred by this species of bird (open shrubby area with perches to hunt prey and several larger *Tamarisk* trees to potentially nest in.

SECTION 4.0 – CONCLUSIONS

4.1. SPECIAL STATUS SPECIES

Of the 20 special status plant species known to occur within the vicinity of the Project site, 17 are considered absent due to lack of suitable habitat and/or no historical records of these species have been recorded within 10 miles of the Project site.

The Mojave spineflower was observed onsite during the survey; this species was present throughout multiple portions of the western half of the Project site. The alkali mariposa lily has a high potential to occur on this Project site due to the presence of high quality suitable habitat and occurrences within one mile. In addition, the sagebrush loeflingia has a moderate potential to occur onsite (occurances within three miles and suitbable habitat was identified on site). A focus plant survey is recommended for these sensitive plant species during May 2012 (blooming period). A focused sensitive plant survey was not conducted during the September 2011 site visit.

Of the 31 special status wildlife species known to occur within the vicinity of the Project site, 29 are considered absent or have a low potential to occur due to lack of suitable habitat and/or no historical records documented within 10 miles of the Project site.

Focused surveys for Mohave ground squirrel and desert tortoise may be required by CDFG for sites within five miles west of the State-route 14. However, these species were determined to have a low potential to occur within the Project site due to low quality habitat.

No further surveys for the remaining low potential special status species and are recommended at this time. The remaining two special status wildlife species were either present on the Project site or have a moderate potential to occur on the Project site.

4.1.1 Burrowing Owl

The burrowing owl has a moderate potential to occur on the Project site. Although burrowing owls are not federal- and/or state-listed as endangered or threatened, this species is listed as a CSC. While the majority of CSC listed species do not typically require focused surveys, specific focused survey protocol for the burrowing owl has been developed by the California Burrowing Owl Consortium and adopted by CDFG.

4.1.2 Loggerhead shrike

The loggerhead shrike was observed on the Project site during the reconnaissance-level survey. Additionally, scattered *Tamarisk* was identified that could support nesting on site. Although loggerhead shrikes are not federal- and/or state-listed as endangered or threatened, this species is listed as a CSC.

4.2. JURISDICTIONAL WATERS

The Project is within a desert playa with cracked clay soils indicative of pooling of water. Furthermore, a manmade irrigation ditch was present on the Project site. However, a formal delineation was not conducted.

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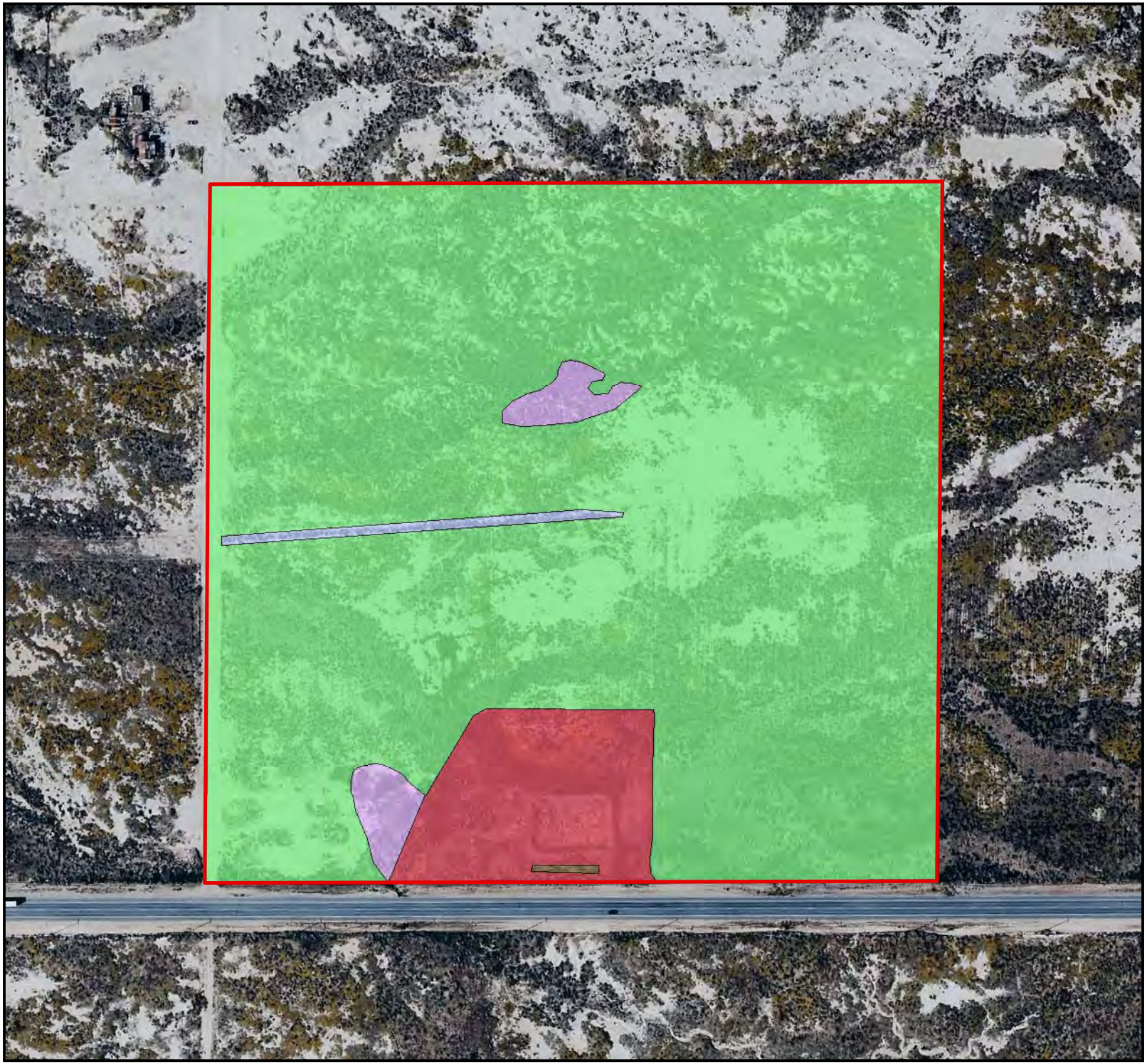
APPENDIX A – VEGETATION COMMUNITIES MAP



Vegetation Map
Lancaster WAD

Legend

- Project Site
- Disturbed Saltbush Scrub
- Disturbed or Barren
- Drainage Feature
- Salt Grass Grassland
- Saltbush Scrub

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APPENDIX B – SITE PHOTOGRAPHS

APPENDIX B – SITE PHOTOGRAPHS

	Photo 1- Lancaster WAD. Photo is taken looking southwest across the Project site from the northeast portion of the site.
	Photo 2- Lancaster WAD. Photo is taken looking northwest across the project site from the southern portion of the site.
	Photo 3- Lancaster WAD. Photo is of a Mohave spineflower population near center of Project site; it is taken looking southwest.

APPENDIX B-4

CULTURAL RESOURCE SURVEY OF SILVERADO POWER'S PROPOSED SOLAR PANEL STATIONS

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Cultural Resource Survey of Silverado Power's Proposed Solar Panel Stations - CUP #6-22, #7-29, [redacted] #9, #10A, [redacted] #11-26, [redacted] and #15-21 County of Los Angeles, California.

With Paleontological Impact Recommendations following Appendix G of the CEQA Guidelines

Final Version.

Little Buttes, CA, Del Sur, CA, Lovejoy Buttes, CA, Rosamond, CA, and Lancaster East, CA
USGS 7.5-minute Topographic Quadrangle Maps

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APPENDIX B-5

DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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APPENDIX B-5.1

PROJECT 1 NORTH LANCASTER RANCH
DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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NORTH LANCASTER RANCH, LLC
CUP 06 – SITE 22

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ATTACHMENT

Attachment 1 Soil Survey Report

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
CGS	California Geological Survey
DWR	Department of Water Resources
MY	million years
NRCS	Natural Resources Conservation Service
Project	North Lancaster Ranch Solar Project
PV	photovoltaic
SAFZ	San Andreas Fault Zone
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION

This geotechnical desktop report provides a desktop level analysis of the geotechnical issues and potential geologic hazards affecting the proposed North Lancaster Ranch Solar Project (Project) and site. This report is based on readily available geologic, hydrologic, and soil data and is intended to be used as a tool to determine feasibility and preliminary design. This report is not intended for use in final design or construction. Additional geotechnical studies, reports, and services will be required if the project proceeds to design and construction.

2.0 PROJECT DESCRIPTION

The North Lancaster Ranch Solar Facility, proposed by Silverado Power, is located in the Antelope Valley area in unincorporated northeastern Los Angeles County, approximately 12 miles northwest of Lancaster and 9.5 miles southwest of the Rosamond. The Project site is bound by Avenue A-6 to the north, 110th Street West to the west, 100th Street West to the east, and West Avenue B to the south. The Project site comprises approximately 240 acres of previously disturbed agricultural land that is currently fallow. The proposed Project site will have a generating capacity of 20 megawatt alternating current consisting of a ground-mounted fixed-tilt or tracking crystalline or thin film photovoltaic module system design. A regional location map (Figure 21) and topographic map (Figure 2-2) show the general vicinity, site boundary, and terrain for the proposed Project area.

3.0 GEOLOGY

3.1 Regional Geology

The proposed Project is located in the Antelope Valley, approximately 48 miles north of Los Angeles, and in the western corner of the Mojave Desert physiographic province. The Mojave Desert province is a topographically closed basin that contains broad expanses of desert plains and isolated mountain ranges with elevations ranging from 2,300 to 3,500 feet above mean sea level (California Geological Survey [CGS] 2002). Annual rainfall generally ranges between 5 to 10 inches and drains into interior playas (Department of Water Resources [DWR] 2003).The Project is located in the western-wedge shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada) and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary).

The geology of the region consists of Pre-Tertiary (greater than 1,000 million years [MY] to 66 my) crystalline igneous and metamorphic rocks, Tertiary age (66 MY to 1.6 MY) sedimentary and volcanic rocks, and Quaternary age (1.6 MY to present) alluvial and sedimentary units. The Antelope Valley is underlain by up to 4,000 feet of alluvial fill from the surrounding uplands, and further underlain by basement rocks including gneiss, granite, and other metamorphic and igneous rocks. Geologic units that make up the basement complex reach the surface in some parts of the valley, and are similar to the surrounding uplands. The uplands are primarily Pre-Tertiary and Tertiary uplifted granite, gneiss, schist, and volcanic rocks, with uplifted sedimentary units in the traverse ranges to the west. Much of these units have undergone extensive deformation throughout their geologic history and continue to undergo additional folding and faulting from the tectonic processes associated with movement along the San Andreas Fault (the North American and Pacific Plate boundary).

3.2 Local Geology

The site is located on the Little Buttes United States Geological Survey (USGS) 7.5 minute topographic quadrangle. Elevations at the site range from approximately 2,490 feet in the western portion of the Project site to 2,468 feet in the eastern portion. A 100-foot-high small hill called Little Buttes is approximately 1.0 miles to the southeast of the site. The site slopes at less than 1 percent and naturally sheet drains from west to east. The site is located on relatively flat alluvial Quaternary sediments and is located approximately 10.5 miles away from the San Andreas Fault zone (SAFZ) to the southwest and 16 miles from the Garlock Fault zone to the northwest.

The general underlying geology of the site is Pleistocene and Holocene alluvial and lacustrine deposits. These deposits typically consist of compacted gravels, sand, silt, and clay; and deposits generally fine towards the central parts of the valley (Duell 1987). Coarse alluvial deposits make up the upper and lower aquifers and are separated by confining layers of clay lake deposits up to 400 feet thick. The confining layers have minor interbeds of coarser material, and experience some leakage between aquifers (Planert and Williams 1995).

4.0 SOILS

Attachment 1 includes a soil survey map and the physical properties report generated from the National Resources Conservation Service (NRCS) Web Soil Survey (U.S. Department of Agriculture [USDA] 2011). Rosamond fine sandy loam unit is present at the site (Attachment 1 and Figure 4-1). Soils have been disturbed and soil horizons may be lacking. General soil descriptions and soil erosion factors based on the soil survey map and the physical properties report (Attachment 1) are summarized below in Table 4-1.

Table 4-1 Project Area Soil Descriptions

Soil Name (Symbol)	Soil Description
Hesperia fine sandy loam (HkA)	• Well Drained • Typical profile includes: o 0 to 4 inches: Fine sandy loam o 4 to 54 inches: Fine sandy loam, sandy loam o 54 to 57 inches: Sandy loam, coarse sandy loam • The capacity of the most limiting layer to transmit water is high. • Shrink swell potential is low to moderate.
Rosamond fine sandy loam (Ro)	• Well drained • Typical profile includes: o 0 to 8 inches: Fine sandy loam o 8 to 60 inches: Stratified loam to silty clay loam • The capacity of the most limiting layer to transmit water is moderately high to high. • Shrink swell potential is low to moderate.
Rosamond loam (Rp)	• Well drained • Typical profile includes: o 0 to 8 inches: Fine sandy loam o 8 to 60 inches: Stratified loam to silty clay loam • The capacity of the most limiting layer to transmit water is moderately high to high. • Shrink swell potential is low to moderate.

4.1 Erodibility

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The two primary types of erosion, water erosion and wind erosion, are further described in the following sections.

4.1.1 Water Erosion

Water erosion of soils typically occurs during flooding or when there is surface water runoff. The erosion potential of a soil is compared using the erosion factor or the K factor which indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range from 0.02 to 0.69 with higher values indicating increased susceptibility to erosion. Table 4-2 below includes the erosion factors for the subject Project site.

Table 4-2 Soil Erosion Chracteristics

Soil Map Unit (Symbol)	Erosion Factor (K Factor) (Kw in Attachment 1)	Wind Erodibility Group
Hesperia fine sandy loam (HkA)	0.28-0.32	3
Rosamond fine sandy loam (Ro)	0.32-0.37	3
Rosamond loam (Rp)	0.32-0.37	3

Notes:

1. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. The range stated is for the entire soil profile.

Soils at the site have K factors that range from 0.32 to 0.37 (for the entire soil profile) and indicate a somewhat medium susceptibility to sheet and rill erosion. It is important to note that land disturbance and construction impacts could increase the susceptibility to soil erosion. However, with the implementation of appropriate erosion and sediment control Best Management Practices, the amount of soil loss due to water erosion is expected to be less than significant.

4.1.2 Wind Erosion

Wind erosion of soil is typical in areas with poor vegetative cover or where there is soil disturbance. Wind erodibility groups are used to assess the susceptibility of soil to wind erosion. Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The wind erodibility group is 3 for the soils at the subject site (Table 4-2) indicating somewhat medium to high susceptibility to wind erosion.

5.0 GROUNDWATER

Water levels near the property were approximately 180 feet below ground surface (bgs) in 2010, and have historically been documented in different wells at depths up to 290 feet bgs (DWR 2010). Groundwater typically flows toward topographic lows and playa lakes from the San Gabriel Mountains to the south and the Tehachapi Mountains to the west and north. However, local groundwater flow paths are often controlled by groundwater pumping conditions near Lancaster and Edwards Air Force Base. Groundwater pumping has contributed to a significant

decline in water levels, and as a result, 292 square miles of Antelope Valley subsided more than 1 foot (Sneed and Galloway 2000; Ikehara and Phillips 1994).

6.0 GEOLOGICAL AND SOIL RELATED HAZARDS

Geologic hazards are natural physical conditions that may result in damage to the land and structures or injury to people. Such hazards include seismicity (earthquakes, ground shaking, and fault rupture), landslides, liquefaction, and subsidence.

6.1 Ground Shaking/Seismicity

Seismicity near the Project site is primarily generated from the Garlock Fault zone and the SAFZ. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones, however, and could also occur at any number of active faults in the regional vicinity.

Regionally, seismicity has mostly been attributed to crustal deformation resulting from the San Andreas Fault and other local fault zones. Faults are considered active if there has been displacement in the last 11,000 years, and potentially active if there has been movement over the Quaternary period (1.6 MY to present). Several active faults and fault zones have been noted in the vicinity of the Project on both federal (USGS) and state (CGS) databases (Figure 3-1). These active faults have the ability to cause significant seismic activity in the region:

- San Andreas Fault Zone – The SAFZ is the transform boundary between the Pacific Plate and the North American Plate and has a right-lateral sense of displacement between 1.5 to 2.5 inches per year (Wallace 1990). The SAFZ has the highest probability of producing a magnitude 6.7 earthquake or greater, and has produced two 8+ magnitude earthquakes in Parkfield (150 miles from the site) and San Francisco (300 miles from the site) in the last 153 years.
- Garlock Fault Zone – The Garlock Fault is a left-lateral strike slip fault that forms the northern portion of the Antelope Valley at the base of the Tehachapi Mountains. The fault extends 200 miles northeast from the Castaic Lake region, is approximately 15.5 miles from the Project area, and has historically produced magnitude 5.7 earthquakes within 39 miles of the Project area.
- Sierra Madre and San Fernando Fault Zones – These fault zones are reverse thrust faults located approximately 35 to 47.5 miles south to southwest of the Project area. These faults zones have produced multiple 5+ magnitude earthquakes over the last 100 years.

Based on the USGS National Seismic Hazard Map (2008), the Project is located in areas mapped from 30 to 40 percent gravity for peak horizontal acceleration with a 10 percent probability of exceedance in the next 50 years. According to the USGS, and dependent on structural design, 10 percent gravity is the lower threshold at which damages to structures are likely to occur. Seismicity will affect the site and proper mitigation and structural design of facilities will be required. Structures must be designed to comply with latest California Building Code or International Building Code requirements.

6.2 Fault Rupture/Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was created to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only

addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Within these zones, development permits are withheld until geologic investigations demonstrate that ground rupture is not a threat. Local county and city data indicate that the closest fault zone is the SAFZ and that the Project is located outside of identified Alquist-Priolo Fault Zones.

6.3 Liquefaction

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. The Project site has poorly sorted coarse grained material, and with groundwater typically greater than 150 feet bgs (USGS 2008), the site has very low susceptibility to liquefaction.

6.4 Landslides and Slope Failure

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the generally low slope of less than 1 percent, the site is not at risk for landslides or slope failure. Because development of a solar facility would not result in significant changes to existing site grades, the proposed development would not increase the susceptibility to slope failure.

6.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence in the Project area are groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster to closer to 1 to 2 feet near the Project site (Sneed and Galloway 2000). Fissures and differential settling have not been observed near the site. However, historical and continued depletion of water is expected to result in future land subsidence throughout the Antelope Valley.

6.6 Collapsible Soil

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. The site is located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage will continue to follow most natural drainage patterns or drainage channels where roads or permanent grading exist. A site-specific geotechnical investigation that would identify site-specific soil characteristics is necessary to confirm the presence of such soils. If such soils exist within the upper 5 feet, mitigation could include removal of low-density soils. If soils are found at greater depths, prewatering may be a more feasible alternative.

6.7 Expansive Soil

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is

subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the years and lead to differential settlement beneath foundations. Soil series in the site are rated for a low shrink/swell potential.

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FIGURES

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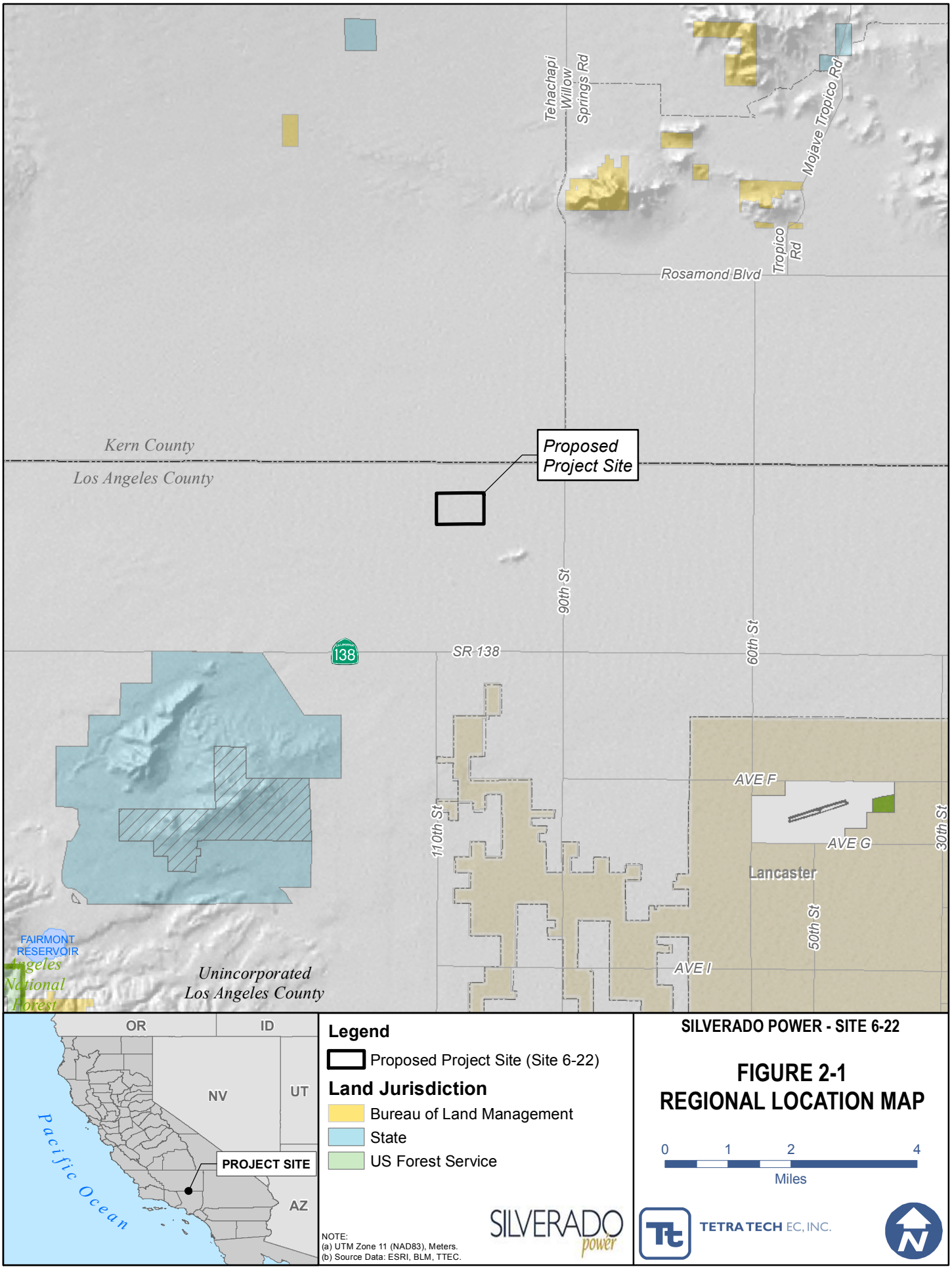

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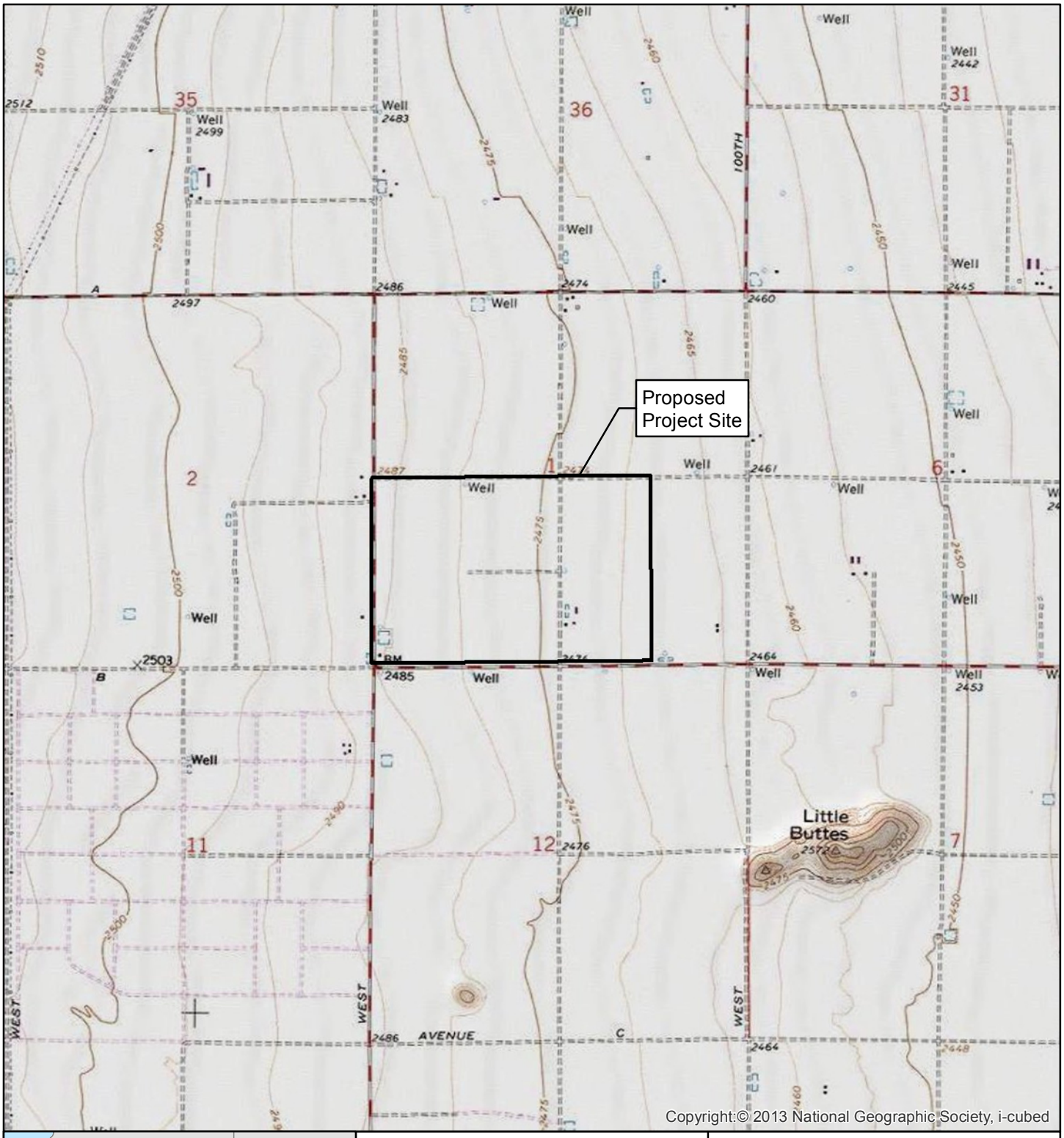

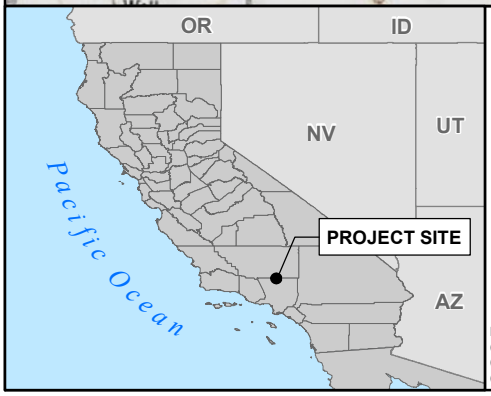

Legend

Proposed Project Site (Site 6-22)

Census Places/Towns

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Little Buttes 7.5' Topographic Map DRG.

SILVERADO power

SILVERADO POWER - SITE 6-22

FIGURE 2-2
SITE TOPOGRAPHIC MAP

0 1,000 2,000 4,000
Feet

TETRA TECH EC, INC.

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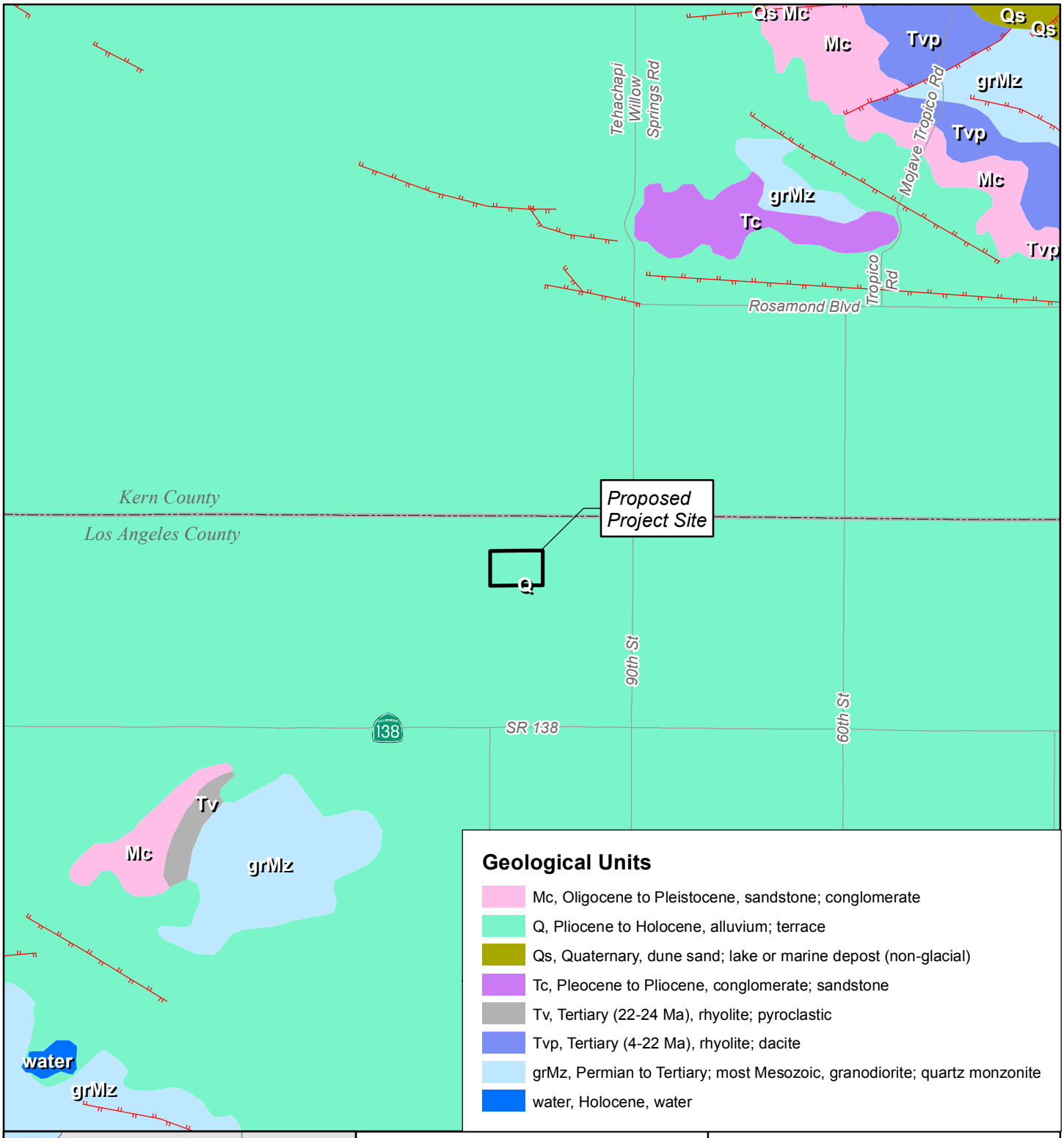

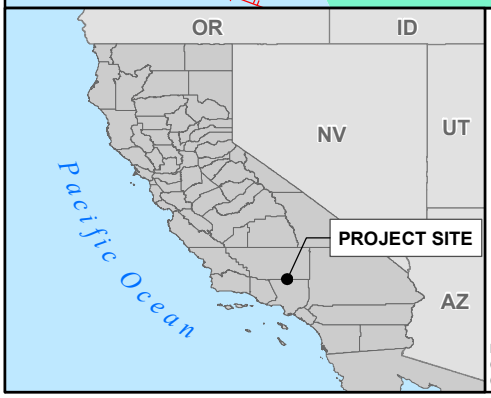

Legend

Proposed Project Site (Site 6-22)

Regional Faults

*Note: Unnamed faults are inactive.

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - SITE 6-22

FIGURE 3-1
REGIONAL GEOLOGY

0 1 2 4
Miles

TETRA TECH EC, INC.

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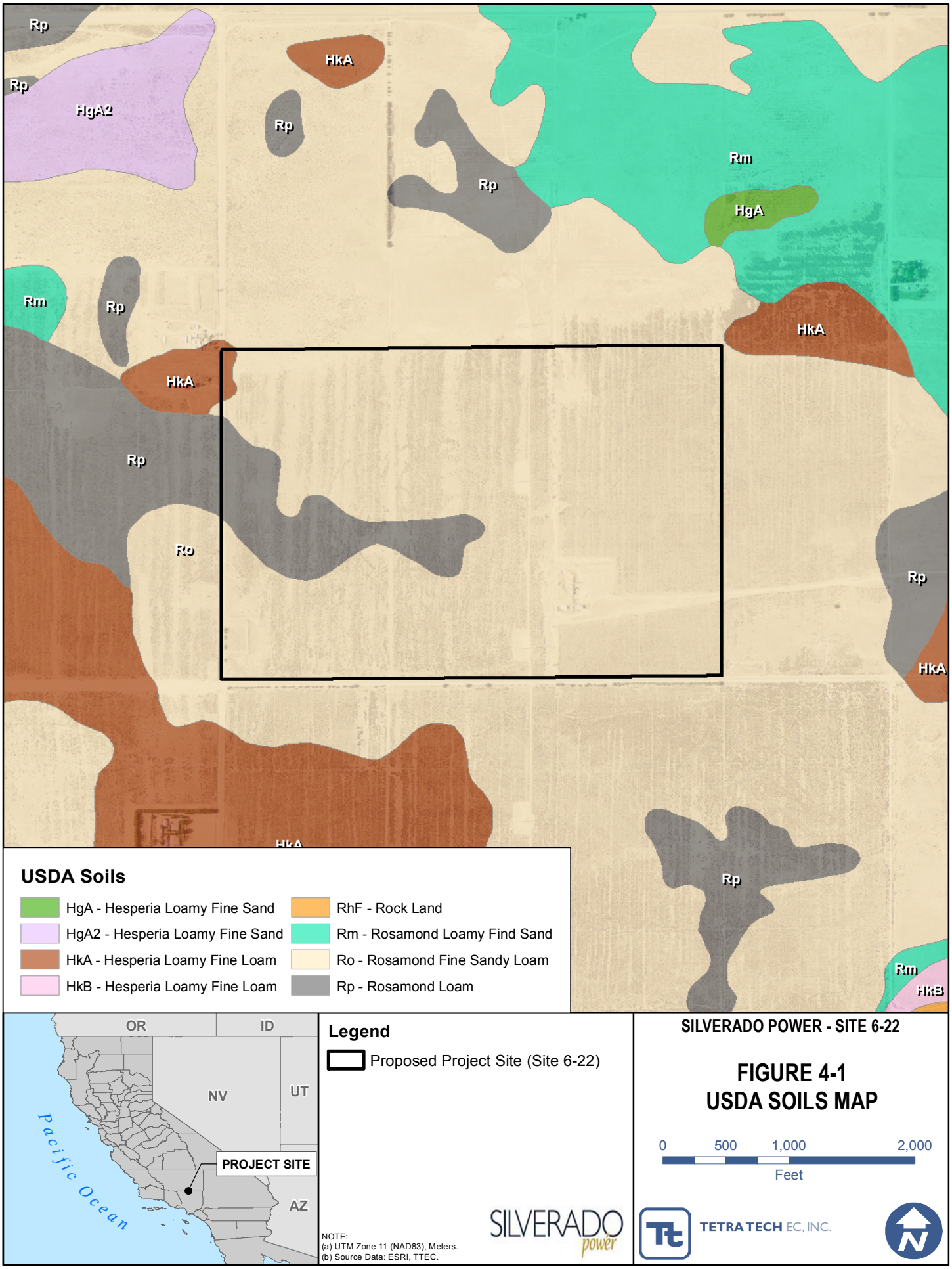

ATTACHMENT 1

SOIL SURVEY REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

North Lancaster Ranch

December 10, 2012

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:7,230 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 5, Jan 3, 2008

Date(s) aerial images were photographed: 6/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Antelope Valley Area, California (CA675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
HkA	Hesperia fine sandy loam, 0 to 2 percent slopes	1.1	0.4%
Ro	Rosamond fine sandy loam	216.2	89.9%
Rp	Rosamond loam	23.3	9.7%
Totals for Area of Interest		**240.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If

intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

HkA—Hesperia fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 200 to 4,000 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 310 days

Map Unit Composition

Hesperia and similar soils: 85 percent
Minor components: 15 percent

Description of Hesperia

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very high (about 15.6 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: LOAMY 4-9" (R030XG021CA)

Typical profile

0 to 4 inches: Fine sandy loam
4 to 54 inches: Fine sandy loam, sandy loam
54 to 77 inches: Sandy loam, coarse sandy loam

Minor Components

Cajon

Percent of map unit: 5 percent

Rosamond

Percent of map unit: 5 percent

Tray
Percent of map unit: 3 percent

Unnamed
Percent of map unit: 2 percent
Landform: Playas

Ro—Rosamond fine sandy loam

Map Unit Setting
Elevation: 1,900 to 2,900 feet
Mean annual precipitation: 3 to 8 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 240 to 260 days

Map Unit Composition
Rosamond and similar soils: 85 percent
Minor components: 15 percent

Description of Rosamond

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Available water capacity: High (about 9.9 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 1
Land capability (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: LOAMY 4-9" (R030XG021CA)

Typical profile
0 to 8 inches: Fine sandy loam
8 to 60 inches: Stratified loam to silty clay loam

Minor Components

Cajon
Percent of map unit: 10 percent

Hesperia
Percent of map unit: 4 percent

Unnamed
Percent of map unit: 1 percent
Landform: Playas

Rp—Rosamond loam

Map Unit Setting
Elevation: 1,900 to 2,900 feet
Mean annual precipitation: 3 to 8 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 240 to 260 days

Map Unit Composition
Rosamond and similar soils: 85 percent
Minor components: 15 percent

Description of Rosamond

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 4.0 mmhos/cm)
Available water capacity: High (about 10.0 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 1
Land capability (nonirrigated): 7c

Hydrologic Soil Group: B
Ecological site: LOAMY 4-9" (R030XG021CA)

Typical profile
0 to 8 inches: Loam
8 to 60 inches: Stratified loam to silty clay loam

Minor Components

Cajon
Percent of map unit: 5 percent

Hesperia
Percent of map unit: 5 percent

Unnamed
Percent of map unit: 4 percent

Unnamed
Percent of map unit: 1 percent
Landform: Playas

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM,

GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash.

Engineering Properties– Antelope Valley Area, California												
Map unit symbol and soil name	**Depth**	**USDA texture**	**Classification**		**Fragments**		**Percentage passing sieve number—**				**Liquid limit**	**Plasticity index**
			Unified	**AASHTO**	**>10 inches**	**3-10 inches**	**4**	**10**	**40**	**200**		
	In				*Pct*	*Pct*					*Pct*	
HkA—Hesperia fine sandy loam, 0 to 2 percent slopes												
Hesperia	0-4	*Fine sandy loam	SM	A-2, A-4	0	0	95-100	90-100	60-80	30-50	20-25	NP-5
	4-54	*Fine sandy loam *Sandy loam	SM	A-2, A-4	0	0	80-100	75-100	55-85	30-50	20-25	NP-5
	54-77	*Sandy loam *Coarse sandy loam	SM	A-4, A-2	0	0	80-100	75-100	45-70	25-40	20-25	NP-5
Ro—Rosamond fine sandy loam												
Rosamond	0-8	*Fine sandy loam	SM	A-4	0	0	100	100	70-85	35-50	20-30	NP-5
	8-60	*Stratified loam to silty clay loam	CL	A-6	0	0	100	100	95-100	60-85	25-40	10-20
Rp—Rosamond loam												
Rosamond	0-8	*Loam	ML	A-4	0	0	100	100	85-95	50-75	25-35	NP-10
	8-60	*Stratified loam to silty clay loam	CL	A-6	0	0	100	100	95-100	60-85	25-40	10-20

Physical Soil Properties

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion.

There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
HkA—Hesperia fine sandy loam, 0 to 2 percent slopes														
Hesperia	0-4	-71-	-17-	8-13- 18	1.50-1.60	14.00-42.00	0.09-0.13	0.0-2.9	0.0-0.5	.32	.32	5	3	86
	4-54	-71-	-17-	8-13- 18	1.50	14.00-42.00	0.13-0.15	0.0-2.9	0.0	.28	.32			
	54-77	-67-	-20-	8-13- 18	1.50-1.60	14.00-42.00	0.08-0.11	0.0-2.9	0.0	.28	.32			
Ro—Rosamond fine sandy loam														
Rosamond	0-8	-69-	-16-	10-15- 20	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.0-0.5	.32	.32	5	3	86
	8-60	—	—	18-27- 35	1.40-1.50	4.00-14.00	0.15-0.18	3.0-5.9	0.0	.37	.37			
Rp—Rosamond loam														
Rosamond	0-8	-43-	-40-	10-18- 25	1.45-1.55	4.00-14.00	0.14-0.16	0.0-2.9	0.0-0.5	.32	.32	5	5	56
	8-60	—	—	18-27- 35	1.40-1.50	4.00-14.00	0.15-0.18	3.0-5.9	0.0	.37	.37			

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APPENDIX B-5.2

PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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WESTERN ANTELOPE BLUE SKY RANCH, LLC
CUP 07 – SITE 29

DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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ATTACHMENT

Attachment 1 Soil Survey Report

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
CGS	California Geological Survey
MY	million years
NRCS	Natural Resources Conservation Service
PV	photovoltaic
Project	Western Antelope Blue Sky Ranch Solar Project
SAFZ	San Andreas Fault Zone
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION

This geotechnical desktop report provides a desktop level analysis of the geotechnical issues and potential geologic hazards affecting the proposed Western Antelope Blue Sky Ranch Solar Project (Project) and site. This report is based on readily available geologic, hydrologic, and soil data and is intended to be used as a tool to determine feasibility and preliminary design. This report is not intended for use in final design or construction. Additional geotechnical studies, reports, and services will be required if the project proceeds to design and construction.

2.0 PROJECT DESCRIPTION

The Project is located in the Antelope Valley area in unincorporated north Los Angeles County, approximately 9.5 miles west of Lancaster and adjacent to the Antelope Valley electrical substation. The Project site is bounded by Avenue J8 to the north, 115th Street West to the west, 110th Street West to the east, and an unknown dirt road to the south. The Project site comprises approximately 157 acres of previously disturbed agricultural land that is currently fallow. The proposed Project consists of a 40 megawatt alternating current solar photovoltaic (PV) generating facility and a generation-tie line to the Antelope Substation. The Project will utilize crystalline silicon, or thin film, PV technology on fixed-tilt or tracker mounting supports. A regional location map (Figure 2-1) and topographic map (Figure 2-2) show the general vicinity, site boundary, and terrain for the proposed Project area.

3.0 GEOLOGY

3.1 Regional Geology

The proposed Project is located in the Antelope Valley, approximately 43 miles north of Los Angeles, and in the western corner of the Mojave Desert physiographic province. The Mojave Desert province is a topographically closed basin that contains broad expanses of desert plains and isolated mountain ranges with elevations ranging from 2,300 to 3,500 feet above mean sea level (California Geological Survey [CGS] 2002). Annual rainfall generally ranges between 5 to 10 inches and drains into interior playas (Department of Water Resources [DWR] 2003).The Project is located in the western wedge-shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada) and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary).

The geology of the region consists of Pre-Tertiary (greater than 1,000 million years [MY] to 66 MY) crystalline igneous and metamorphic rocks, Tertiary age (66 MY to 1.6 MY) sedimentary and volcanic rocks, and Quaternary age (1.6 MY to present) alluvial and sedimentary units. The Antelope Valley is underlain by up to 4,000 feet of alluvial fill from the surrounding uplands, and further underlain by basement rocks including gneiss, granite, and other metamorphic and igneous rocks. Geologic units that make up the basement complex reach the surface in some parts of the valley, and are similar to the surrounding uplands. The uplands are primarily Pre-Tertiary and Tertiary uplifted granite, gneiss, schist, and volcanic rocks, with uplifted sedimentary units in the traverse ranges to the west. Much of these units have undergone extensive deformation throughout their geologic history and continue to undergo additional folding and faulting from the tectonic processes associated with movement along the San Andreas Fault (the North American and Pacific Plate boundary). Regional Geology is shown in Figure 3-1.

3.2 Local Geology

The site is located on the Del Sur United States Geological Survey (USGS) 7.5 minute topographic quadrangle. Elevations at the site range from approximately 2,720 feet in the southwest portion of the Project site to 2,600 feet in the northeast portion of the site. The site is located on relatively flat alluvial Quaternary sediments and is located approximately 2.5 miles away from the San Andreas Fault zone (SAFZ).

The general underlying geology of the site is Pleistocene and Holocene alluvial and lacustrine deposits. These deposits typically consist of compacted gravels, sand, silt, and clay; and deposits generally fine towards the central parts of the valley (Duell 1987). Coarse alluvial deposits make up the upper and lower aquifers and are separated by confining layers of clay lake deposits up to 400 feet thick. The confining layers have minor interbeds of coarser material, and experience some leakage between aquifers (Planert and Williams 1995).

4.0 SOILS

Attachment 1 includes a soil survey map and the physical properties report generated from the National Resources Conservation Service (NRCS) Web Soil Survey (U.S. Department of Agriculture [USDA] 2011). Soil map units at the site include Greenfield sandy loam, Hanford coarse sandy loam, Ramona coarse sandy loam, and Terrace escarpments (Attachment 1 and Figure 4-1). Soils have been disturbed and soil horizons may be lacking. General soil descriptions and soil erosion factors based on the soil survey map and the physical properties report (Attachment 1) are summarized below in Table 4-1.

Table 4-1 Project Area Soil Descriptions

Soil Name (Symbol)	Soil Description

Greenfield sandy loam, 2 to 9 percent slopes (GsC)	• Well drained
	• Typical profile includes:
	  ○ 0 to 20 inches: Sandy loam
	  ○ 20 to 60 inches: Sandy loam
	  ○ 60 to 80 inches: Stratified loamy sand to coarse sandy loam
	• The capacity of the most limiting layer to transmit water is high.
	• Shrink swell potential is low.

Hanford coarse sandy loam, 2 to 9 percent slopes (HbC)	• Well drained
	• Typical profile includes:
	  ○ 0 to 8 inches: Coarse sandy loam
	  ○ 8 to 39 inches: Sandy loam, coarse sandy loam
	  ○ 39 to 70 inches: Gravelly loamy coarse sand, gravelly coarse sandy loam
	• The capacity of the most limiting layer to transmit water is high.
	• Shrink swell potential is low.

Ramona coarse sandy loam, 2 to 5 percent slopes (RcB), 5 to 9 percent slopes (RcC), 9 to 15 percent slopes (RcD)	• Well drained
	• Typical profile includes:
	  ○ 0 to 20 inches: Coarse sandy loam
	  ○ 20 to 31 inches: Fine sandy loam
	  ○ 31 to 90 inches: Sandy clay loam
	• The capacity of the most limiting layer to transmit water is moderately high.
	• Shrink swell potential is low.

Soil Name (Symbol)	Soil Description
Terrace escarpments (TsF)	• Typical profile: ○ 0 to 60 inches: Varies (Parent material is Alluvium. Formed on terraces.)

4.1 Erodibility

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The two primary types of erosion, water erosion and wind erosion, are further described in the following sections.

4.1.1 Water Erosion

Water erosion of soils typically occurs during flooding or when there is surface water runoff. The erosion potential of a soil is compared using the erosion factor or the K factor which indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range from 0.02 to 0.69 with higher values indicating increased susceptibility to erosion. Table 4-2 below includes the erosion factors for the subject project site.

Table 4-2 Soil Erosion Chracteristics

Soil Map Unit (Symbol)	Erosion Factor (K Factor) (Kw in Attachment 1)	Wind Erodibility Group
Greenfield sandy loam, 2 to 9 percent slopes (GsC)	0.24-0.28	3
Hanford coarse sandy loam, 2 to 9 percent slopes (HbC)	0.15-0.28	3
Ramona coarse sandy loam, 2 to 5 percent slopes (RcB), 5 to 9 percent slopes (RcC), 9 to 15 percent slopes (RcD)	0.28	3
Terrace escarpments (TsF)	-	-

Notes:

1. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. The range stated is for the entire soil profile.

Soils at the site have K factors that range from 0.15 to 0.28 (for the entire soil profile) and indicate a low to medium susceptibility to sheet and rill erosion. It is important to note that land disturbance and construction impacts could increase the susceptibility to soil erosion. However, with the implementation of appropriate erosion and sediment control Best Management Practices, the amount of soil loss due to water erosion is expected to be less than significant.

4.1.2 Wind Erosion

Wind erosion of soil is typical in areas with poor vegetative cover or where there is soil disturbance. Wind erodibility groups are used to assess the susceptibility of soil to wind erosion. Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The wind erodibility group is 3 for the soils at the subject site (Table 4-2) indicating somewhat low to medium susceptibility to wind erosion for the soils across the site.

5.0 GROUNDWATER

Water levels near the property were approximately 235 feet below ground surface (bgs) in 2008, and have historically been documented in different wells at depths between 160 to 290 feet bgs (DWR 2010). Groundwater typically flows toward topographic lows and playa lakes from the San Gabriel Mountains to the south and the Tehachapi Mountains to the west and north. However, local groundwater flow paths are often controlled by groundwater pumping conditions near Lancaster and Edwards Air Force Base. Groundwater pumping has contributed to a significant decline in water levels, and as a result, 292 square miles of Antelope Valley subsided more than 1 foot (Sneed and Galloway 2000; Ikehara and Phillips 1994).

6.0 GEOLOGICAL AND SOIL RELATED HAZARDS

Geologic hazards are natural physical conditions that may result in damage to the land and structures or injury to people. Such hazards include seismicity (earthquakes, ground shaking, and fault rupture), landslides, liquefaction, and subsidence.

6.1 Ground Shaking/Seismicity

Seismicity near the Project site is primarily generated from the Garlock Fault zone and the SAFZ. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones, however, and could also occur at any number of active faults in the regional vicinity.

Regionally, seismicity has mostly been attributed to crustal deformation resulting from the San Andreas Fault and other local fault zones. Faults are considered active if there has been displacement in the last 11,000 years, and potentially active if there has been movement over the Quaternary period (1.6 MY to present). Several active faults and fault zones have been noted in the vicinity of the Project on both federal (USGS) and state (CGS) databases (Figure 3-1). These active faults have the ability to cause significant seismic activity in the region:

- San Andreas Fault Zone – The SAFZ is the transform boundary between the Pacific Plate and the North American Plate and has a right-lateral sense of displacement between 1.5 to 2.5 inches per year (Wallace 1990). The SAFZ has the highest probability of producing a magnitude 6.7 earthquake or greater, and has produced two 8+ magnitude earthquakes in Parkfield (150 miles from the site) and San Francisco (300 miles from the site) in the last 153 years.
- Garlock Fault Zone – The Garlock Fault is a left-lateral strike slip fault that forms the northern portion of the Antelope Valley at the base of the Tehachapi Mountains. The fault extends 200 miles northeast from the Castaic Lake region, is approximately 23 miles from the Project area, and has historically produced magnitude 5.7 earthquakes within 35 miles of the Project area.
- Sierra Madre and San Fernando Fault Zones – These fault zones are reverse thrust faults located approximately 23 to 45 miles southwest to southeast of the Project area. These faults zones have produced multiple 5+ magnitude earthquakes over the last 100 years.

Based on the USGS National Seismic Hazard Map (2008), the Project is located in areas mapped from 60 to 80 percent gravity for peak horizontal acceleration with a 10 percent probability of exceedance in the next 50 years. According to the USGS, and dependent on structural design, 10 percent gravity is the lower threshold at which damages to structures are likely to occur. Seismicity will affect the site and proper mitigation and structural design of facilities will be required. Structures must be designed to comply with latest California Building Code or International Building Code requirements.

6.2 Fault Rupture/Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was created to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Within these zones, development permits are withheld until geologic investigations demonstrate that ground rupture is not a threat. Local county and city data indicate that the closest fault zone is the SAFZ and that the Project is located outside of identified Alquist-Priolo Fault Zones.

6.3 Liquefaction

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. The Project site has poorly sorted coarse grained material, and with groundwater typically greater than 100 feet bgs (USGS 2008), the site has very low susceptibility to liquefaction.

6.4 Landslides and Slope Failure

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the relatively flat gradient with no slopes exceeding 5%, the site is not at risk for landslides or slope failure. Because development of a solar facility would not result in significant changes to existing site grades, the proposed development would not increase the susceptibility to slope failure and development of a solar facility would not result in significant changes to existing site grades.

6.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence in the Project area are groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster to closer to 1 to 2 feet near the Project site (Sneed and Galloway 2000). Fissures and differential settling have not been observed near the site. However, historical and continued depletion of water is expected to result in future land subsidence throughout the Antelope Valley.

6.6 Collapsible Soil

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. The site is located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage will continue to follow most natural drainage patterns or drainage channels where roads or permanent grading exist. A site-specific geotechnical investigation that would indentify site-specific soil characteristics is necessary to confirm the presence of such soils. If such soils exist within the upper 5 feet, mitigation could include removal of low-density soils. If soils are found at greater depths, prewatering may be a more feasible alternative.

6.7 Expansive Soil

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the years and lead to differential settlement beneath foundations. Soil series in the site are rated for a low shrink/swell potential.

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FIGURES

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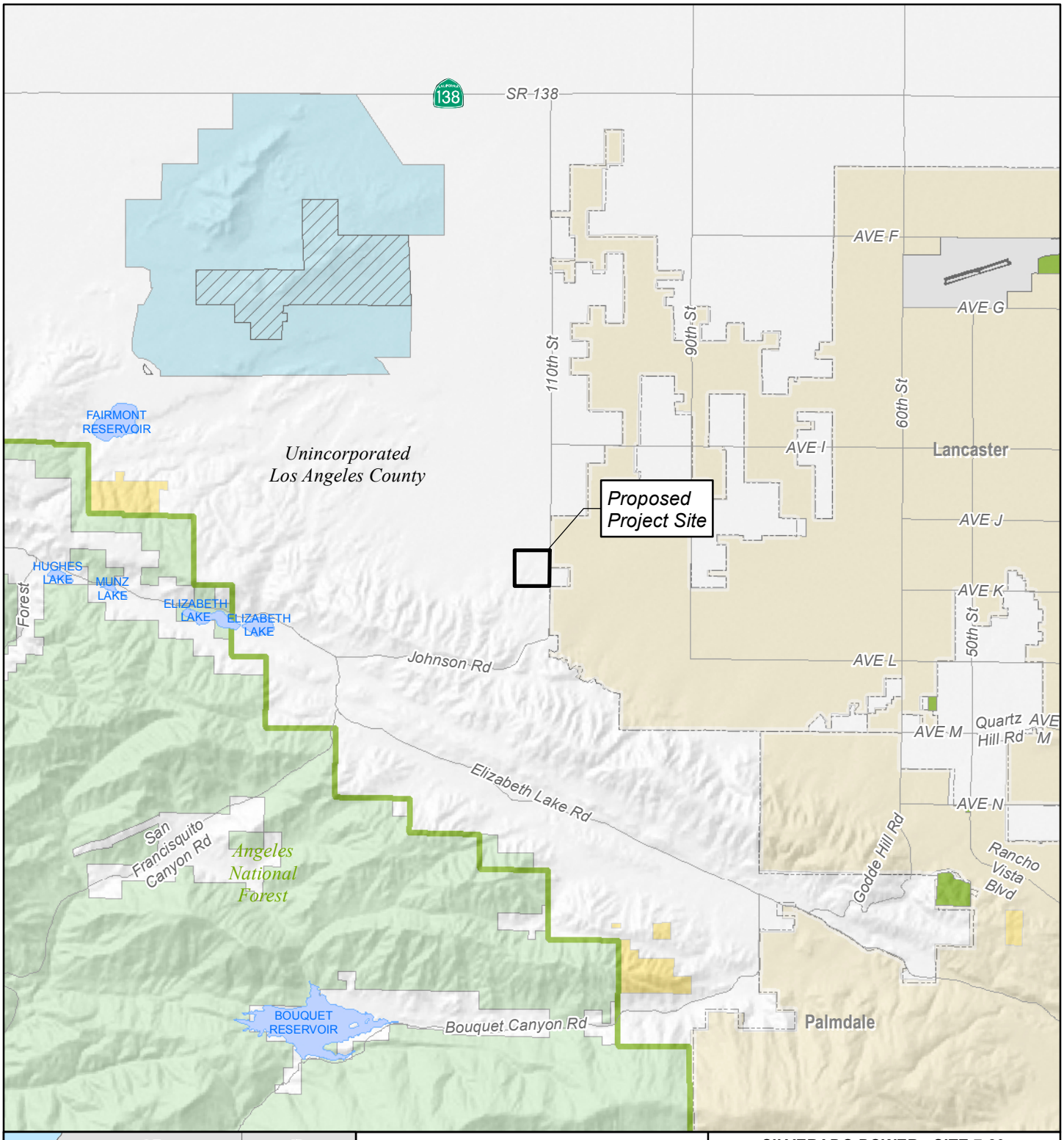

Legend

Proposed Project Site (Site 7-29)

Land Jurisdiction

- Bureau of Land Management
- State
- US Forest Service

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - SITE 7-29

FIGURE 2-1
REGIONAL LOCATION MAP

0 1 2 4
Miles

TETRA TECH EC, INC.

Date: 6/14/2011 11:48:19 AM
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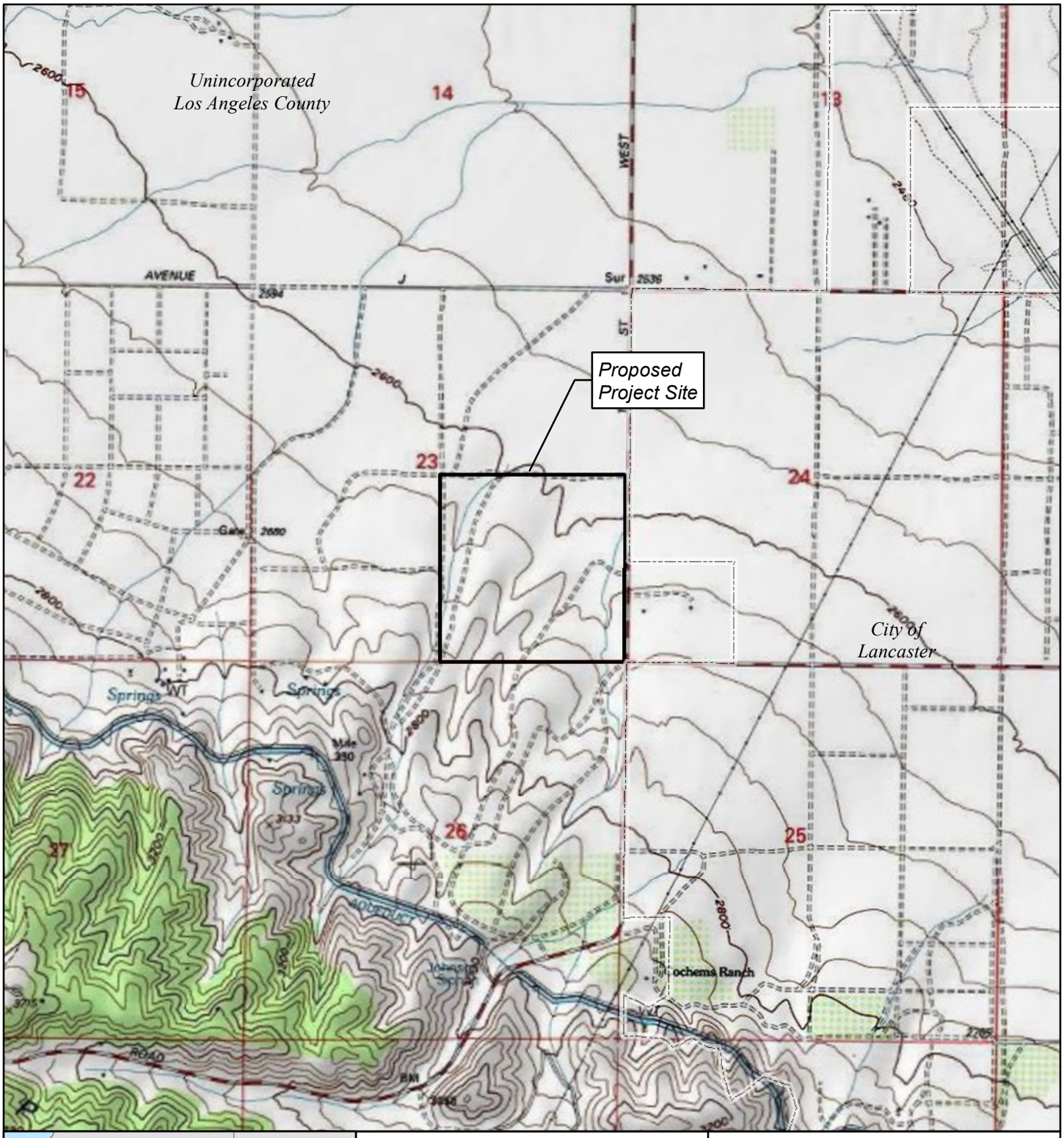
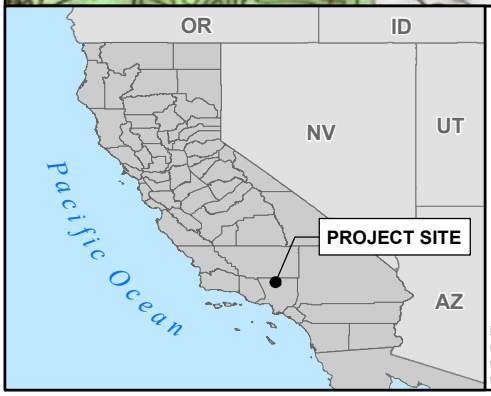




Legend

Proposed Project Site (Site 7-29)

Census Places/Towns

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Del Sur 7.5' Topographic Map DRG.

SILVERADO power

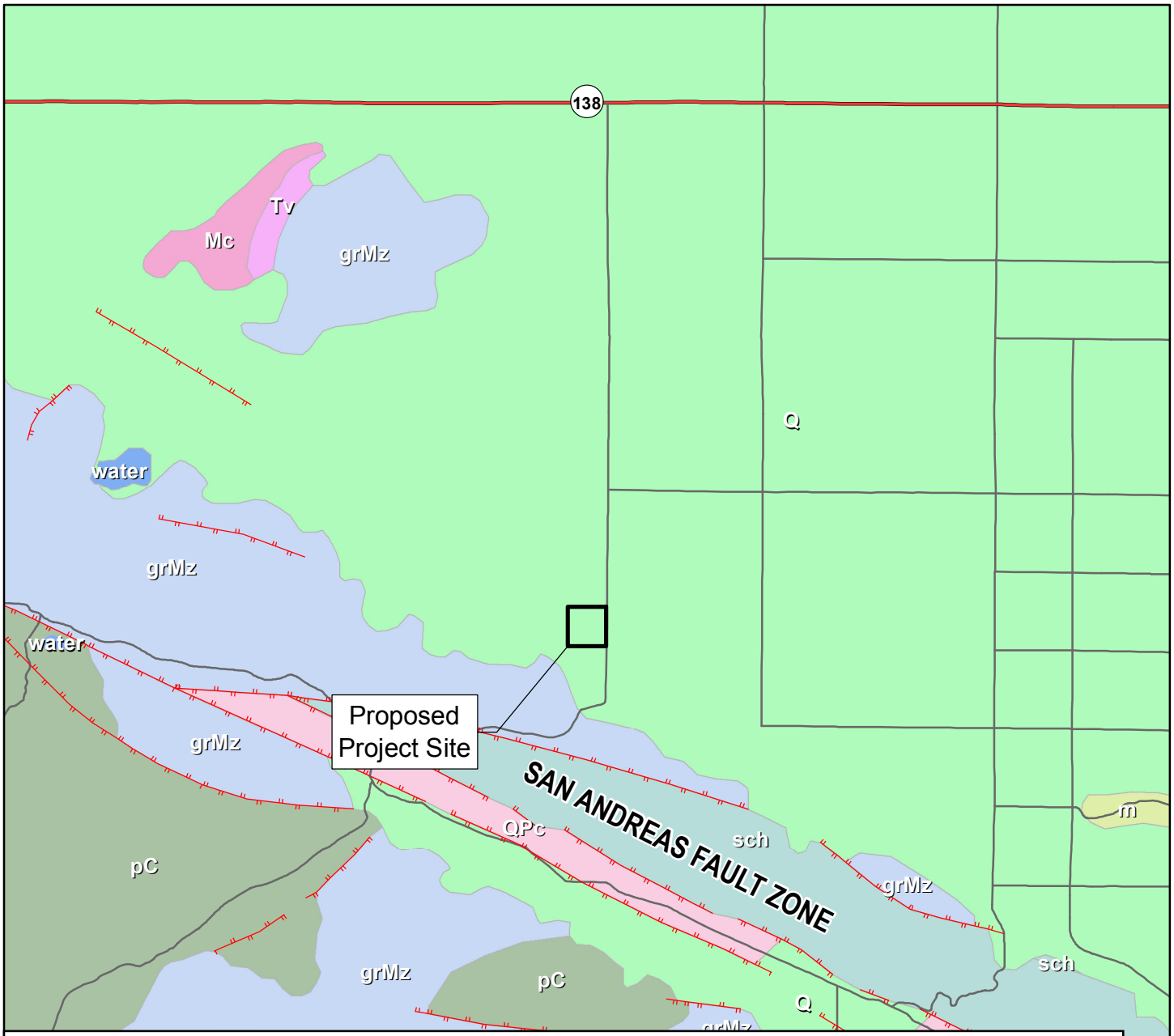
SILVERADO POWER - SITE 7-29

FIGURE 2-2
SITE TOPOGRAPHIC MAP

0 1,000 2,000 4,000
Feet

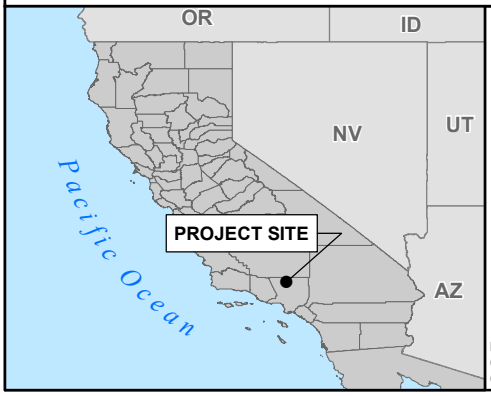
TETRA TECH EC, INC.

Printing Date: 6/14/2011 12:36:34 PM
File: R:\projects_2011\Silverado_GeoTech_Reports\maps\FIG3_1_Regional_Geology.mxd



Geological Units

- Ep, Paleocene, sandstone; mudstone
- Mc, Oligocene to Pleistocene, sandstone; conglomerate
- O, Eocene to Miocene, sandstone; mudstone
- Q, Pliocene to Holocene, alluvium; terrace
- QPc, Miocene to Pleistocene, sandstone; conglomerate
- Tv, Tertiary (22-24 Ma), rhyolite; pyroclastic
- grMz, Permian to Tertiary; most Mesozoic, granodiorite; quartz monzonite
- m, Early Proterozoic to Cretaceous, schist; gneiss
- pC, Early Proterozoic to Miocene, gneiss; granitoid
- sch, Late Cretaceous to Eocene, mica schist; mica schist
- water, Holocene, water



Legend

- Proposed Project Site (Site 7-29)
- Faults*

*Note: Unnamed faults are inactive.

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

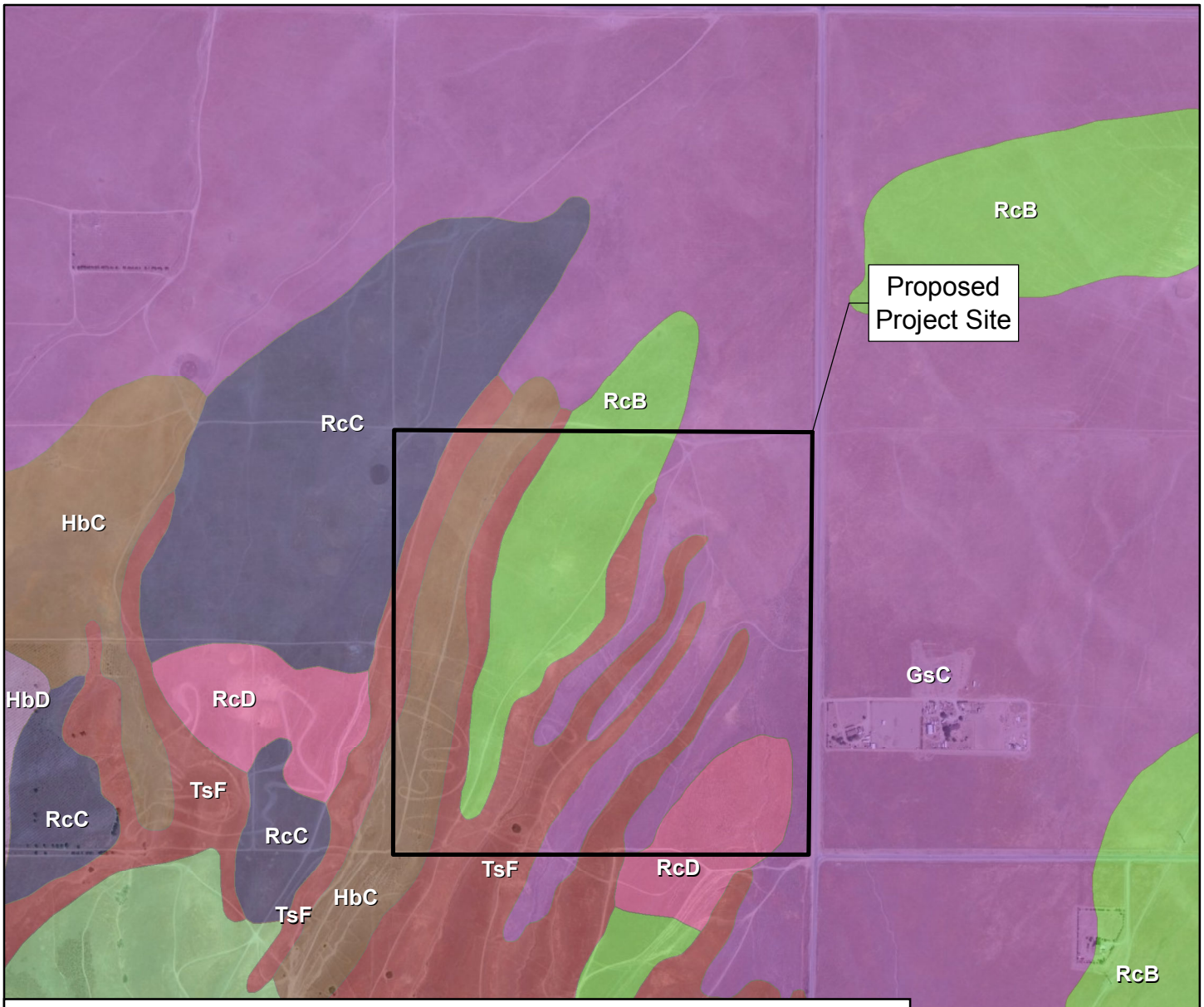
SILVERADO POWER - SITE 7-29

FIGURE 3-1
REGIONAL GEOLOGY

0 1 2 4
Miles

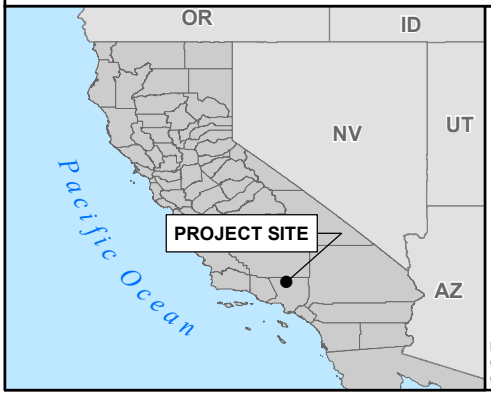
TETRA TECH EC, INC.

Printing Date: 6/10/2011 2:44:20 PM
File: R:\projects_2011\Silverado_GeoTech_Reports\maps\FIG4_1_Site_Soils.mxd



USDA Soils

- AmF2, Amargosa rocky coarse sandy loam
- GsC, Greenfield sandy loam
- GsC2, Greenfield sandy loam
- HbC, Hanford coarse sandy loam
- HbD, Hanford coarse sandy loam
- HdC, Hanford gravelly sandy loam
- RcB, Ramona coarse sandy loam
- RcC, Ramona coarse sandy loam
- RcD, Ramona coarse sandy loam
- TsF, Terrace escarpments
- VsE2, Vista coarse sandy loam
- VsF, Vista coarse sandy loam
- VsF2, Vista coarse sandy loam



Legend

Proposed Project Site (Site 7-29)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

SILVERADO POWER - SITE 7-29

FIGURE 4-1
SITE SOILS

0 460 920 1,840
Feet

TETRA TECH EC, INC.

ATTACHMENT 1

SOIL SURVEY REPORT

United States Department of Agriculture

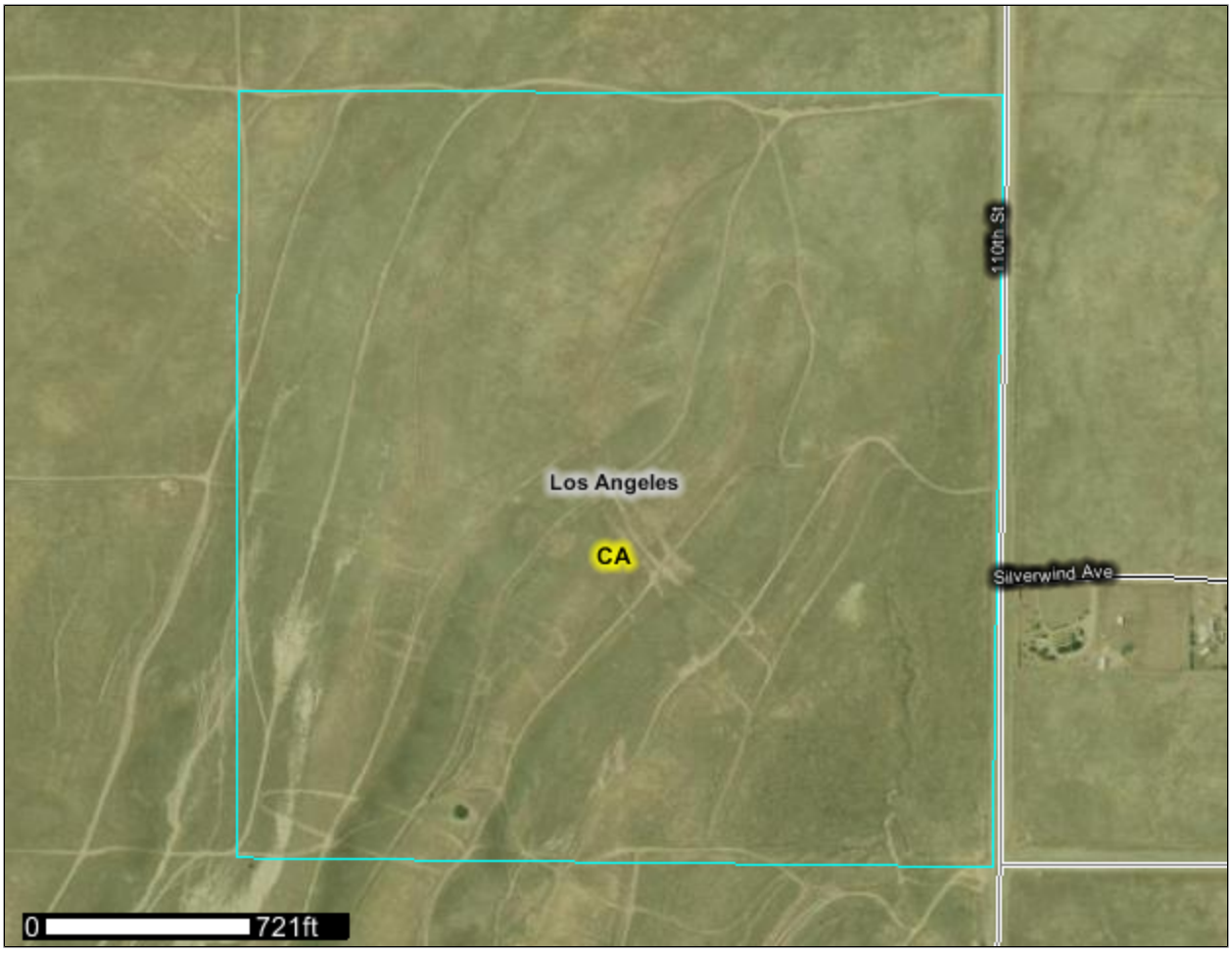
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

Western Antelope Blue Sky Ranch (Site 7/29)



May 25, 2011

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:6,310 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 5, Jan 3, 2008

Date(s) aerial images were photographed: 6/19/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Antelope Valley Area, California (CA675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
GsC	Greenfield sandy loam, 2 to 9 percent slopes	58.0	35.7%
HbC	Hanford coarse sandy loam, 2 to 9 percent slopes	18.7	11.5%
RcB	Ramona coarse sandy loam, 2 to 5 percent slopes	29.7	18.3%
RcC	Ramona coarse sandy loam, 5 to 9 percent slopes	3.8	2.3%
RcD	Ramona coarse sandy loam, 9 to 15 percent slopes	11.4	7.0%
TsF	Terrace escarpments	40.8	25.1%
Totals for Area of Interest		**162.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic

classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

GsC—Greenfield sandy loam, 2 to 9 percent slopes

Map Unit Setting

Elevation: 2,600 to 4,200 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 250 days

Map Unit Composition

Greenfield and similar soils: 85 percent
Minor components: 15 percent

Description of Greenfield

Setting

Landform: Terraces, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability (nonirrigated): 4e
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile

0 to 20 inches: Sandy loam
20 to 60 inches: Sandy loam
60 to 80 inches: Stratified loamy sand to coarse sandy loam

Minor Components

Hanford

Percent of map unit: 8 percent

Ramona

Percent of map unit: 5 percent

Unnamed

Percent of map unit: 1 percent

Unnamed

Percent of map unit: 1 percent

HbC—Hanford coarse sandy loam, 2 to 9 percent slopes

Map Unit Setting

Elevation: 2,600 to 4,200 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 250 days

Map Unit Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent

Description of Hanford

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very high (about 13.3 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability (nonirrigated): 4e
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile

0 to 8 inches: Coarse sandy loam
8 to 39 inches: Sandy loam, coarse sandy loam
39 to 70 inches: Gravelly loamy coarse sand, gravelly coarse sandy loam

Minor Components

Greenfield

Percent of map unit: 8 percent

Ramona

Percent of map unit: 5 percent

Unnamed
Percent of map unit: 2 percent

RcB—Ramona coarse sandy loam, 2 to 5 percent slopes

Map Unit Setting
Elevation: 2,700 to 3,900 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 210 to 240 days

Map Unit Composition
Ramona and similar soils: 85 percent
Minor components: 15 percent

Description of Ramona

Setting
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 4e
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile
0 to 20 inches: Coarse sandy loam
20 to 31 inches: Fine sandy loam
31 to 90 inches: Sandy clay loam

Minor Components

Greenfield
Percent of map unit: 10 percent

Hanford
Percent of map unit: 5 percent

RcC—Ramona coarse sandy loam, 5 to 9 percent slopes

Map Unit Setting
Elevation: 2,700 to 3,900 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 210 to 240 days

Map Unit Composition
Ramona and similar soils: 85 percent
Minor components: 15 percent

Description of Ramona

Setting
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 4e
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile
0 to 20 inches: Coarse sandy loam
20 to 31 inches: Fine sandy loam
31 to 90 inches: Sandy clay loam

Minor Components

Greenfield
Percent of map unit: 5 percent

Hanford
Percent of map unit: 5 percent

Unnamed
Percent of map unit: 5 percent

RcD—Ramona coarse sandy loam, 9 to 15 percent slopes

Map Unit Setting
Elevation: 2,700 to 3,900 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 210 to 240 days

Map Unit Composition
Ramona and similar soils: 85 percent
Minor components: 15 percent

Description of Ramona

Setting
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 9 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 4e
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile
0 to 20 inches: Coarse sandy loam
20 to 31 inches: Fine sandy loam
31 to 90 inches: Sandy clay loam

Minor Components

Greenfield
Percent of map unit: 5 percent

Hanford
Percent of map unit: 5 percent

Unnamed
Percent of map unit: 4 percent

Unnamed
Percent of map unit: 1 percent
Landform: Drainageways

TsF—Terrace escarpments

Map Unit Setting
Mean annual precipitation: 14 inches
Mean annual air temperature: 61 degrees F

Map Unit Composition
Terrace escarpments: 90 percent
Minor components: 10 percent

Description of Terrace Escarpments

Setting
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium

Interpretive groups
Land capability (nonirrigated): 7e
Ecological site: LOAMY 9-20" (R020XE024CA)

Typical profile
0 to 60 inches: Variable

Minor Components

Unnamed
Percent of map unit: 10 percent

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties (Western Antelope Blue Sky Ranch (Site 7/29))

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to

buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
GsC—Greenfield sandy loam, 2 to 9 percent slopes														
Greenfield	0-20	-66-	-23-	7-11- 15	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	20-60	-67-	-19-	10-14- 18	1.50-1.60	14.00-42.00	0.11-0.16	0.0-2.9	0.0-0.5	.28	.32			
	60-80	—	—	7-11- 15	1.55-1.70	14.00-42.00	0.07-0.12	0.0-2.9	0.0	.24	.32			
HbC—Hanford coarse sandy loam, 2 to 9 percent slopes														
Hanford	0-8	-68-	-19-	7-13- 18	1.50-1.60	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	8-39	-68-	-20-	7-13- 18	1.50-1.65	14.00-42.00	0.10-0.15	0.0-2.9	0.0-0.5	.28	.32			
	39-70	-85-	- 2-	7-13- 18	1.60-1.70	14.00-42.00	0.08-0.12	0.0-2.9	0.0	.15	.28			
RcB—Ramona coarse sandy loam, 2 to 5 percent slopes														
Ramona	0-20	-70-	-23-	5- 8- 10	1.60-1.65	14.00-42.00	0.09-0.11	0.0-2.9	0.5-1.0	.28	.37	5	3	86
	20-31	-68-	-21-	8-12- 15	1.45-1.60	4.00-14.00	0.10-0.15	0.0-2.9	0.0	.28	.37			
	31-90	-57-	-18-	20-25- 30	1.70-1.90	1.40-4.00	0.12-0.17	0.0-2.9	0.0	.28	.37			

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
RcC—Ramona coarse sandy loam, 5 to 9 percent slopes														
Ramona	0-20	-70-	-23-	5- 8- 10	1.60-1.65	14.00-42.00	0.09-0.11	0.0-2.9	0.5-1.0	.28	.37	5	3	86
	20-31	-68-	-21-	8-12- 15	1.45-1.60	4.00-14.00	0.10-0.15	0.0-2.9	0.0	.28	.37			
	31-90	-57-	-18-	20-25- 30	1.70-1.90	1.40-4.00	0.12-0.17	0.0-2.9	0.0	.28	.37			
RcD—Ramona coarse sandy loam, 9 to 15 percent slopes														
Ramona	0-20	-70-	-23-	5- 8- 10	1.60-1.65	14.00-42.00	0.09-0.11	0.0-2.9	0.5-1.0	.28	.37	5	3	86
	20-31	-68-	-21-	8-12- 15	1.45-1.60	4.00-14.00	0.10-0.15	0.0-2.9	0.0	.28	.37			
	31-90	-57-	-18-	20-25- 30	1.70-1.90	1.40-4.00	0.12-0.17	0.0-2.9	0.0	.28	.37			
TsF—Terrace escarpments														
Terrace escarpments	0-60	—	—	—	—	0.00	0.00	—	0.0					

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APPENDIX B-5.3

PROJECT 3 AMERICAN SOLAR GREENWORKS DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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AMERICAN SOLAR GREENWORKS, LLC
CUP 09 – SITE 06

DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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ATTACHMENT

Attachment 1 Soil Survey Report

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
CGS	California Geological Survey
DWR	Department of Water Resources
MY	million years
NRCS	Natural Resources Conservation Service
PV	photovoltaic
Project	American Solar Greenworks Solar Project
SAFZ	San Andreas Fault Zone
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION

This geotechnical desktop report provides a desktop level analysis of the geotechnical issues and potential geologic hazards affecting the proposed American Solar Greenworks Solar Project (Project) and site. This report is based on readily available geologic, hydrologic, and soil data and is intended to be used as a tool to determine feasibility and preliminary design. This report is not intended for use in final design or construction. Additional geotechnical studies, reports, and services will be required if the project proceeds to design and construction.

2.0 PROJECT DESCRIPTION

The Project is located in the Antelope Valley area in unincorporated northeast Los Angeles County, approximately 8 miles west of Lancaster. The Project site is bounded by West Avnue G to the north, 70th Street West to the east, and can be accessed via 75th Street West to the south. The Project site comprises approximately 37 acres of previously disturbed agricultural land that is currently fallow. The proposed Project consists of a 10 megawatt alternating current solar photovoltaic (PV) generating facility and a generation-tie line to the Antelope Substation. The Project will utilize crystalline silicon, or thin film, PV technology on fixed-tilt or tracker mounting supports. A regional location map (Figure 2-1) and topographic map (Figure 2-2) show the general vicinity, site boundary, and terrain for the proposed Project area.

3.0 GEOLOGY

3.1 Regional Geology

The proposed Project is located in the Antelope Valley, approximately 45 miles north of Los Angeles, and in the western corner of the Mojave Desert physiographic province. The Mojave Desert province is a topographically closed basin that contains broad expanses of desert plains and isolated mountain ranges with elevations ranging from 2,300 to 3,500 feet above mean sea level (California Geological Survey [CGS] 2002). Annual rainfall generally ranges between 5 to 10 inches and drains into interior playas (Department of Water Resources [DWR] 2003).The Project is located in the western wedge-shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada) and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary).

The geology of the region consists of Pre-Tertiary (greater than 1,000 million years [MY] to 66 MY) crystalline igneous and metamorphic rocks, Tertiary age (66 MY to 1.6 MY) sedimentary and volcanic rocks, and Quaternary age (1.6 MY to present) alluvial and sedimentary units. The Antelope Valley is underlain by up to 4,000 feet of alluvial fill from the surrounding uplands, and further underlain by basement rocks including gneiss, granite, and other metamorphic and igneous rocks. Geologic units that make up the basement complex reach the surface in some parts of the valley, and are similar to the surrounding uplands. The uplands are primarily Pre-Tertiary and Tertiary uplifted granite, gneiss, schist, and volcanic rocks, with uplifted sedimentary units in the traverse ranges to the west. Much of these units have undergone extensive deformation throughout their geologic history and continue to undergo additional folding and faulting from the tectonic processes associated with movement along the San Andreas Fault (the North American and Pacific Plate boundary). Regional geology is shown in Figure 3-1.

3.2 Local Geology

The site is located on the Del Sur United States Geological Survey (USGS) 7.5 minute topographic quadrangle. Elevations at the site range from approximately 2,395 feet in the southwest portion of the Project site to 2,385 feet in the east portion of the site. The site is located on relatively flat alluvial Quaternary sediments and is located approximately 7 miles away from the San Andreas Fault zone (SAFZ).

The general underlying geology of the site is Pleistocene and Holocene alluvial and lacustrine deposits. These deposits typically consist of compacted gravels, sand, silt, and clay; and deposits generally fine towards the central parts of the valley (Duell 1987). Coarse alluvial deposits make up the upper and lower aquifers and are separated by confining layers of clay lake deposits up to 400 feet thick. The confining layers have minor interbeds of coarser material, and experience some leakage between aquifers (Planert and Williams 1995).

4.0 SOILS

Attachment 1 includes a soil survey map and the physical properties report generated from the National Resources Conservation Service (NRCS) Web Soil Survey (U.S. Department of Agriculture [USDA] 2011). Hesperia fine sandy loam is present at the site (Attachment 1 and Figure 4-1). Soils have been disturbed and soil horizons may be lacking. General soil descriptions and soil erosion factors based on the soil survey map and the physical properties report (Attachment 1) are summarized below in Table 4-1.

Table 4-1 Project Area Soil Descriptions

Soil Name (Symbol)	Soil Description

Hesperia fine sandy loam (HkA)	• Well drained
	• Typical profile includes:
	  ○ 0 to 4 inches: Fine sandy loam
	  ○ 4 to 54 inches: Fine sandy loam, sandy loam
	  ○ 54 to 77 inches: Sandy loam, coarse sandy loam
	• The capacity of the most limiting layer to transmit water is high.
	• Shrink swell potential is low.

4.1 Erodibility

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The two primary types of erosion, water erosion and wind erosion, are further described in the following sections.

4.1.1 Water Erosion

Water erosion of soils typically occurs during flooding or when there is surface water runoff. The erosion potential of a soil is compared using the erosion factor or the K factor which indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range from 0.02 to 0.69 with higher values indicating increased susceptibility to erosion. Table 4-2 below includes the erosion factors for the subject Project site.

Table 4-2 Soil Erosion Chracteristics

Soil Map Unit (Symbol)	Erosion Factor (K Factor) (Kw in Attachment 1)	Wind Erodibility Group
Hesperia fine sandy loam (HkA)	0.28-0.32	3

Notes:

1. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. The range stated is for the entire soil profile.

Soils at the site have K factors that range from 0.28 to 0.32 (for the entire soil profile) and indicate a low to medium susceptibility to sheet and rill erosion. It is important to note that land disturbance and construction impacts could increase the susceptibility to soil erosion. However, with the implementation of appropriate erosion and sediment control Best Management Practices, the amount of soil loss due to water erosion is expected to be less than significant.

4.1.2 Wind Erosion

Wind erosion of soil is typical in areas with poor vegetative cover or where there is soil disturbance. Wind erodibility groups are used to assess the susceptibility of soil to wind erosion. Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The wind erodibility group is 3 for the soils at the subject site (Table 4-2) indicating somewhat low to medium susceptibility to wind erosion.

5.0 GROUNDWATER

Water levels near the property ranged from approximately 137 to 156 feet below ground surface (bgs) in 2005 and 135.3 to 160 bgs in 2008, and have historically been documented in different wells at depths up to 280 feet bgs (DWR 2010). Groundwater typically flows toward topographic lows and playa lakes from the San Gabriel Mountains to the south and the Tehachapi Mountains to the west and north. However, local groundwater flow paths are often controlled by groundwater pumping conditions near Lancaster and Edwards Air Force Base. Groundwater pumping has contributed to a significant decline in water levels, and as a result, 292 square miles of Antelope Valley subsided more than 1 foot (Sneed and Galloway 2000; Ikehara and Phillips 1994).

6.0 GEOLOGICAL AND SOIL RELATED HAZARDS

Geologic hazards are natural physical conditions that may result in damage to the land and structures or injury to people. Such hazards include seismicity (earthquakes, ground shaking, and fault rupture), landslides, liquefaction, and subsidence.

6.1 Ground Shaking/Seismicity

Seismicity near the Project site is primarily generated from the Garlock Fault zone and the SAFZ. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones, however, and could also occur at any number of active faults in the regional vicinity.

Regionally, seismicity has mostly been attributed to crustal deformation resulting from the San Andreas Fault and other local fault zones. Faults are considered active if there has been displacement in the last 11,000 years, and potentially active if there has been movement over the Quaternary period (1.6 MY to present). Several active faults and fault zones have been noted in the vicinity of the Project on both federal (USGS) and state (CGS) databases (Figure 3-1). These active faults have the ability to cause significant seismic activity in the region:

- San Andreas Fault Zone – The SAFZ is the transform boundary between the Pacific Plate and the North American Plate and has a right-lateral sense of displacement between 1.5 to 2.5 inches per year (Wallace 1990). The SAFZ has the highest probability of producing a magnitude 6.7 earthquake or greater, and has produced two 8+ magnitude earthquakes in Parkfield (145 miles from the site) and San Francisco (320 miles from the site) in the last 153 years.
- Garlock Fault Zone – The Garlock Fault is a left-lateral strike slip fault that forms the northern portion of the Antelope Valley at the base of the Tehachapi Mountains. The fault extends 200 miles northeast from the Castaic Lake region, is approximately 20 miles from the Project area, and has historically produced magnitude 5.7 earthquakes within 22 miles of the Project area.
- Sierra Madre and San Fernando Fault Zones – These fault zones are reverse thrust faults located approximately 30 to 35 miles south to southwest of the Project area. These faults zones have produced multiple 5+ magnitude earthquakes over the last 100 years.

Based on the USGS National Seismic Hazard Map (2008), the Project is located in areas mapped from 40 to 60 percent gravity for peak horizontal acceleration with a 10 percent probability of exceedance in the next 50 years. According to the USGS, and dependent on structural design, 10 percent gravity is the lower threshold at which damages to structures are likely to occur. Seismicity will affect the site and proper mitigation and structural design of facilities will be required. Structures must be designed to comply with latest California Building Code or International Building Code requirements.

6.2 Fault Rupture/Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was created to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Within these zones, development permits are withheld until geologic investigations demonstrate that ground rupture is not a threat. Local county and city data indicate that the closest fault zone is the SAFZ and that the Project is located outside of identified Alquist-Priolo Fault Zones.

6.3 Liquefaction

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. The Project site has poorly sorted coarse grained material, and with groundwater typically greater than 100 feet bgs (USGS 2008), the site has very low susceptibility to liquefaction.

6.4 Landslides and Slope Failure

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the generally low slope less than 1 percent, the site is not at risk for landslides or slope failure. Because development of a solar facility would not result in significant changes to existing site grades, the proposed development would not increase the susceptibility to slope failure.

6.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence in the Project area are groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster to closer to 1 to 2 feet near the Project site (Sneed and Galloway 2000). Fissures and differential settling have not been observed near the site. However, historical and continued depletion of water is expected to result in future land subsidence throughout the Antelope Valley.

6.6 Collapsible Soil

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. The site is located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage will continue to follow most natural drainage patterns or drainage channels where roads or permanent grading exist. A site-specific geotechnical investigation that would indentify site-specific soil characteristics is necessary to confirm the presence of such soils. If such soils exist within the upper 5 feet, mitigation could include removal of low-density soils. If soils are found at greater depths, prewatering may be a more feasible alternative.

6.7 Expansive Soil

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the years and lead to differential settlement beneath foundations. Soil series in the site are rated for a low shrink/swell potential.

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FIGURES

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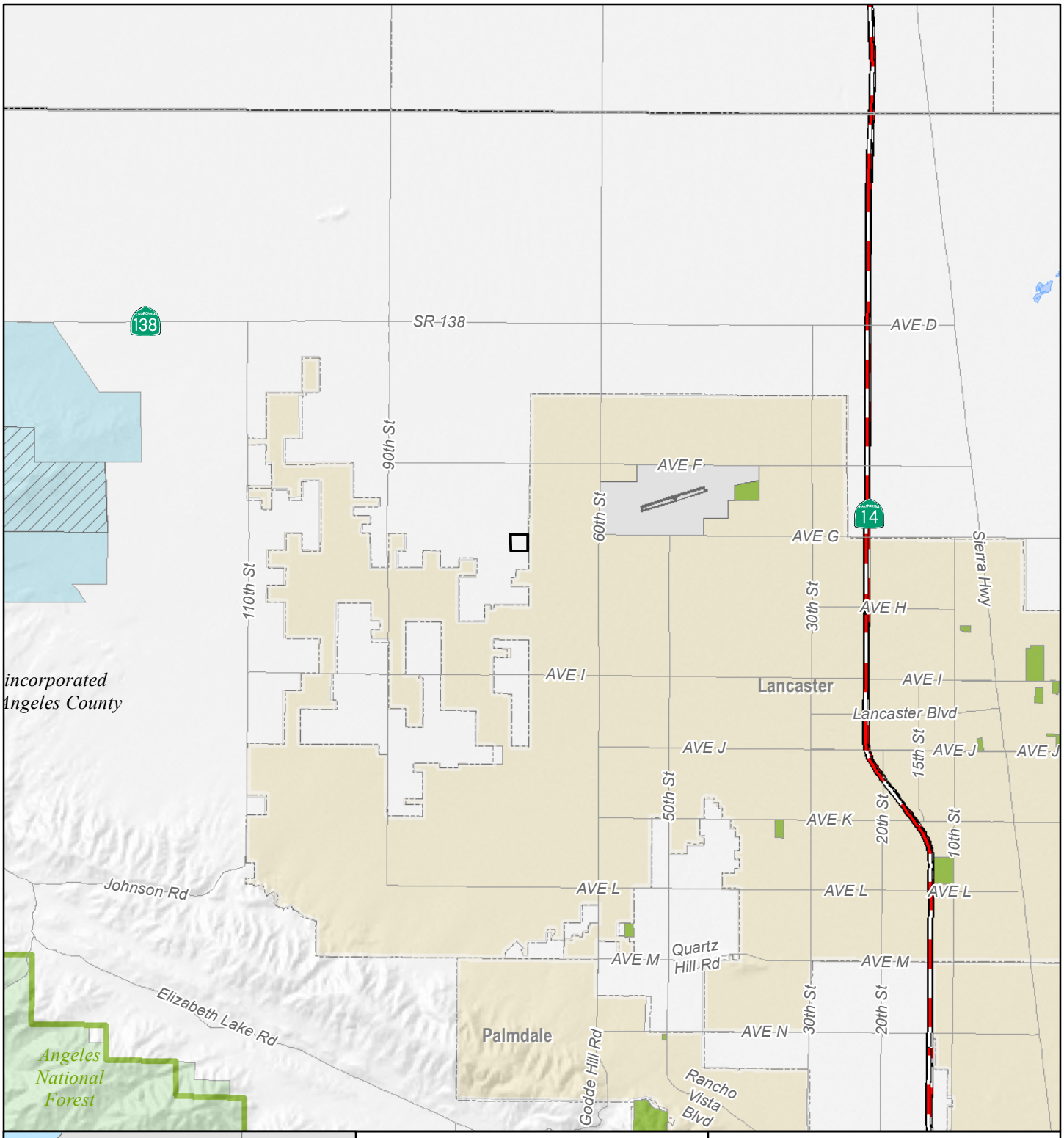

Legend

Proposed Project Site (Site 9-6)

Land Jurisdiction

Bureau of Land Management
State
US Forest Service

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - SITE 9-6

FIGURE 2-1
REGIONAL LOCATION MAP

0 1 2 4
Miles

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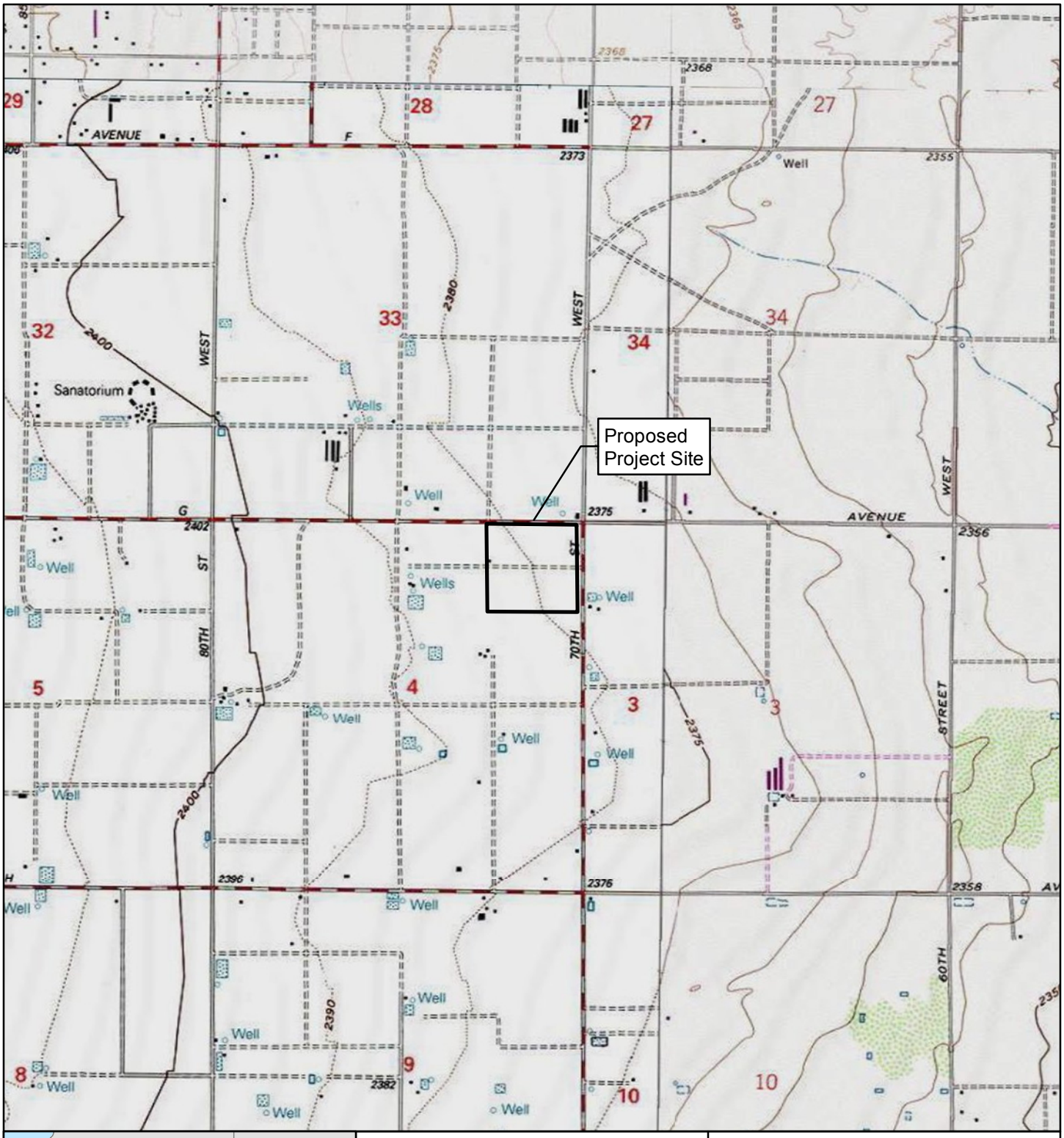

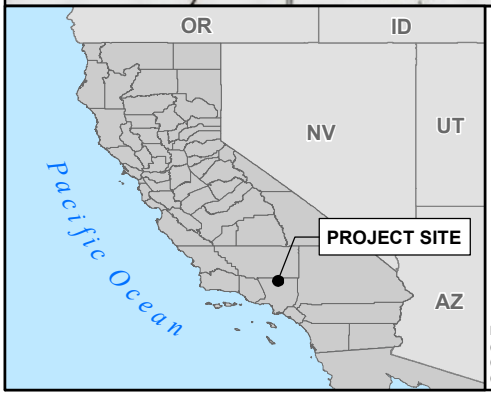

Legend

Proposed Project Site (Site 9-6)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Del Sur 7.5' Topographic Map DRG.

SILVERADO power

SILVERADO SOLAR - SITE 9-6

FIGURE 2-2
SITE TOPOGRAPHIC MAP

0 1,000 2,000 4,000
Feet

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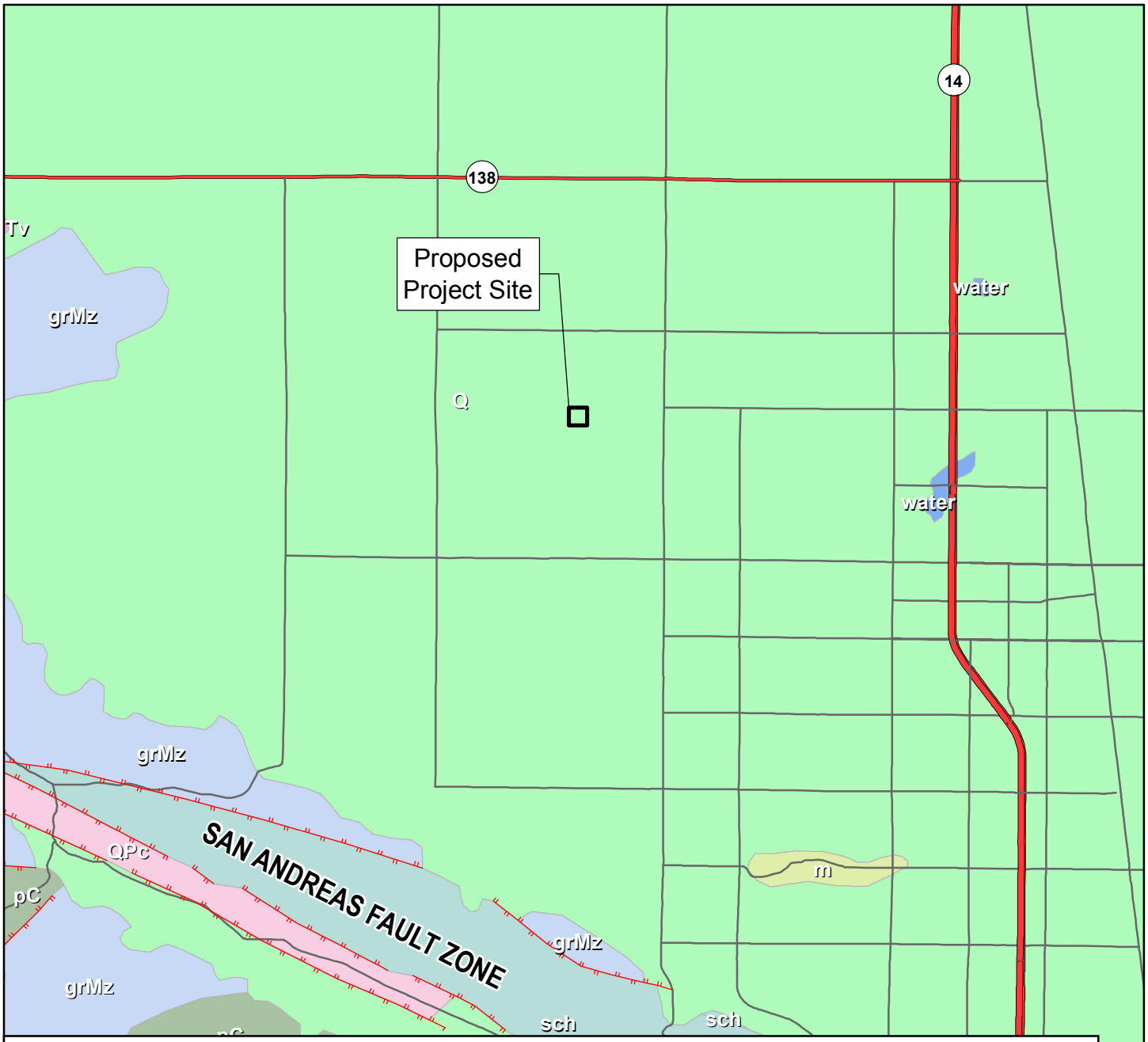
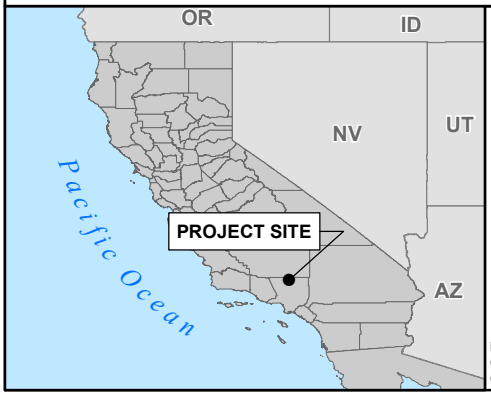


Geological Units

- Ep, Paleocene, sandstone; mudstone
- Mc, Oligocene to Pleistocene, sandstone; conglomerate
- Q, Pliocene to Holocene, alluvium; terrace
- QPc, Miocene to Pleistocene, sandstone; conglomerate
- Tv, Tertiary (22-24 Ma), rhyolite; pyroclastic
- grMz, Permian to Tertiary; most Mesozoic, granodiorite; quartz monzonite
- m, Early Proterozoic to Cretaceous, schist; gneiss
- pC, Early Proterozoic to Miocene, gneiss; granitoid
- sch, Late Cretaceous to Eocene, mica schist; mica schist
- water, Holocene, water



Legend

- Proposed Project Site (Site 9-6)
- Faults*

*Note: Unnamed faults are inactive.

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

TETRA TECH EC, INC.

SILVERADO POWER - SITE 9-6

FIGURE 3-1
REGIONAL GEOLOGY

0 1 2 4
Miles

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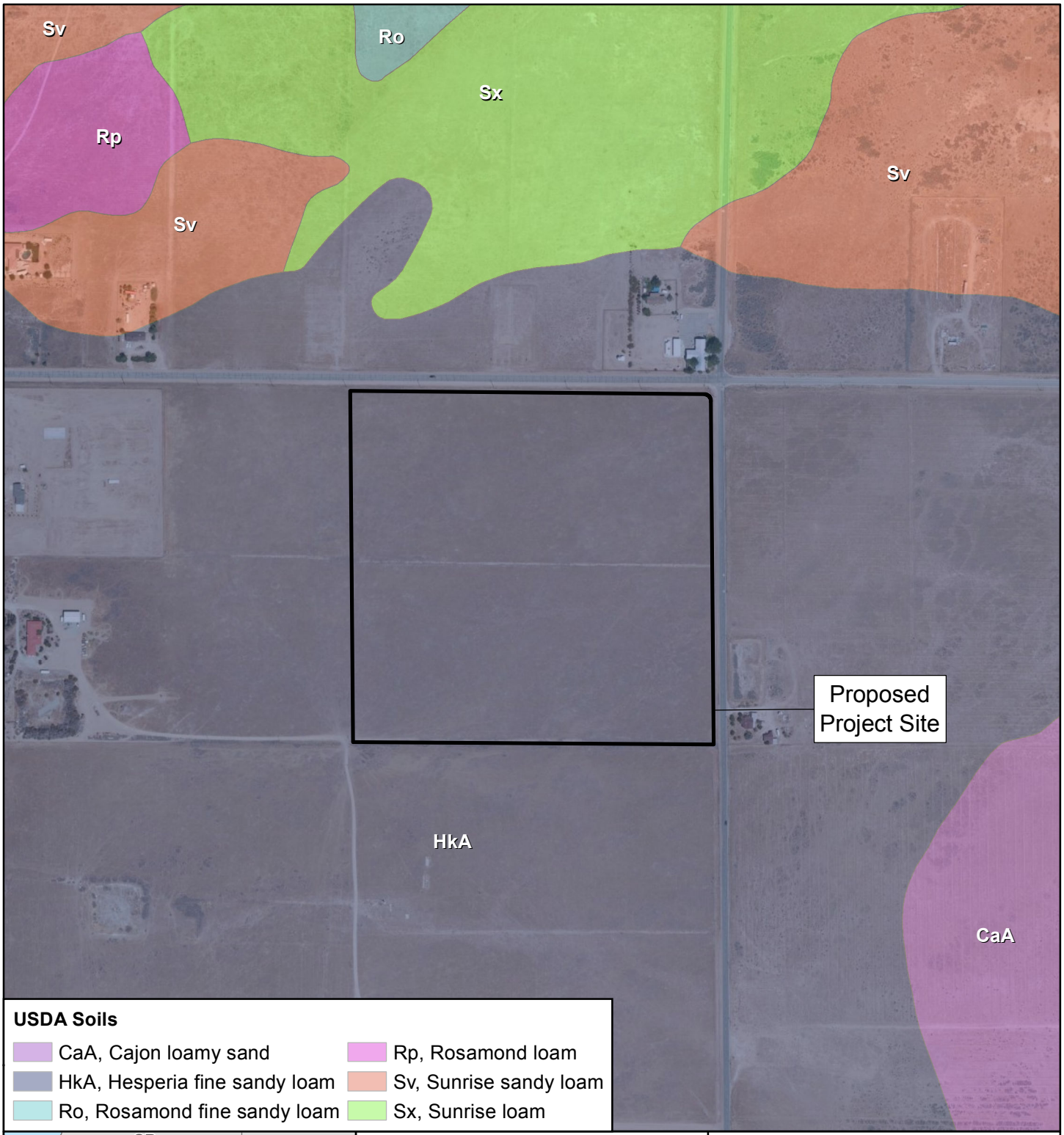
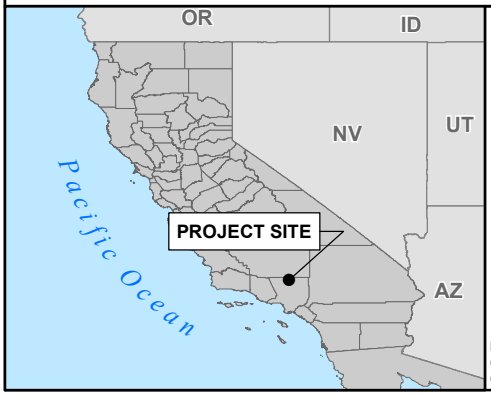


USDA Soils

- CaA, Cajon loamy sand
- HkA, Hesperia fine sandy loam
- Ro, Rosamond fine sandy loam
- Rp, Rosamond loam
- Sv, Sunrise sandy loam
- Sx, Sunrise loam



Legend

Proposed Project Site (Site 9-6)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

TETRA TECH EC, INC.

SILVERADO POWER - SITE 9-6

FIGURE 4-1
SITE SOILS

0 230 460 920
Feet

ATTACHMENT 1

SOIL SURVEY REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

CUP 9 Sites

May 27, 2011

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:6,980 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 5, Jan 3, 2008

Date(s) aerial images were photographed: 6/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Antelope Valley Area, California (CA675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
CaA	Cajon loamy sand, 0 to 2 percent slopes	0.0	0.0%
HkA	Hesperia fine sandy loam, 0 to 2 percent slopes	137.9	100.0%
Totals for Area of Interest		**137.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

CaA—Cajon loamy sand, 0 to 2 percent slopes

Map Unit Setting

Elevation: 400 to 4,000 feet
Mean annual precipitation: 3 to 9 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 200 to 300 days

Map Unit Composition

Cajon and similar soils: 85 percent
Minor components: 15 percent

Description of Cajon

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 7e
Ecological site: SANDY 4-9" (R030XG022CA)

Typical profile

0 to 9 inches: Loamy sand
9 to 60 inches: Sand, fine sand

Minor Components

Arizo

Percent of map unit: 4 percent

Hesperia

Percent of map unit: 4 percent

Rosamond

Percent of map unit: 4 percent

Unnamed

Percent of map unit: 3 percent
Landform: Playas

HkA—Hesperia fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 200 to 4,000 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 310 days

Map Unit Composition

Hesperia and similar soils: 85 percent
Minor components: 15 percent

Description of Hesperia

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very high (about 15.6 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Ecological site: LOAMY 4-9" (R030XG021CA)

Typical profile

0 to 4 inches: Fine sandy loam
4 to 54 inches: Fine sandy loam, sandy loam
54 to 77 inches: Sandy loam, coarse sandy loam

Minor Components

Cajon
Percent of map unit: 5 percent

Rosamond
Percent of map unit: 5 percent

Tray
Percent of map unit: 3 percent

Unnamed
Percent of map unit: 2 percent
Landform: Playas

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties (CUP 9 Sites)

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as

a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
CaA—Cajon loamy sand, 0 to 2 percent slopes														
Cajon	0-9	-79-	-17-	0- 4- 8	1.60-1.70	42.00-141.00	0.06-0.10	0.0-2.9	0.5-1.0	.24	.28	5	2	134
	9-60	-96-	- 2-	0- 3- 5	1.60-1.70	42.00-141.00	0.06-0.08	0.0-2.9	0.0	.20	.24			
HkA—Hesperia fine sandy loam, 0 to 2 percent slopes														
Hesperia	0-4	-71-	-17-	8-13- 18	1.50-1.60	14.00-42.00	0.09-0.13	0.0-2.9	0.0-0.5	.32	.32	5	3	86
	4-54	-71-	-17-	8-13- 18	1.50	14.00-42.00	0.13-0.15	0.0-2.9	0.0	.28	.32			
	54-77	-67-	-20-	8-13- 18	1.50-1.60	14.00-42.00	0.08-0.11	0.0-2.9	0.0	.28	.32			

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CUP 09 – SITE 23

DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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ATTACHMENT

Attachment 1 Soil Survey Report

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
CGS	California Geological Survey
DWR	Department of Water Resources
MY	million years
NRCS	Natural Resources Conservation Service
PV	photovoltaic
Project	Pinnacle Solar Ranch Solar Project
SAFZ	San Andreas Fault Zone
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION

This geotechnical desktop report provides a desktop level analysis of the geotechnical issues and potential geologic hazards affecting the proposed Pinnacle Solar Ranch Solar Project (Project) and site. This report is based on readily available geologic, hydrologic, and soil data and is intended to be used as a tool to determine feasibility and preliminary design. This report is not intended for use in final design or construction. Additional geotechnical studies, reports, and services will be required if the project proceeds to design and construction.

2.0 PROJECT DESCRIPTION

The Project is located in the Antelope Valley area in unincorporated northeast Los Angeles County, approximately 7 miles west of Lancaster. The Project site is bounded by 75th Street West to the west, 70th Street West to the east, and can be accessed via 75th Street West and Avenue G-12 to the south. The Project site comprises approximately 80 acres of previously disturbed agricultural land that is currently fallow. The proposed Project consists of a 20 megawatt alternating current solar photovoltaic (PV) generating facility and a generation-tie line to the Antelope Substation. The Project will utilize crystalline silicon, or thin film, PV technology on fixed-tilt or tracker mounting supports. A regional location map (Figure 2-1) and topographic map (Figure 2-2) show the general vicinity, site boundary, and terrain for the proposed Project area.

3.0 GEOLOGY

3.1 Regional Geology

The proposed Project is located in the Antelope Valley, approximately 45 miles north of Los Angeles, and in the western corner of the Mojave Desert physiographic province. The Mojave Desert province is a topographically closed basin that contains broad expanses of desert plains and isolated mountain ranges with elevations ranging from 2,300 to 3,500 feet above mean sea level (California Geological Survey [CGS] 2002). Annual rainfall generally ranges between 5 to 10 inches and drains into interior playas (Department of Water Resources [DWR] 2003).The Project is located in the western wedge-shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada) and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary).

The geology of the region consists of Pre-Tertiary (greater than 1,000 million years [MY] to 66 MY) crystalline igneous and metamorphic rocks, Tertiary age (66 MY to 1.6 MY) sedimentary and volcanic rocks, and Quaternary age (1.6 MY to present) alluvial and sedimentary units. The Antelope Valley is underlain by up to 4,000 feet of alluvial fill from the surrounding uplands, and further underlain by basement rocks including gneiss, granite, and other metamorphic and igneous rocks. Geologic units that make up the basement complex reach the surface in some parts of the valley, and are similar to the surrounding uplands. The uplands are primarily Pre-Tertiary and Tertiary uplifted granite, gneiss, schist, and volcanic rocks, with uplifted sedimentary units in the traverse ranges to the west. Much of these units have undergone extensive deformation throughout their geologic history and continue to undergo additional folding and faulting from the tectonic processes associated with movement along the San Andreas Fault (the North American and Pacific Plate boundary). Regional geology is shown in Figure 3-1.

3.2 Local Geology

The site is located on the Del Sur United States Geological Survey (USGS) 7.5 minute topographic quadrangle. Elevations at the site range from approximately 2,390 feet in the southwest portion of the Project site to 2,380 feet in the east portion of the site. The site is located on relatively flat alluvial Quaternary sediments and is located approximately 7 miles away from the San Andreas Fault zone (SAFZ).

The general underlying geology of the site is Pleistocene and Holocene alluvial and lacustrine deposits. These deposits typically consist of compacted gravels, sand, silt, and clay; and deposits generally fine towards the central parts of the valley (Duell 1987). Coarse alluvial deposits make up the upper and lower aquifers and are separated by confining layers of clay lake deposits up to 400 feet thick. The confining layers have minor interbeds of coarser material, and experience some leakage between aquifers (Planert and Williams 1995).

4.0 SOILS

Attachment 1 includes a soil survey map and the physical properties report generated from the National Resources Conservation Service (NRCS) Web Soil Survey (U.S. Department of Agriculture [USDA] 2011). Hesperia fine sandy loam is present at the site (Attachment 1 and Figure 4-1). In the southwest corner of the property a relatively small area of Cajon loamy sand unit exists. Soils have been disturbed and soil horizons may be lacking. General soil descriptions and soil erosion factors based on the soil survey map and the physical properties report (Attachment 1) are summarized below in Table 4-1. Considering that the Cajon loamy sand occupies a relatively small area when compared to the Hesperia fine sandy loam, this unit is not further discusssed below.

Table 4-1 Project Area Soil Descriptions

Soil Name (Symbol)	Soil Description

Hesperia fine sandy loam (HkA)	• Well drained
	• Typical profile includes:
	  ○ 0 to 4 inches: Fine sandy loam
	  ○ 4 to 54 inches: Fine sandy loam, sandy loam
	  ○ 54 to 77 inches: Sandy loam, coarse sandy loam
	• The capacity of the most limiting layer to transmit water is high.
	• Shrink swell potential is low.

4.1 Erodibility

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The two primary types of erosion, water erosion and wind erosion, are further described in the following sections.

4.1.1 Water Erosion

Water erosion of soils typically occurs during flooding or when there is surface water runoff. The erosion potential of a soil is compared using the erosion factor or the K factor which indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range from 0.02 to 0.69 with higher values indicating increased susceptibility to erosion. Table 4-2 below includes the erosion factors for the subject Project site.

Table 4-2 Soil Erosion Chracteristics

Soil Map Unit (Symbol)	Erosion Factor (K Factor) (Kw in Attachment 1)	Wind Erodibility Group
Hesperia fine sandy loam (HkA)	0.28-0.32	3

Notes:

1. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. The range stated is for the entire soil profile.

Soils at the site have K factors that range from 0.28 to 0.32 (for the entire soil profile) and indicate a low to medium susceptibility to sheet and rill erosion. It is important to note that land disturbance and construction impacts could increase the susceptibility to soil erosion. However, with the implementation of appropriate erosion and sediment control Best Management Practices, the amount of soil loss due to water erosion is expected to be less than significant.

4.1.2 Wind Erosion

Wind erosion of soil is typical in areas with poor vegetative cover or where there is soil disturbance. Wind erodibility groups are used to assess the susceptibility of soil to wind erosion. Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The wind erodibility group is 3 for the soils at the subject site (Table 4-2) indicating somewhat low to medium susceptibility to wind erosion.

5.0 GROUNDWATER

Water levels near the property ranged from approximately 137 to 156 feet below ground surface (bgs) in 2005 and 135.3 to 160 bgs in 2008, and have historically been documented in different wells at depths up to 280 feet bgs (DWR 2010). Groundwater typically flows toward topographic lows and playa lakes from the San Gabriel Mountains to the south and the Tehachapi Mountains to the west and north. However, local groundwater flow paths are often controlled by groundwater pumping conditions near Lancaster and Edwards Air Force Base. Groundwater pumping has contributed to a significant decline in water levels, and as a result, 292 square miles of Antelope Valley subsided more than 1 foot (Sneed and Galloway 2000; Ikehara and Phillips 1994).

6.0 GEOLOGICAL AND SOIL RELATED HAZARDS

Geologic hazards are natural physical conditions that may result in damage to the land and structures or injury to people. Such hazards include seismicity (earthquakes, ground shaking, and fault rupture), landslides, liquefaction, and subsidence.

6.1 Ground Shaking/Seismicity

Seismicity near the Project site is primarily generated from the Garlock Fault zone and the SAFZ. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones, however, and could also occur at any number of active faults in the regional vicinity.

Regionally, seismicity has mostly been attributed to crustal deformation resulting from the San Andreas Fault and other local fault zones. Faults are considered active if there has been displacement in the last 11,000 years, and potentially active if there has been movement over the Quaternary period (1.6 MY to present). Several active faults and fault zones have been noted in the vicinity of the Project on both federal (USGS) and state (CGS) databases (Figure 31). These active faults have the ability to cause significant seismic activity in the region:

- San Andreas Fault Zone – The SAFZ is the transform boundary between the Pacific Plate and the North American Plate and has a right-lateral sense of displacement between 1.5 to 2.5 inches per year (Wallace 1990). The SAFZ has the highest probability of producing a magnitude 6.7 earthquake or greater, and has produced two 8+ magnitude earthquakes in Parkfield (145 miles from the site) and San Francisco (320 miles from the site) in the last 153 years.
- Garlock Fault Zone – The Garlock Fault is a left-lateral strike slip fault that forms the northern portion of the Antelope Valley at the base of the Tehachapi Mountains. The fault extends 200 miles northeast from the Castaic Lake region, is approximately 20 miles from the Project area, and has historically produced magnitude 5.7 earthquakes within 22 miles of the Project area.
- Sierra Madre and San Fernando Fault Zones – These fault zones are reverse thrust faults located approximately 30 to 35 miles south to southwest of the Project area. These faults zones have produced multiple 5+ magnitude earthquakes over the last 100 years.

Based on the USGS National Seismic Hazard Map (2008), the Project is located in areas mapped from 40 to 60 percent gravity for peak horizontal acceleration with a 10 percent probability of exceedance in the next 50 years. According to the USGS, and dependent on structural design, 10 percent gravity is the lower threshold at which damages to structures are likely to occur. Seismicity will affect the site and proper mitigation and structural design of facilities will be required. Structures must be designed to comply with latest California Building Code or International Building Code requirements.

6.2 Fault Rupture/Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was created to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Within these zones, development permits are withheld until geologic investigations demonstrate that ground rupture is not a threat. Local county and city data indicate that the closest fault zone is the SAFZ and that the Project is located outside of identified Alquist-Priolo Fault Zones.

6.3 Liquefaction

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. The Project site has poorly sorted coarse grained material, and with groundwater typically greater than 100 feet bgs (USGS 2008), the site has very low susceptibility to liquefaction.

6.4 Landslides and Slope Failure

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the generally low slope less than 1 percent, the site is not at risk for landslides or slope failure. Because development of a solar facility would not result in significant changes to existing site grades, the proposed development would not increase the susceptibility to slope failure.

6.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence in the Project area are groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster to closer to 1 to 2 feet near the Project site (Sneed and Galloway 2000). Fissures and differential settling have not been observed near the site. However, historical and continued depletion of water is expected to result in future land subsidence throughout the Antelope Valley.

6.6 Collapsible Soil

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. The site is located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage will continue to follow most natural drainage patterns or drainage channels where roads or permanent grading exist. A site-specific geotechnical investigation that would indentify site-specific soil characteristics is necessary to confirm the presence of such soils. If such soils exist within the upper 5 feet, mitigation could include removal of low-density soils. If soils are found at greater depths, prewatering may be a more feasible alternative.

6.7 Expansive Soil

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the years and lead to differential settlement beneath foundations. Soil series in the site are rated for a low shrink/swell potential.

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FIGURES

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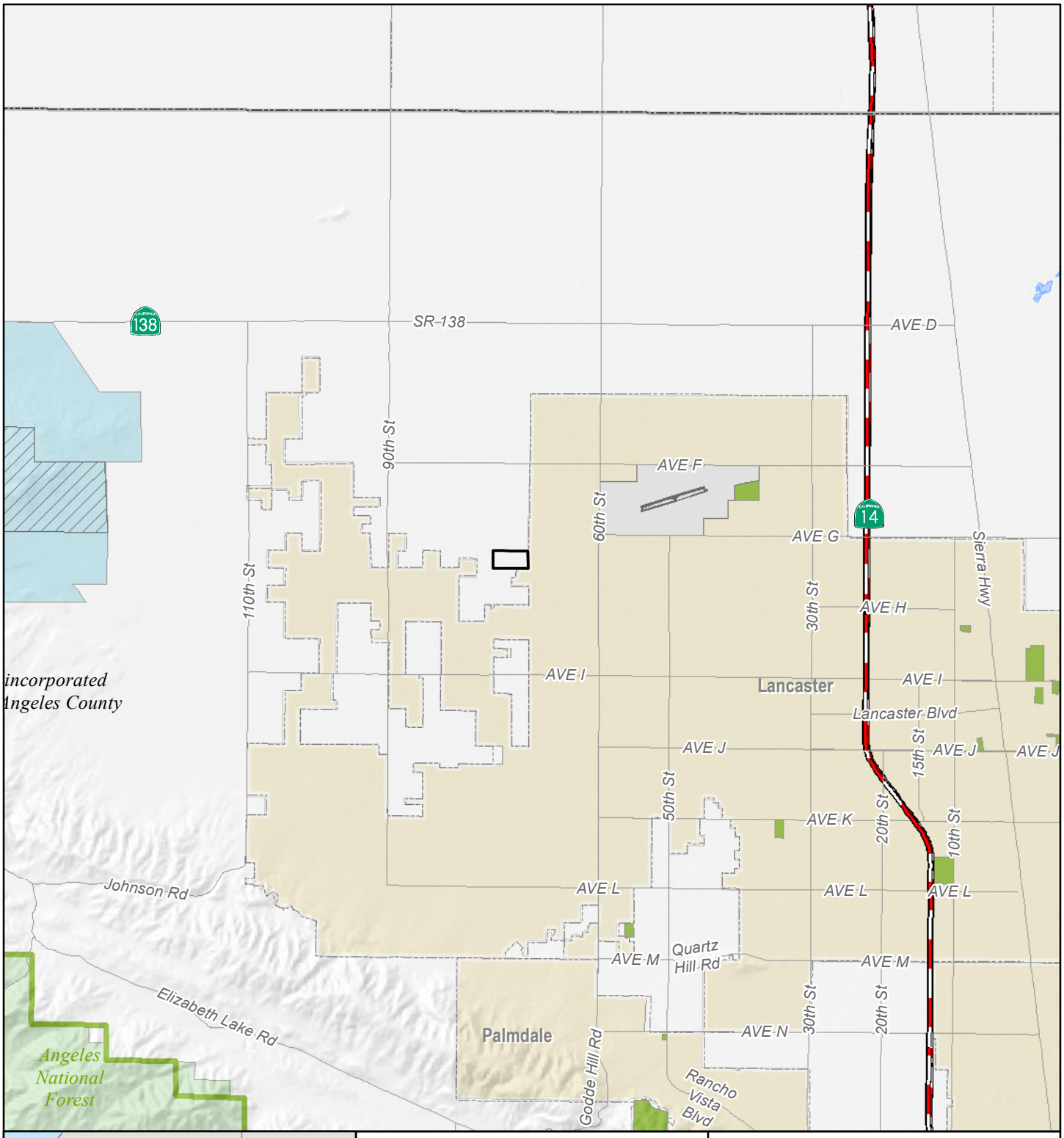

Legend

Proposed Project Site (Site 9-23)

Land Jurisdiction

- Bureau of Land Management
- State
- US Forest Service

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - SITE 9-23

FIGURE 2-1
REGIONAL LOCATION MAP

0 1 2 4
Miles

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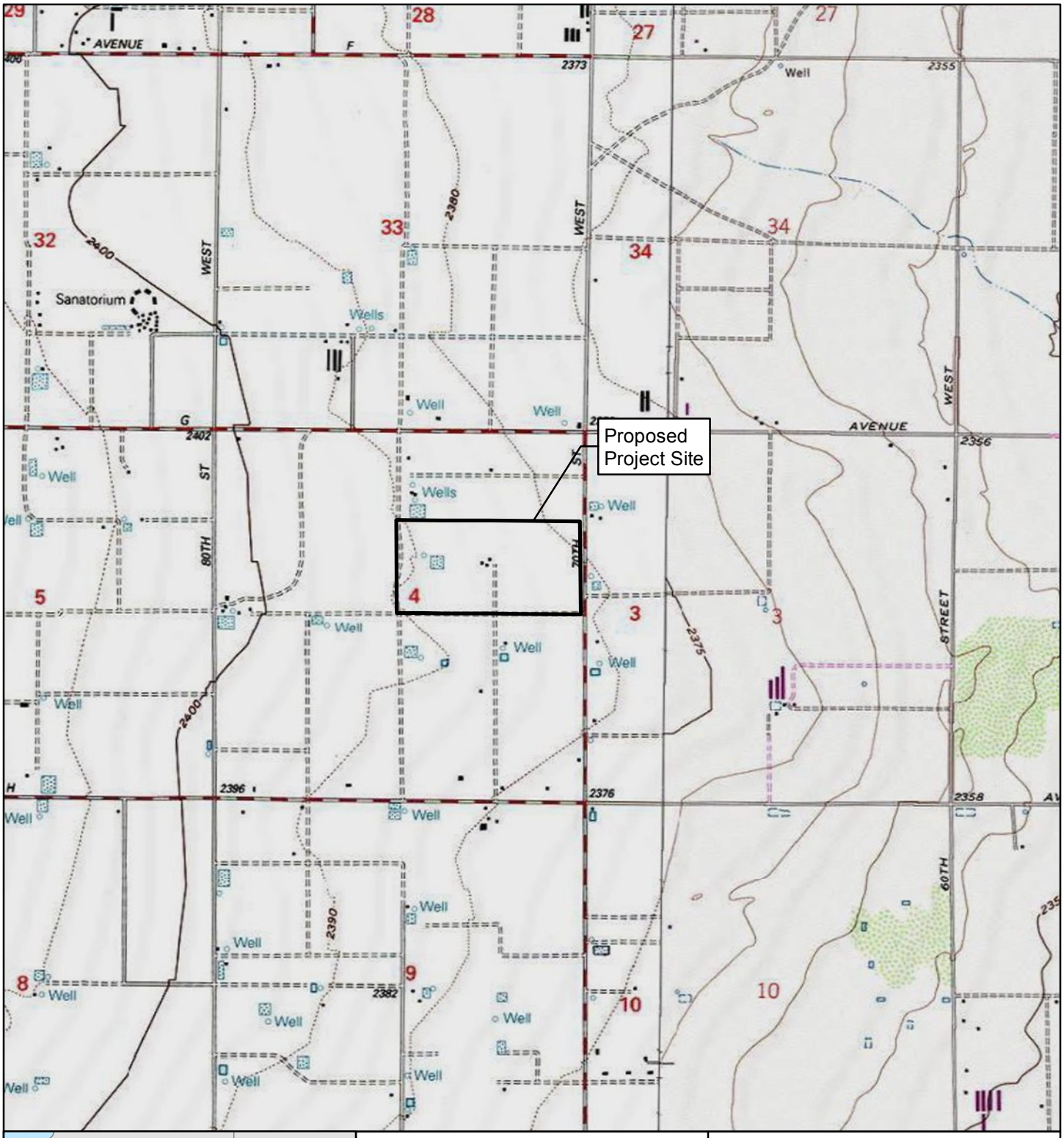

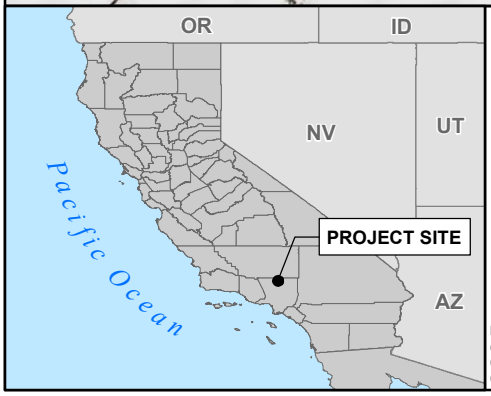

Legend

Proposed Project Site (Site 9-23)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Del Sur 7.5' Topographic Map DRG.

SILVERADO power

SILVERADO SOLAR - SITE 9-23

FIGURE 2-2
SITE TOPOGRAPHIC MAP

0 1,000 2,000 4,000
Feet

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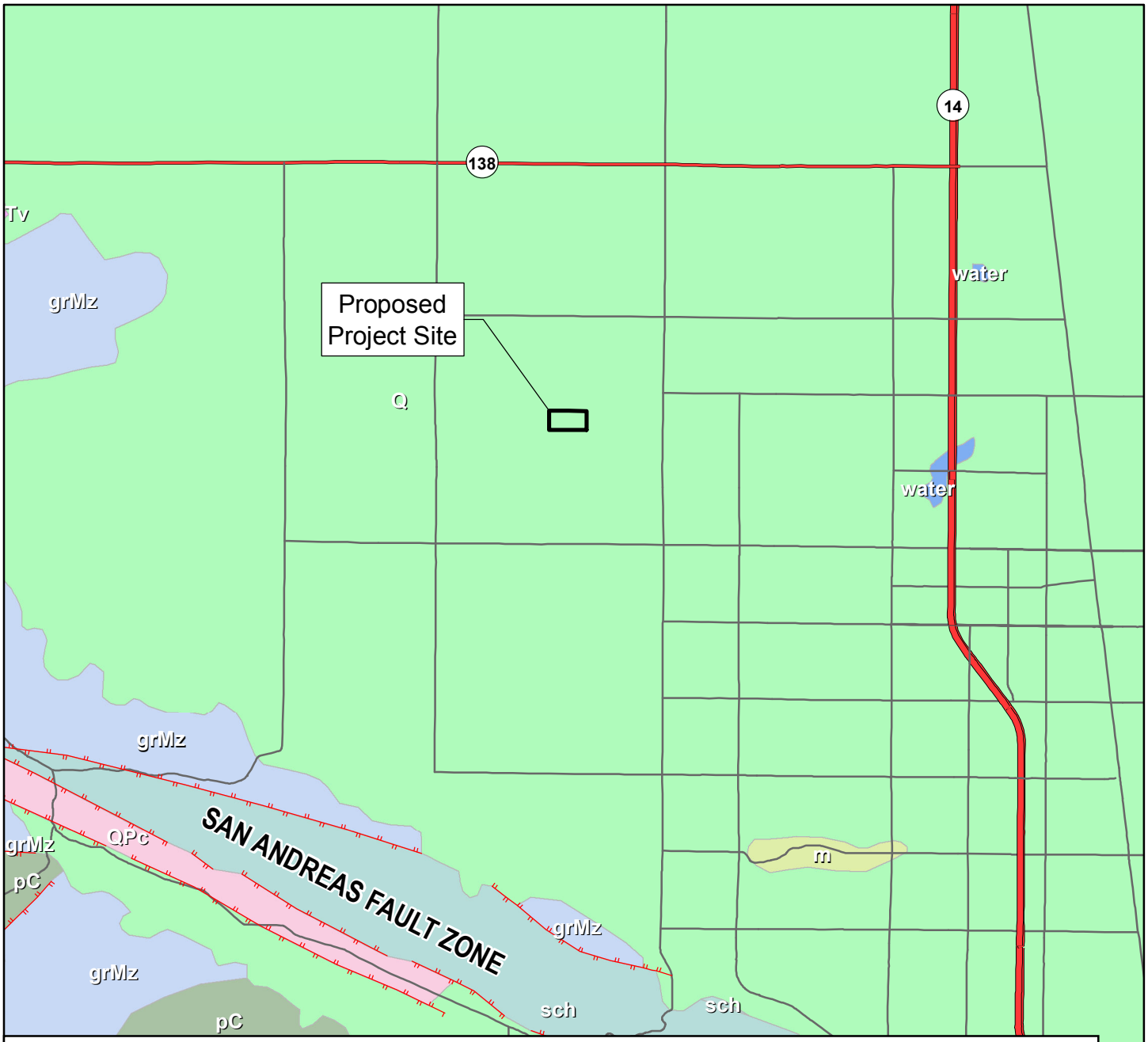
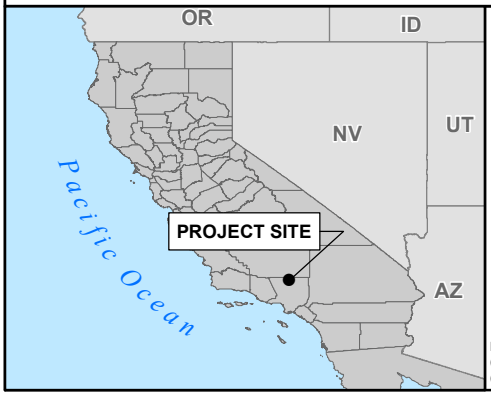


Geological Units

- Ep, Paleocene, sandstone; mudstone
- Mc, Oligocene to Pleistocene, sandstone; conglomerate
- Q, Pliocene to Holocene, alluvium; terrace
- QPc, Miocene to Pleistocene, sandstone; conglomerate
- Tv, Tertiary (22-24 Ma), rhyolite; pyroclastic
- grMz, Permian to Tertiary; most Mesozoic, granodiorite; quartz monzonite
- m, Early Proterozoic to Cretaceous, schist; gneiss
- pC, Early Proterozoic to Miocene, gneiss; granitoid
- sch, Late Cretaceous to Eocene, mica schist; mica schist
- water, Holocene, water



Legend

- Proposed Project Site (Site 9-23)
- Faults*

*Note: Unnamed faults are inactive.

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

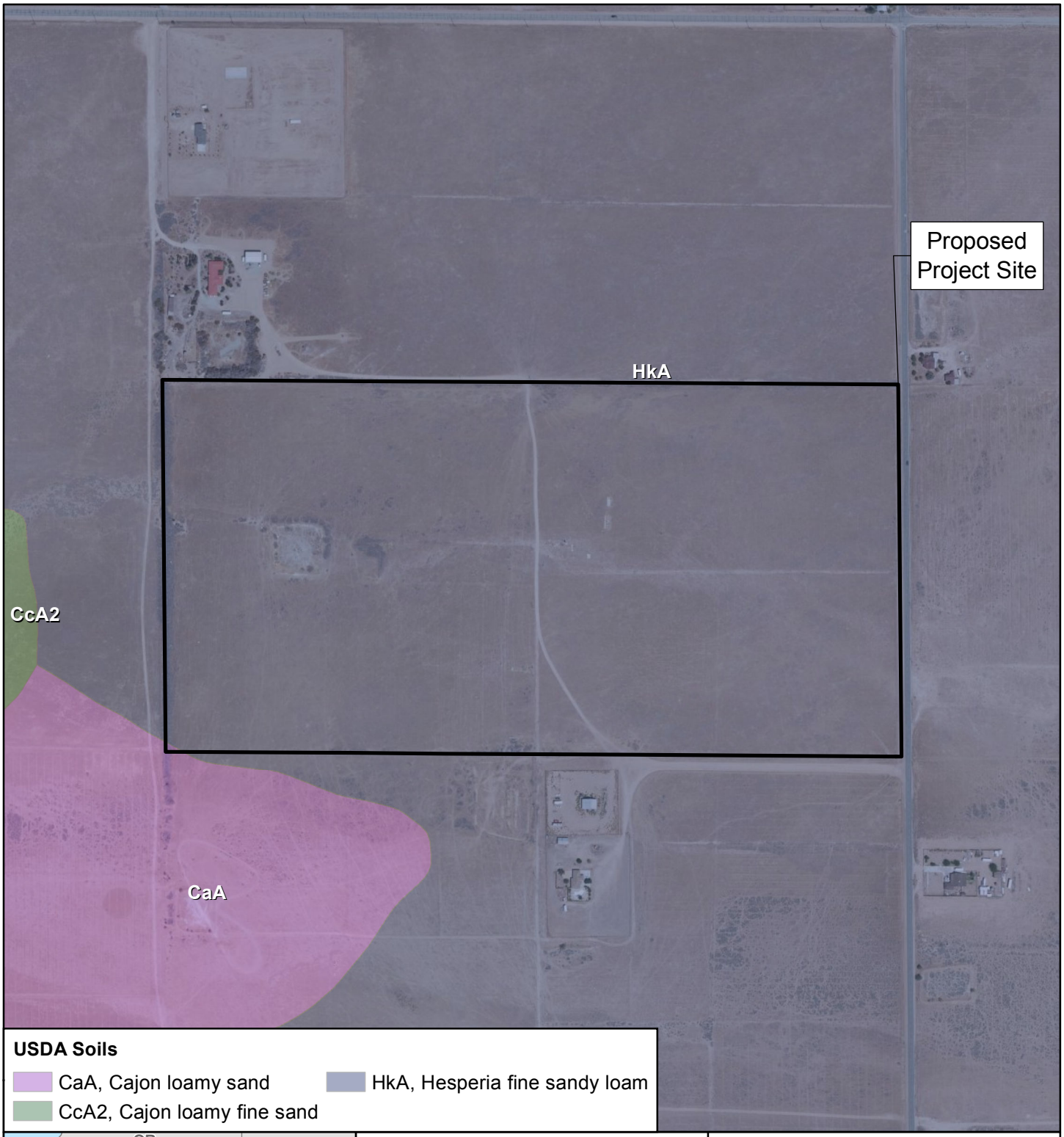
SILVERADO POWER - SITE 9-23

FIGURE 3-1
REGIONAL GEOLOGY

0 1 2 4
Miles

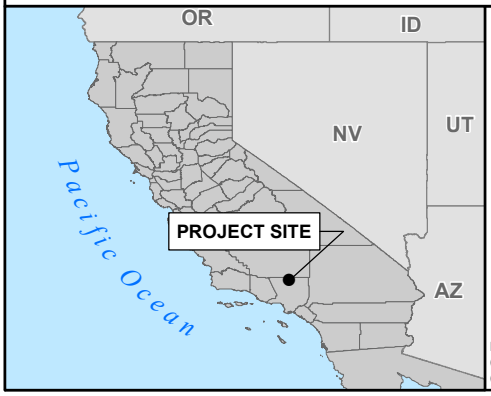
TETRA TECH EC, INC.

Printing Date: 6/10/2011 3:02:11 PM
File: R:\projects_2011\Silverado_GeoTech_Reports\maps\FIG4_1_Site_Soils.mxd



USDA Soils

- CaA, Cajon loamy sand
- CcA2, Cajon loamy fine sand
- HkA, Hesperia fine sandy loam



Legend

- Proposed Project Site (Site 9-23)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

SILVERADO POWER - SITE 9-23

FIGURE 4-1
SITE SOILS

0 230 460 920
Feet

TETRA TECH EC, INC.

N

ATTACHMENT 1

SOIL SURVEY REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

CUP 9 Sites

May 27, 2011

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:6,980 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 5, Jan 3, 2008

Date(s) aerial images were photographed: 6/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Antelope Valley Area, California (CA675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
CaA	Cajon loamy sand, 0 to 2 percent slopes	0.0	0.0%
HkA	Hesperia fine sandy loam, 0 to 2 percent slopes	137.9	100.0%
Totals for Area of Interest		**137.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

CaA—Cajon loamy sand, 0 to 2 percent slopes

Map Unit Setting

Elevation: 400 to 4,000 feet
Mean annual precipitation: 3 to 9 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 200 to 300 days

Map Unit Composition

Cajon and similar soils: 85 percent
Minor components: 15 percent

Description of Cajon

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 7e
Ecological site: SANDY 4-9" (R030XG022CA)

Typical profile

0 to 9 inches: Loamy sand
9 to 60 inches: Sand, fine sand

Minor Components

Arizo

Percent of map unit: 4 percent

Hesperia

Percent of map unit: 4 percent

Rosamond

Percent of map unit: 4 percent

Unnamed

Percent of map unit: 3 percent
Landform: Playas

HkA—Hesperia fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 200 to 4,000 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 310 days

Map Unit Composition

Hesperia and similar soils: 85 percent
Minor components: 15 percent

Description of Hesperia

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very high (about 15.6 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Ecological site: LOAMY 4-9" (R030XG021CA)

Typical profile

0 to 4 inches: Fine sandy loam
4 to 54 inches: Fine sandy loam, sandy loam
54 to 77 inches: Sandy loam, coarse sandy loam

Minor Components

Cajon
Percent of map unit: 5 percent

Rosamond
Percent of map unit: 5 percent

Tray
Percent of map unit: 3 percent

Unnamed
Percent of map unit: 2 percent
Landform: Playas

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties (CUP 9 Sites)

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as

a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
CaA—Cajon loamy sand, 0 to 2 percent slopes														
Cajon	0-9	-79-	-17-	0- 4- 8	1.60-1.70	42.00-141.00	0.06-0.10	0.0-2.9	0.5-1.0	.24	.28	5	2	134
	9-60	-96-	- 2-	0- 3- 5	1.60-1.70	42.00-141.00	0.06-0.08	0.0-2.9	0.0	.20	.24			
HkA—Hesperia fine sandy loam, 0 to 2 percent slopes														
Hesperia	0-4	-71-	-17-	8-13- 18	1.50-1.60	14.00-42.00	0.09-0.13	0.0-2.9	0.0-0.5	.32	.32	5	3	86
	4-54	-71-	-17-	8-13- 18	1.50	14.00-42.00	0.13-0.15	0.0-2.9	0.0	.28	.32			
	54-77	-67-	-20-	8-13- 18	1.50-1.60	14.00-42.00	0.08-0.11	0.0-2.9	0.0	.28	.32			

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WEST LA GREENWORKS, LLC
CUP 09 – SITE 28

DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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June 2011

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ATTACHMENT

Attachment 1 Soil Survey Report

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
CGS	California Geological Survey
DWR	Department of Water Resources
MY	million years
NRCS	Natural Resources Conservation Service
Project	West LA Greenworks Solar Project
PV	photovoltaic
SAFZ	San Andreas Fault Zone
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION

This geotechnical desktop report provides a desktop level analysis of the geotechnical issues and potential geologic hazards affecting the proposed West LA Greenwoks Solar Project (Project) and site. This report is based on readily available geologic, hydrologic, and soil data and is intended to be used as a tool to determine feasibility and preliminary design. This report is not intended for use in final design or construction. Additional geotechnical studies, reports, and services will be required if the project proceeds to design and construction.

2.0 PROJECT DESCRIPTION

The Project is located in the Antelope Valley area in unincorporated northeast Los Angeles County, approximately 7 miles west of Lancaster. The Project site is bounded by 75th Street West to the south and west, and Avenue G to the north. The Project site comprises approximately 19 acres of previously disturbed agricultural land that is currently fallow. The proposed Project consists of a 5 megawatt alternating current solar photovoltaic (PV) generating facility and a generation-tie line to the Antelope Substation. The Project will utilize crystalline silicon, or thin film, PV technology on fixed-tilt or tracker mounting supports. A regional location map (Figure 2-1) and topographic map (Figure 2-2) show the general vicinity, site boundary, and terrain for the proposed Project area.

3.0 GEOLOGY

3.1 Regional Geology

The proposed Project is located in the Antelope Valley, approximately 45 miles north of Los Angeles, and in the western corner of the Mojave Desert physiographic province. The Mojave Desert province is a topographically closed basin that contains broad expanses of desert plains and isolated mountain ranges with elevations ranging from 2,300 to 3,500 feet above mean sea level (California Geological Survey [CGS] 2002). Annual rainfall generally ranges between 5 to 10 inches and drains into interior playas (Department of Water Resources [DWR] 2003).The Project is located in the western wedge-shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada) and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary).

The geology of the region consists of Pre-Tertiary (greater than 1,000 million years [MY] to 66 MY) crystalline igneous and metamorphic rocks, Tertiary age (66 MY to 1.6 MY) sedimentary and volcanic rocks, and Quaternary age (1.6 MY to present) alluvial and sedimentary units. The Antelope Valley is underlain by up to 4,000 feet of alluvial fill from the surrounding uplands, and further underlain by basement rocks including gneiss, granite, and other metamorphic and igneous rocks. Geologic units that make up the basement complex reach the surface in some parts of the valley, and are similar to the surrounding uplands. The uplands are primarily Pre-Tertiary and Tertiary uplifted granite, gneiss, schist, and volcanic rocks, with uplifted sedimentary units in the traverse ranges to the west. Much of these units have undergone extensive deformation throughout their geologic history and continue to undergo additional folding and faulting from the tectonic processes associated with movement along the San Andreas Fault (the North American and Pacific Plate boundary). Regional geology is shown in Figure 3-1.

3.2 Local Geology

The site is located on the Del Sur United States Geological Survey (USGS) 7.5 minute topographic quadrangle. Elevations at the site range from approximately 2,387 feet in the southwest portion of the Project site to 2,381 feet in the northeast portion of the site. The site is located on relatively flat alluvial Quaternary sediments and is located approximately 7 miles away from the San Andreas Fault zone (SAFZ).

The general underlying geology of the site is Pleistocene and Holocene alluvial and lacustrine deposits. These deposits typically consist of compacted gravels, sand, silt, and clay; and deposits generally fine towards the central parts of the valley (Duell 1987). Coarse alluvial deposits make up the upper and lower aquifers and are separated by confining layers of clay lake deposits up to 400 feet thick. The confining layers have minor interbeds of coarser material, and experience some leakage between aquifers (Planert and Williams 1995).

4.0 SOILS

Attachment 1 includes a soil survey map and the physical properties report generated from the National Resources Conservation Service (NRCS) Web Soil Survey (U.S. Department of Agriculture [USDA] 2011). Hesperia fine sandy loam is present at the site (Attachment 1 and Figure 4-1). Soils have been disturbed and soil horizons may be lacking. General soil descriptions and soil erosion factors based on the soil survey map and the physical properties report (Attachment 1) are summarized below in Table 4-1.

Table 4-1 Project Area Soil Descriptions

Soil Name (Symbol)	Soil Description

Hesperia fine sandy loam (HkA)	• Well drained
	• Typical profile includes:
	  ○ 0 to 4 inches: Fine sandy loam
	  ○ 4 to 54 inches: Fine sandy loam, sandy loam
	  ○ 54 to 77 inches: Sandy loam, coarse sandy loam
	• The capacity of the most limiting layer to transmit water is high.
	• Shrink swell potential is low.

4.1 Erodibility

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The two primary types of erosion, water erosion and wind erosion, are further described in the following sections.

4.1.1 Water Erosion

Water erosion of soils typically occurs during flooding or when there is surface water runoff. The erosion potential of a soil is compared using the erosion factor or the K factor which indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range from 0.02 to 0.69 with higher values indicating increased susceptibility to erosion. Table 4-2 below includes the erosion factors for the subject Project site.

Table 4-2 Soil Erosion Chracteristics

Soil Map Unit (Symbol)	Erosion Factor (K Factor) (Kw in Attachment 1)	Wind Erodibility Group
Hesperia fine sandy loam (HkA)	0.28-0.32	3

Notes:

1. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. The range stated is for the entire soil profile.

Soils at the site have K factors that range from 0.28 to 0.32 (for the entire soil profile) and indicate a low to medium susceptibility to sheet and rill erosion. It is important to note that land disturbance and construction impacts could increase the susceptibility to soil erosion. However, with the implementation of appropriate erosion and sediment control Best Management Practices, the amount of soil loss due to water erosion is expected to be less than significant.

4.1.2 Wind Erosion

Wind erosion of soil is typical in areas with poor vegetative cover or where there is soil disturbance. Wind erodibility groups are used to assess the susceptibility of soil to wind erosion. Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The wind erodibility group is 3 for the soils at the subject site (Table 4-2) indicating somewhat low to medium susceptibility to wind erosion.

5.0 GROUNDWATER

Water levels near the property ranged from approximately 137 to 156 feet below ground surface (bgs) in 2005 and 135.3 to 160 bgs in 2008, and have historically been documented in different wells at depths up to 280 feet bgs (DWR 2011). Groundwater typically flows toward topographic lows and playa lakes from the San Gabriel Mountains to the south and the Tehachapi Mountains to the west and north. However, local groundwater flow paths are often controlled by groundwater pumping conditions near Lancaster and Edwards Air Force Base. Groundwater pumping has contributed to a significant decline in water levels, and as a result, 292 square miles of Antelope Valley subsided more than 1 foot (Sneed and Galloway 2000; Ikehara and Phillips 1994).

6.0 GEOLOGICAL AND SOIL RELATED HAZARDS

Geologic hazards are natural physical conditions that may result in damage to the land and structures or injury to people. Such hazards include seismicity (earthquakes, ground shaking, and fault rupture), landslides, liquefaction, and subsidence.

6.1 Ground Shaking/Seismicity

Seismicity near the Project site is primarily generated from the Garlock Fault zone and the San Andreas Fault zone. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones, however, and could also occur at any number of active faults in the regional vicinity.

Regionally, seismicity has mostly been attributed to crustal deformation resulting from the San Andreas Fault and other local fault zones. Faults are considered active if there has been displacement in the last 11,000 years, and potentially active if there has been movement over the Quaternary period (1.6 MY to present). Several active faults and fault zones have been noted in the vicinity of the Project on both federal (USGS) and state (CGS) databases (Figure 31). These active faults have the ability to cause significant seismic activity in the region:

- San Andreas Fault Zone – The SAFZ is the transform boundary between the Pacific Plate and the North American Plate and has a right-lateral sense of displacement between 1.5 to 2.5 inches per year (Wallace 1990). The SAFZ has the highest probability of producing a magnitude 6.7 earthquake or greater, and has produced two 8+ magnitude earthquakes in Parkfield (145 miles from the site) and San Francisco (320 miles from the site) in the last 153 years.
- Garlock Fault Zone – The Garlock Fault is a left-lateral strike slip fault that forms the northern portion of the Antelope Valley at the base of the Tehachapi Mountains. The fault extends 200 miles northeast from the Castaic Lake region, is approximately 20 miles from the Project area, and has historically produced magnitude 5.7 earthquakes within 22 miles of the Project area.
- Sierra Madre and San Fernando Fault Zones – These fault zones are reverse thrust faults located approximately 30 to 35 miles south to southwest of the Project area. These faults zones have produced multiple 5+ magnitude earthquakes over the last 100 years.

Based on the USGS National Seismic Hazard Map (2008), the Project is located in areas mapped from 40 to 60 percent gravity for peak horizontal acceleration with a 10 percent probability of exceedance in the next 50 years. According to the USGS, and dependent on structural design, 10 percent gravity is the lower threshold at which damages to structures are likely to occur. Seismicity will affect the site and proper mitigation and structural design of facilities will be required. Structures must be designed to comply with latest California Building Code or International Building Code requirements.

6.2 Fault Rupture/Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was created to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Within these zones, development permits are withheld until geologic investigations demonstrate that ground rupture is not a threat. Local county and city data indicate that the closest fault zone is the SAFZ and that the Project is located outside of identified Alquist-Priolo Fault Zones.

6.3 Liquefaction

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. The Project site has poorly sorted coarse grained material, and with groundwater typically greater than 100 feet bgs (USGS 2008), the site has very low susceptibility to liquefaction.

6.4 Landslides and Slope Failure

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the generally low slope less than 1 percent, the site is not at risk for landslides or slope failure. Because development of a solar facility would not result in significant changes to existing site grades, the proposed development would not increase the susceptibility to slope failure.

6.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence in the Project area are groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster to closer to 1 to 2 feet near the Project site (Sneed and Galloway 2000). Fissures and differential settling have not been observed near the site. However, historical and continued depletion of water is expected to result in future land subsidence throughout the Antelope Valley.

6.6 Collapsible Soil

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. The site is located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage will continue to follow most natural drainage patterns or drainage channels where roads or permanent grading exist. A site-specific geotechnical investigation that would indentify site-specific soil characteristics is necessary to confirm the presence of such soils. If such soils exist within the upper 5 feet, mitigation could include removal of low-density soils. If soils are found at greater depths, prewatering may be a more feasible alternative.

6.7 Expansive Soil

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the years and lead to differential settlement beneath foundations. Soil series in the site are rated for a low shrink/swell potential.

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FIGURES

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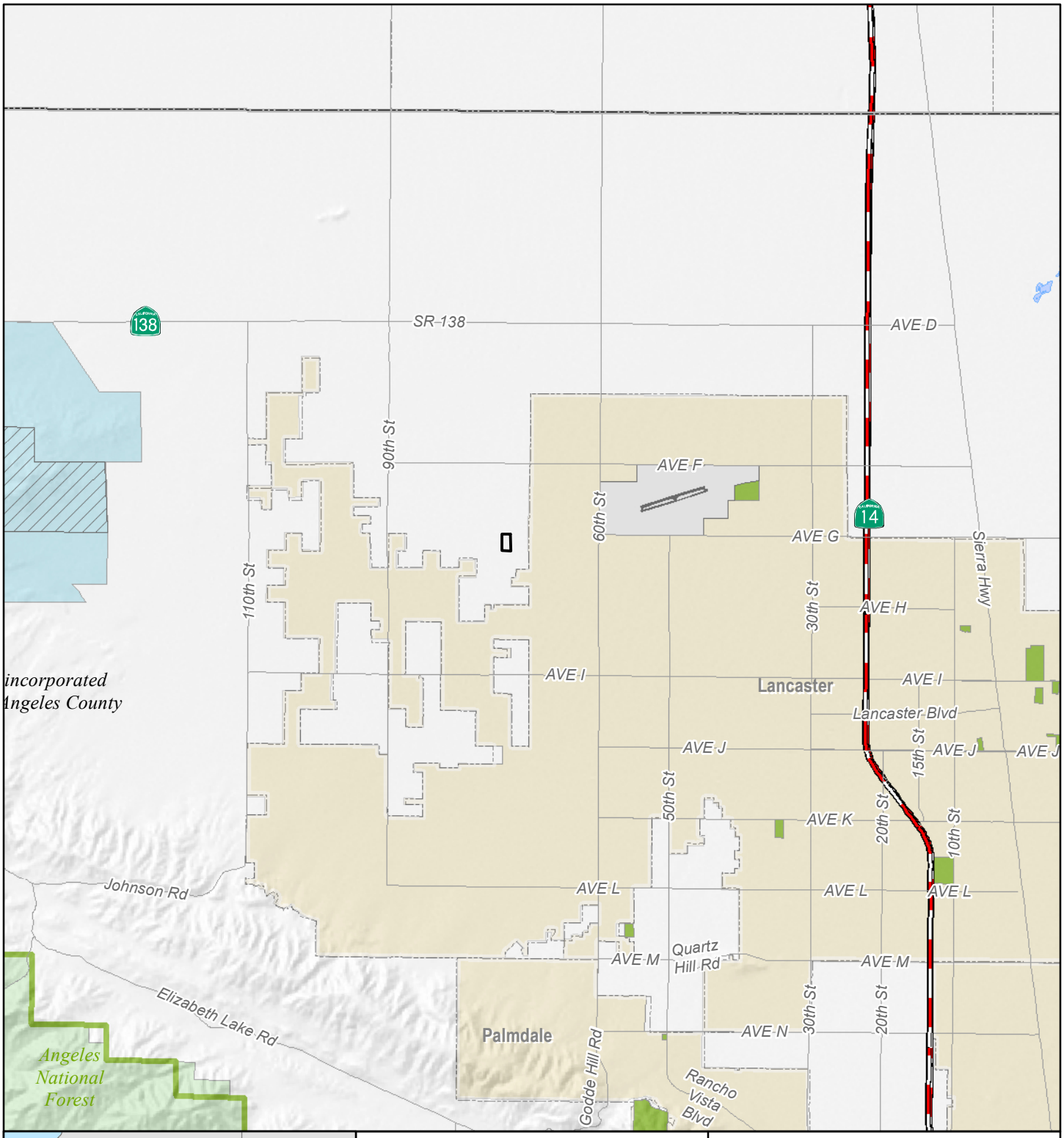

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Proposed Project Site (Site 9-28)

Land Jurisdiction

Bureau of Land Management

State

US Forest Service

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - SITE 9-28

FIGURE 2-1
REGIONAL LOCATION MAP

0 1 2 4
Miles

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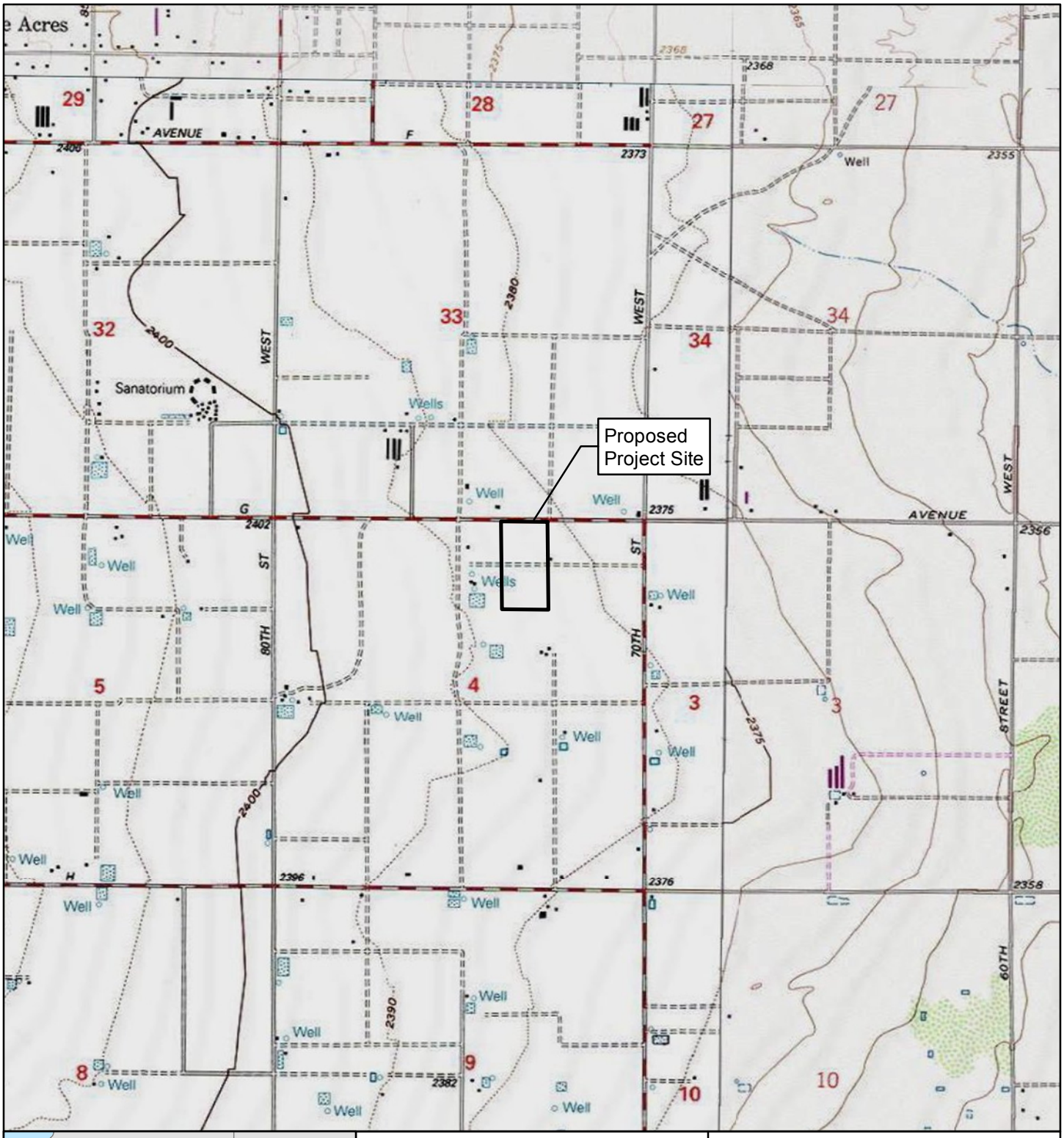

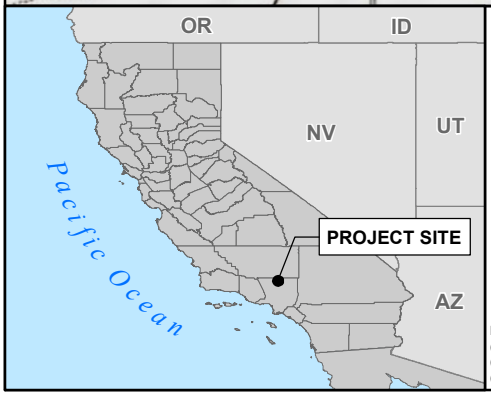

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Proposed Project Site (Site 9-28)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Del Sur 7.5' Topographic Map DRG.

SILVERADO power

SILVERADO SOLAR - SITE 9-28

FIGURE 2-2
SITE TOPOGRAPHIC MAP

0 1,000 2,000 4,000
Feet

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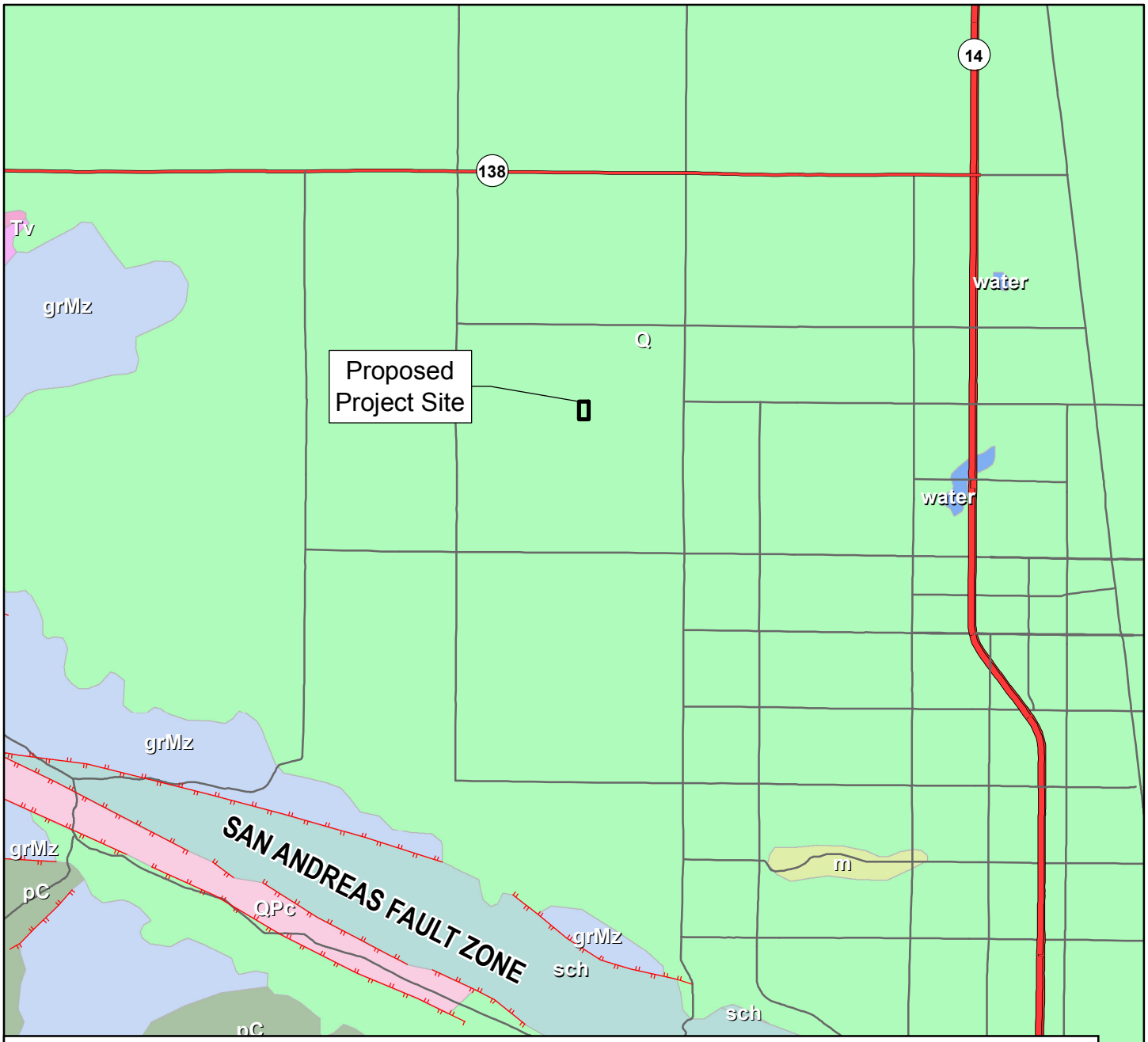
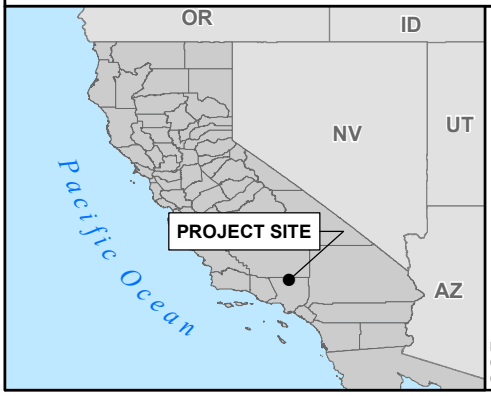


Geological Units

- Ep, Paleocene, sandstone; mudstone
- Mc, Oligocene to Pleistocene, sandstone; conglomerate
- Q, Pliocene to Holocene, alluvium; terrace
- QPc, Miocene to Pleistocene, sandstone; conglomerate
- Tv, Tertiary (22-24 Ma), rhyolite; pyroclastic
- grMz, Permian to Tertiary; most Mesozoic, granodiorite; quartz monzonite
- m, Early Proterozoic to Cretaceous, schist; gneiss
- pC, Early Proterozoic to Miocene, gneiss; granitoid
- sch, Late Cretaceous to Eocene, mica schist; mica schist
- water, Holocene, water



Legend

- Proposed Project Site (Site 9-28)
- Faults*

*Note: Unnamed faults are inactive.

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

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SILVERADO POWER - SITE 9-28

FIGURE 3-1
REGIONAL GEOLOGY

0 1 2 4
Miles

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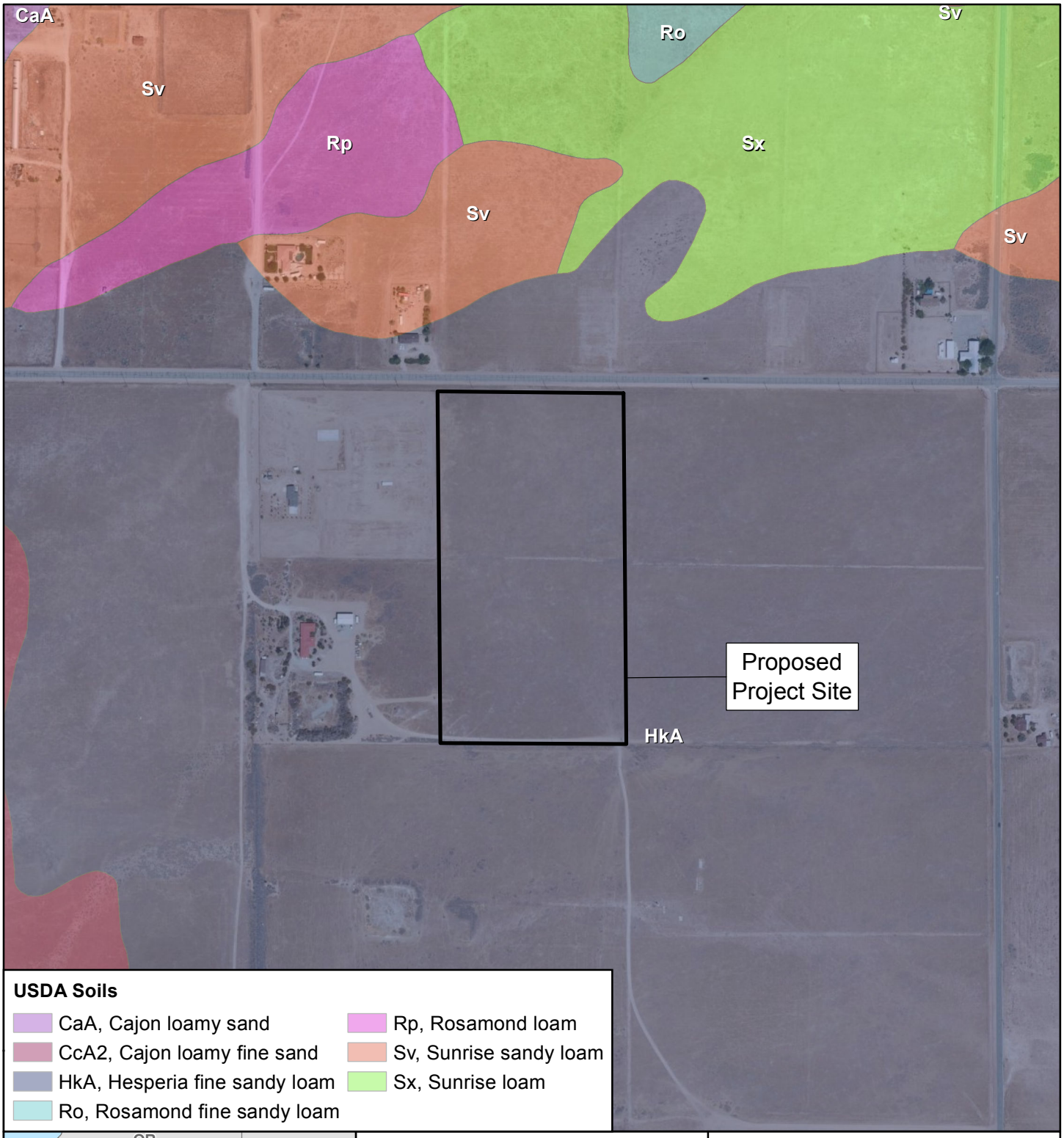
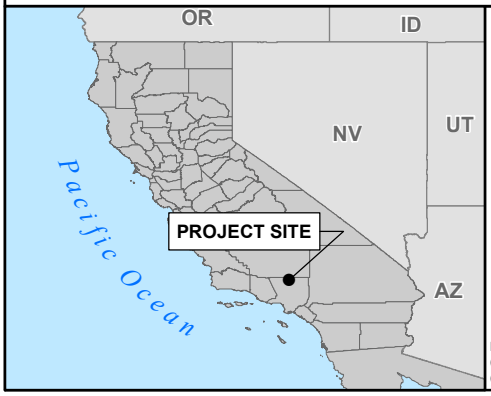


USDA Soils

- CaA, Cajon loamy sand
- CcA2, Cajon loamy fine sand
- HkA, Hesperia fine sandy loam
- Ro, Rosamond fine sandy loam
- Rp, Rosamond loam
- Sv, Sunrise sandy loam
- Sx, Sunrise loam



Legend

Proposed Project Site (Site 9-28)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

TETRA TECH EC, INC.

SILVERADO POWER - SITE 9-28

FIGURE 4-1
SITE SOILS

0 230 460 920
Feet

ATTACHMENT 1

SOIL SURVEY REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

CUP 9 Sites

May 27, 2011

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:6,980 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 5, Jan 3, 2008

Date(s) aerial images were photographed: 6/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Antelope Valley Area, California (CA675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
CaA	Cajon loamy sand, 0 to 2 percent slopes	0.0	0.0%
HkA	Hesperia fine sandy loam, 0 to 2 percent slopes	137.9	100.0%
Totals for Area of Interest		**137.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

CaA—Cajon loamy sand, 0 to 2 percent slopes

Map Unit Setting

Elevation: 400 to 4,000 feet
Mean annual precipitation: 3 to 9 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 200 to 300 days

Map Unit Composition

Cajon and similar soils: 85 percent
Minor components: 15 percent

Description of Cajon

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 7e
Ecological site: SANDY 4-9" (R030XG022CA)

Typical profile

0 to 9 inches: Loamy sand
9 to 60 inches: Sand, fine sand

Minor Components

Arizo

Percent of map unit: 4 percent

Hesperia

Percent of map unit: 4 percent

Rosamond

Percent of map unit: 4 percent

Unnamed

Percent of map unit: 3 percent
Landform: Playas

HkA—Hesperia fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 200 to 4,000 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 310 days

Map Unit Composition

Hesperia and similar soils: 85 percent
Minor components: 15 percent

Description of Hesperia

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very high (about 15.6 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Ecological site: LOAMY 4-9" (R030XG021CA)

Typical profile

0 to 4 inches: Fine sandy loam
4 to 54 inches: Fine sandy loam, sandy loam
54 to 77 inches: Sandy loam, coarse sandy loam

Minor Components

Cajon
Percent of map unit: 5 percent

Rosamond
Percent of map unit: 5 percent

Tray
Percent of map unit: 3 percent

Unnamed
Percent of map unit: 2 percent
Landform: Playas

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties (CUP 9 Sites)

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as

a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
CaA—Cajon loamy sand, 0 to 2 percent slopes														
Cajon	0-9	-79-	-17-	0- 4- 8	1.60-1.70	42.00-141.00	0.06-0.10	0.0-2.9	0.5-1.0	.24	.28	5	2	134
	9-60	-96-	- 2-	0- 3- 5	1.60-1.70	42.00-141.00	0.06-0.08	0.0-2.9	0.0	.20	.24			
HkA—Hesperia fine sandy loam, 0 to 2 percent slopes														
Hesperia	0-4	-71-	-17-	8-13- 18	1.50-1.60	14.00-42.00	0.09-0.13	0.0-2.9	0.0-0.5	.32	.32	5	3	86
	4-54	-71-	-17-	8-13- 18	1.50	14.00-42.00	0.13-0.15	0.0-2.9	0.0	.28	.32			
	54-77	-67-	-20-	8-13- 18	1.50-1.60	14.00-42.00	0.08-0.11	0.0-2.9	0.0	.28	.32			

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APPENDIX B-5.4

PROJECT 4 ANTELOPE SOLAR GREENWORKS DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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ANTELOPE SOLAR GREENWORKS
CUP 10 – SITE 08

DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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May 2012

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Figure 4-1 Site Soils

ATTACHMENT

Attachment 1 Soil Survey Report

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
CGS	California Geological Survey
DWR	Department of Water Resources
MY	million years
NRCS	Natural Resources Conservation Service
Project	Antelope Solar Greenworks Solar Project
PV	photovoltaic
SAFZ	San Andreas Fault Zone
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION

This geotechnical desktop report provides a desktop level analysis of the geotechnical issues and potential geologic hazards affecting the proposed Antelope Solar Greenworks Solar Project (Project) and site. This report is based on readily available geologic, hydrologic, and soil data and is intended to be used as a tool to determine feasibility and preliminary design. This report is not intended for use in final design or construction. Additional geotechnical studies, reports, and services will be required if the project proceeds to design and construction.

2.0 PROJECT DESCRIPTION

The Project is located in the Antelope Valley area in unincorporated northeast Los Angeles County, approximately 8 miles west of Lancaster. The Project site is bounded by an unknown dirt road to the north, 95th Street West to the west, 90th Street West to the east, and there is no known road access from the south. The Project site, consisting of previously disturbed agricultural land that is currently fallow, comprises 256 acres, 37.80 of which are being analyzed in this report. The proposed Project consists of a 52 megawatt alternating current solar photovoltaic (PV) generating facility, 6 megawatts of which are being analyzed in this report. The Project will utilize crystalline silicon, or thin film, PV technology on fixed-tilt or tracker mounting supports. A regional location map (Figure 2-1) and topographic map (Figure 2-2) show the general vicinity, site boundary, and terrain for the proposed Project area.

3.0 GEOLOGY

3.1 Regional Geology

The proposed Project is located in the Antelope Valley, approximately 45 miles north of Los Angeles, and in the western corner of the Mojave Desert physiographic province. The Mojave Desert province is a topographically closed basin that contains broad expanses of desert plains and isolated mountain ranges with elevations ranging from 2,300 to 3,500 feet above mean sea level (California Geological Survey [CGS] 2002). Annual rainfall generally ranges between 5 to 10 inches and drains into interior playas (Department of Water Resources [DWR] 2003). The Project is located in the western wedge-shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada) and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary).

The geology of the region consists of Pre-Tertiary (greater than 1,000 million years [MY] to 66 MY) crystalline igneous and metamorphic rocks, Tertiary age (66 MY to 1.6 MY) sedimentary and volcanic rocks, and Quaternary age (1.6 MY to present) alluvial and sedimentary units. The Antelope Valley is underlain by up to 4,000 feet of alluvial fill from the surrounding uplands, and further underlain by basement rocks including gneiss, granite, and other metamorphic and igneous rocks. Geologic units that make up the basement complex reach the surface in some parts of the valley, and are similar to the surrounding uplands. The uplands are primarily Pre-Tertiary and Tertiary uplifted granite, gneiss, schist, and volcanic rocks, with uplifted sedimentary units in the traverse ranges to the west. Much of these units have undergone extensive deformation throughout their geologic history and continue to undergo additional folding and faulting from the tectonic processes associated with movement along the San Andreas Fault (the North American and Pacific Plate boundary). Regional geology is shown in Figure 3-1.

3.2 Local Geology

The site is located on the Del Sur United States Geological Survey (USGS) 7.5 minute topographic quadrangle. Elevations at the site range from approximately 2,440 feet in the southwest portion of the Project site to 2,420 feet in the northeast portion of the site. The site is located on relatively flat alluvial Quaternary sediments and is located approximately 4.3 miles away from the San Andreas Fault zone (SAFZ).

The general underlying geology of the site is Pleistocene and Holocene alluvial and lacustrine deposits. These deposits typically consist of compacted gravels, sand, silt, and clay; and deposits generally fine towards the central parts of the valley (Duell 1987). Coarse alluvial deposits make up the upper and lower aquifers and are separated by confining layers of clay lake deposits up to 400 feet thick. The confining layers have minor interbeds of coarser material, and experience some leakage between aquifers (Planert and Williams 1995).

4.0 SOILS

Attachment 1 includes a soil survey map and the physical properties report generated from the National Resources Conservation Service (NRCS) Web Soil Survey (U.S. Department of Agriculture [USDA] 2011). Greenfield sandy loam is dominant at the site (Attachment 1 and Figure 4-1). Also present at the site is the Sunrise sandy loam. Soils have been disturbed and soil horizons may be lacking. General soil descriptions and soil erosion factors based on the soil survey map and the physical properties report (Attachment 1) are summarized below in Table 4-1.

Table 4-1 Project Area Soil Descriptions

Soil Name (Symbol)	Soil Description
Greenfield sandy loam, 0 to 2 percent slopes (GsA), 2 to 9 percent slopes (GsC)	• Well drained • Typical profile includes: o 0 to 20 inches: Sandy loam o 20 to 60 inches: Sandy loam o 60 to 80 inches: Stratified loamy sand to coarse sandy loam • The capacity of the most limiting layer to transmit water is high. • Shrink swell potential is low.
Sunrise sandy loam (Sv)	• Moderately well drained • Typical profile includes: o 0 to 19 inches: Sandy loam o 19 to 31 inches: Loam o 31 to 48 inches: Cemented o 48 to 65 inches: Stratified gravelly sandy loam to loam • The capacity of the most limiting layer to transmit water is very low. • Shrink swell potential is low to moderate.

4.1 Erodibility

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The two primary types of erosion, water erosion and wind erosion, are further described in the following sections.

4.1.1 Water Erosion

Water erosion of soils typically occurs during flooding or when there is surface water runoff. The erosion potential of a soil is compared using the erosion factor or the K factor which indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range from 0.02 to 0.69 with higher values indicating increased susceptibility to erosion. Table 4-2 below includes the erosion factors for the subject project site.

Table 4-2 Soil Erosion Characteristics

Soil Map Unit (Symbol)	Erosion Factor (K Factor) (Kw in Attachment 1)	Wind Erodibility Group
Greenfield sandy loam (GsA)	0.24-0.28	3
Sunrise sandy loam (Sv)	0.28-0.32	3
Greenfield sandy loam, 2 to 9 percent slopes (GsC)	0.24-0.28	3

Notes:

1. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. The range stated is for the entire soil profile.

Soils at the site have K factors that range from 0.24 to 0.32 (for the entire soil profile) indicating a low to medium susceptibility to sheet and rill erosion. It is important to note that land disturbance and construction impacts could increase the susceptibility to soil erosion. However, with the implementation of appropriate erosion and sediment control Best Management Practices, the amount of soil loss due to water erosion is expected to be less than significant.

4.1.2 Wind Erosion

Wind erosion of soil is typical in areas with poor vegetative cover or where there is soil disturbance. Wind erodibility groups are used to assess the susceptibility of soil to wind erosion. Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The wind erodibility group is 3 for the soils at the subject site (Table 4-2) indicating somewhat low to medium susceptibility to wind erosion.

5.0 GROUNDWATER

Water levels near the property ranged from approximately 217.30 feet below ground surface (bgs) in 2005 to 235 bgs in 2008, and have historically been documented in different wells at depths up to 290 feet bgs (DWR 2010). Groundwater typically flows toward topographic lows and playa lakes from the San Gabriel Mountains to the south and the Tehachapi Mountains to the west and north. However, local groundwater flow paths are often controlled by groundwater pumping conditions near Lancaster and Edwards Air Force Base. Groundwater pumping has contributed to a significant decline in water levels, and as a result, 292 square miles of Antelope Valley subsided more than 1 foot (Sneed and Galloway 2000; Ikehara and Phillips 1994).

6.0 GEOLOGICAL AND SOIL RELATED HAZARDS

Geologic hazards are natural physical conditions that may result in damage to the land and structures or injury to people. Such hazards include seismicity (earthquakes, ground shaking, and fault rupture), landslides, liquefaction, and subsidence.

6.1 Ground Shaking/Seismicity

Seismicity near the Project site is primarily generated from the Garlock Fault zone and the San Andreas Fault zone. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones, however, and could also occur at any number of active faults in the regional vicinity.

Regionally, seismicity has mostly been attributed to crustal deformation resulting from the San Andreas Fault and other local fault zones. Faults are considered active if there has been displacement in the last 11,000 years, and potentially active if there has been movement over the Quaternary period (1.6 MY to present). Several active faults and fault zones have been noted in the vicinity of the Project on both federal (USGS) and state (CGS) databases (Figure 3-1). These active faults have the ability to cause significant seismic activity in the region:

- San Andreas Fault Zone – The SAFZ is the transform boundary between the Pacific Plate and the North American Plate and has a right-lateral sense of displacement between 1.5 to 2.5 inches per year (Wallace 1990). The SAFZ has the highest probability of producing a magnitude 6.7 earthquake or greater, and has produced two 8+ magnitude earthquakes in Parkfield (150 miles from the site) and San Francisco (300 miles from the site) in the last 153 years.
- Garlock Fault Zone – The Garlock Fault is a left-lateral strike slip fault that forms the northern portion of the Antelope Valley at the base of the Tehachapi Mountains. The fault extends 200 miles northeast from the Castaic Lake region, is approximately 20 miles from the Project area, and has historically produced magnitude 5.7 earthquakes within 35 miles of the Project area.
- Sierra Madre and San Fernando Fault Zones – These fault zones are reverse thrust faults located approximately 35 to 45 miles south to southwest of the Project area. These faults zones have produced multiple 5+ magnitude earthquakes over the last 100 years.

Based on the USGS National Seismic Hazard Map (2008), the Project is located in areas mapped from 40 to 60 percent gravity for peak horizontal acceleration with a 10 percent probability of exceedance in the next 50 years. According to the USGS, and dependent on structural design, 10 percent gravity is the lower threshold at which damages to structures are likely to occur. Seismicity will affect the site and proper mitigation and structural design of facilities will be required. Structures must be designed to comply with latest California Building Code or International Building Code requirements.

6.2 Fault Rupture/Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was created to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake

hazards. Within these zones, development permits are withheld until geologic investigations demonstrate that ground rupture is not a threat. Local county and city data indicate that the closest fault zone is the SAFZ and that the Project is located outside of identified Alquist-Priolo Fault Zones.

6.3 Liquefaction

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. The Project site has poorly sorted coarse grained material, and with groundwater typically greater than 100 feet bgs (USGS 2008), the site has very low susceptibility to liquefaction.

6.4 Landslides and Slope Failure

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the generally low slope less than 1 percent, the site is not at risk for landslides or slope failure. Because development of a solar facility would not result in significant changes to existing site grades, the proposed development would not increase the susceptibility to slope failure.

6.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence in the Project area are groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster to closer to 1 to 2 feet near the Project site (Sneed and Galloway 2000). Fissures and differential settling have not been observed near the site. However, historical and continued depletion of water is expected to result in future land subsidence throughout the Antelope Valley.

6.6 Collapsible Soil

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. The site is located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage will continue to follow most natural drainage patterns or drainage channels where roads or permanent grading exist. A site-specific geotechnical investigation that would identify site-specific soil characteristics is necessary to confirm the presence of such soils. If such soils exist within the upper 5 feet, mitigation could include removal of low-density soils. If soils are found at greater depths, prewatering may be a more feasible alternative.

6.7 Expansive Soil

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the years and lead to differential settlement beneath foundations. Soil series in the site are rated for a low shrink/swell potential.

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FIGURES

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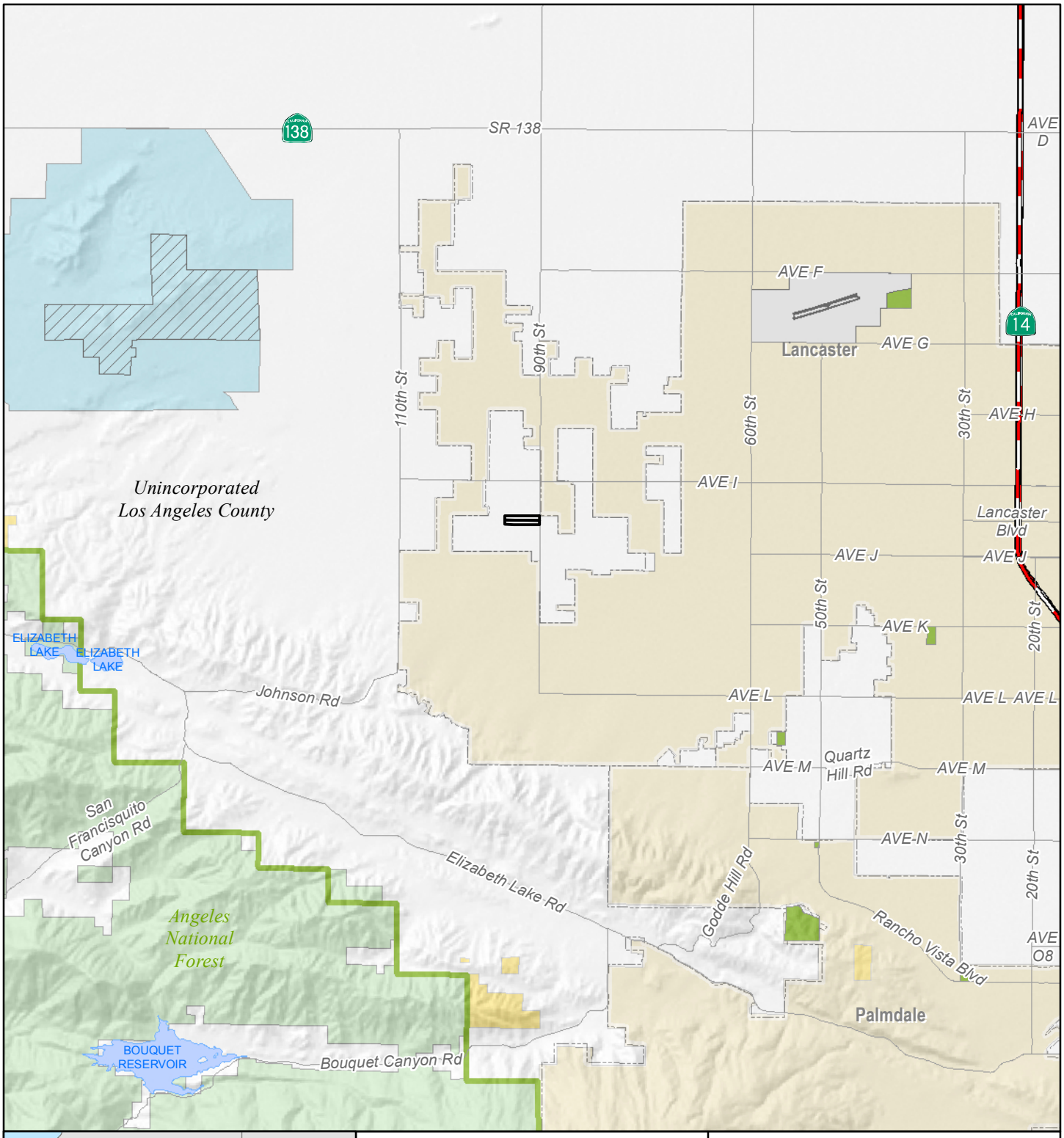

Legend

Proposed Project Site (Site 10-8)

Land Jurisdiction

- Bureau of Land Management
- State
- US Forest Service

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - SITE 10-8

FIGURE 2-1
REGIONAL LOCATION MAP

0 1 2 4
Miles

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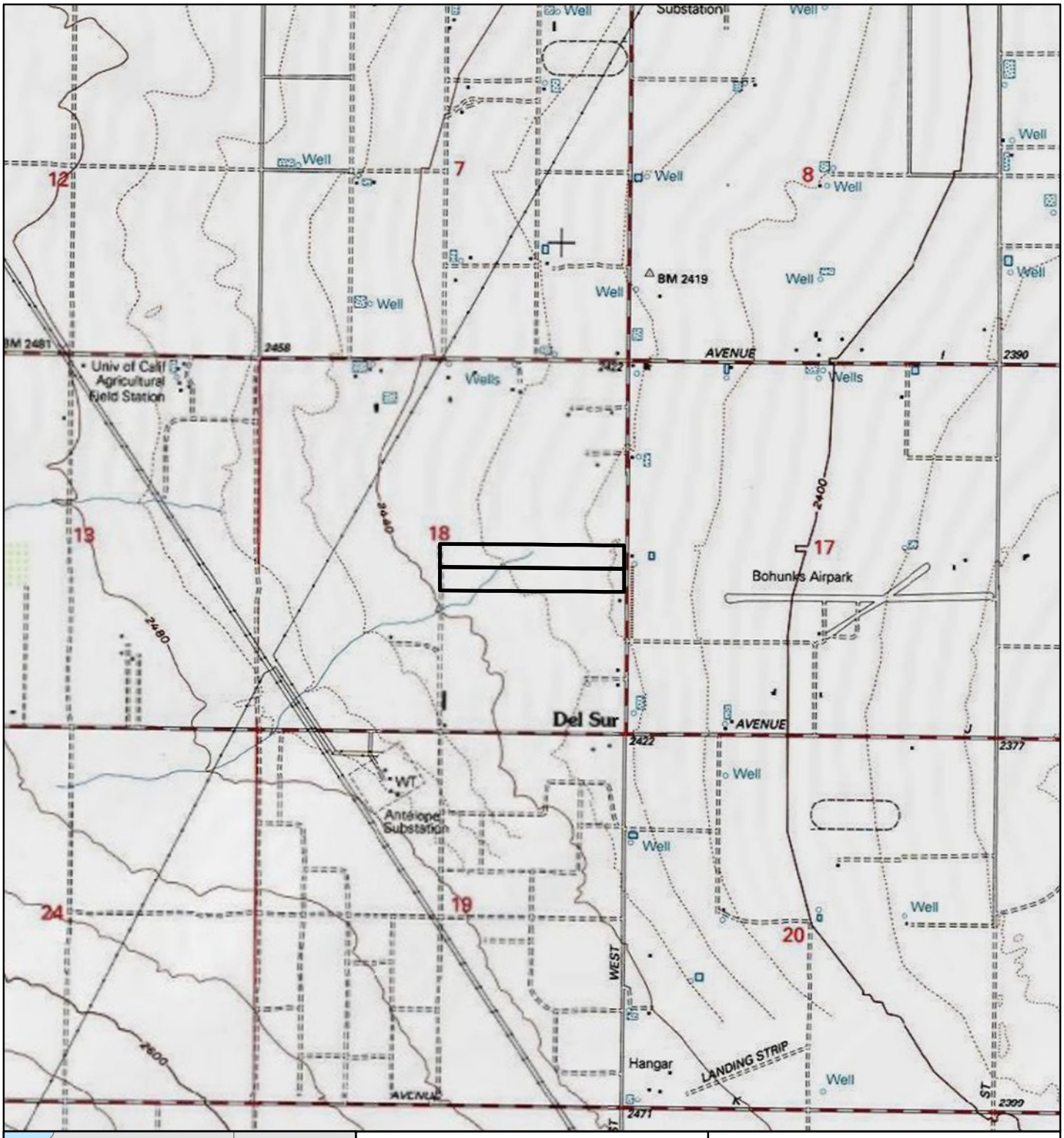

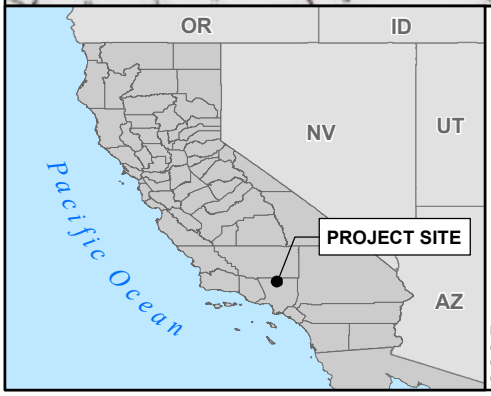

Legend

Proposed Project Site (Site 10-8)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Del Sur 7.5' Topographic Map DRG.

SILVERADO power

SILVERADO SOLAR - SITE 10-8

FIGURE 2-2
SITE TOPOGRAPHIC MAP

0 1,000 2,000 4,000
Feet

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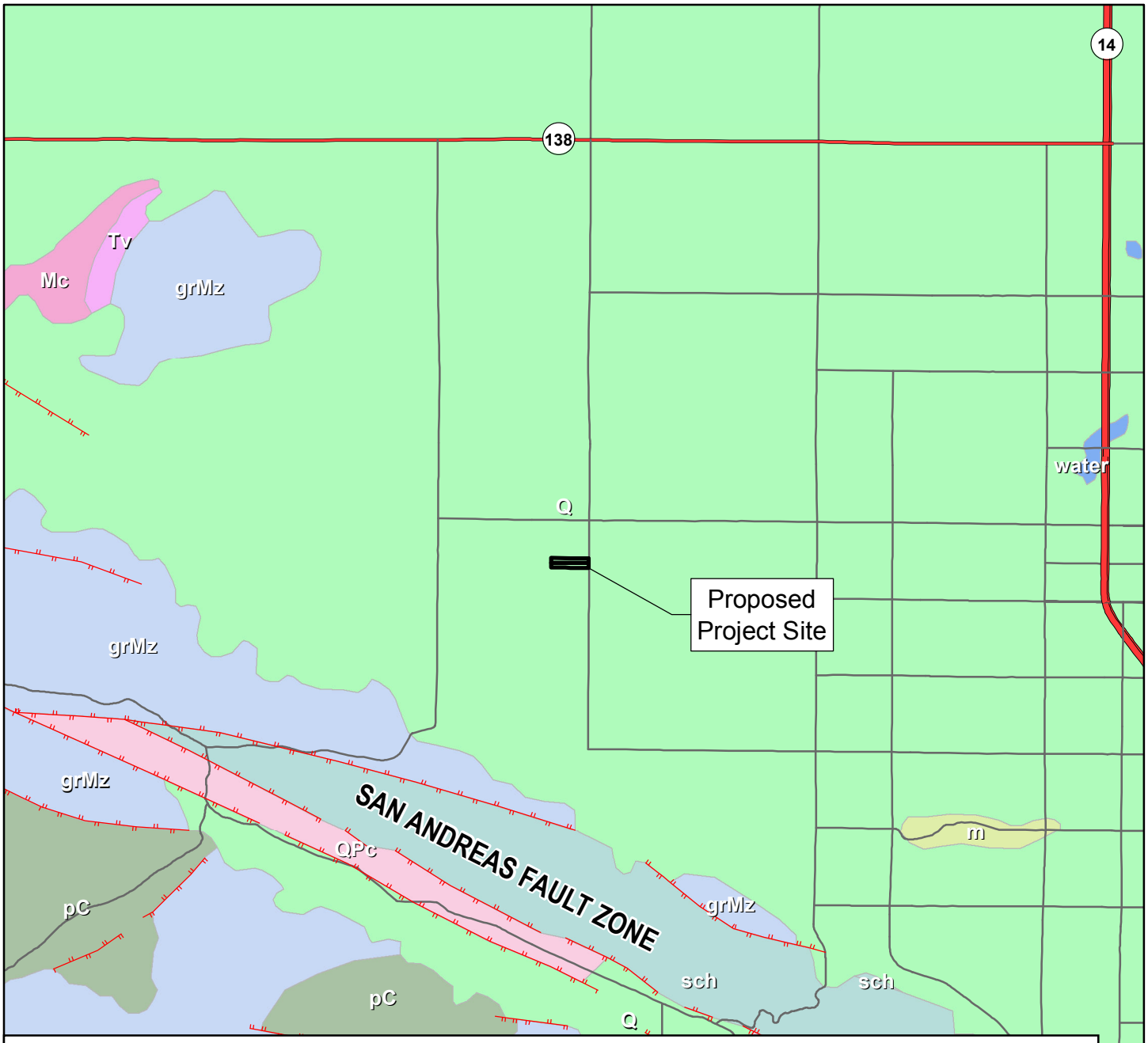
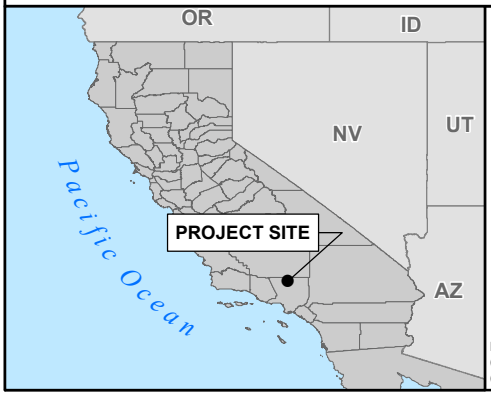


Geological Units

- Ep, Paleocene, sandstone; mudstone
- Mc, Oligocene to Pleistocene, sandstone; conglomerate
- Q, Pliocene to Holocene, alluvium; terrace
- QPc, Miocene to Pleistocene, sandstone; conglomerate
- Tv, Tertiary (22-24 Ma), rhyolite; pyroclastic
- grMz, Permian to Tertiary; most Mesozoic, granodiorite; quartz monzonite
- m, Early Proterozoic to Cretaceous, schist; gneiss
- pC, Early Proterozoic to Miocene, gneiss; granitoid
- sch, Late Cretaceous to Eocene, mica schist; mica schist
- water, Holocene, water



Legend

- Proposed Project Site (Site 10-8)
- Faults*

*Note: Unnamed faults are inactive.

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

TETRA TECH EC, INC.

SILVERADO POWER - SITE 10-8

FIGURE 3-1
REGIONAL GEOLOGY

0 1 2 4
Miles

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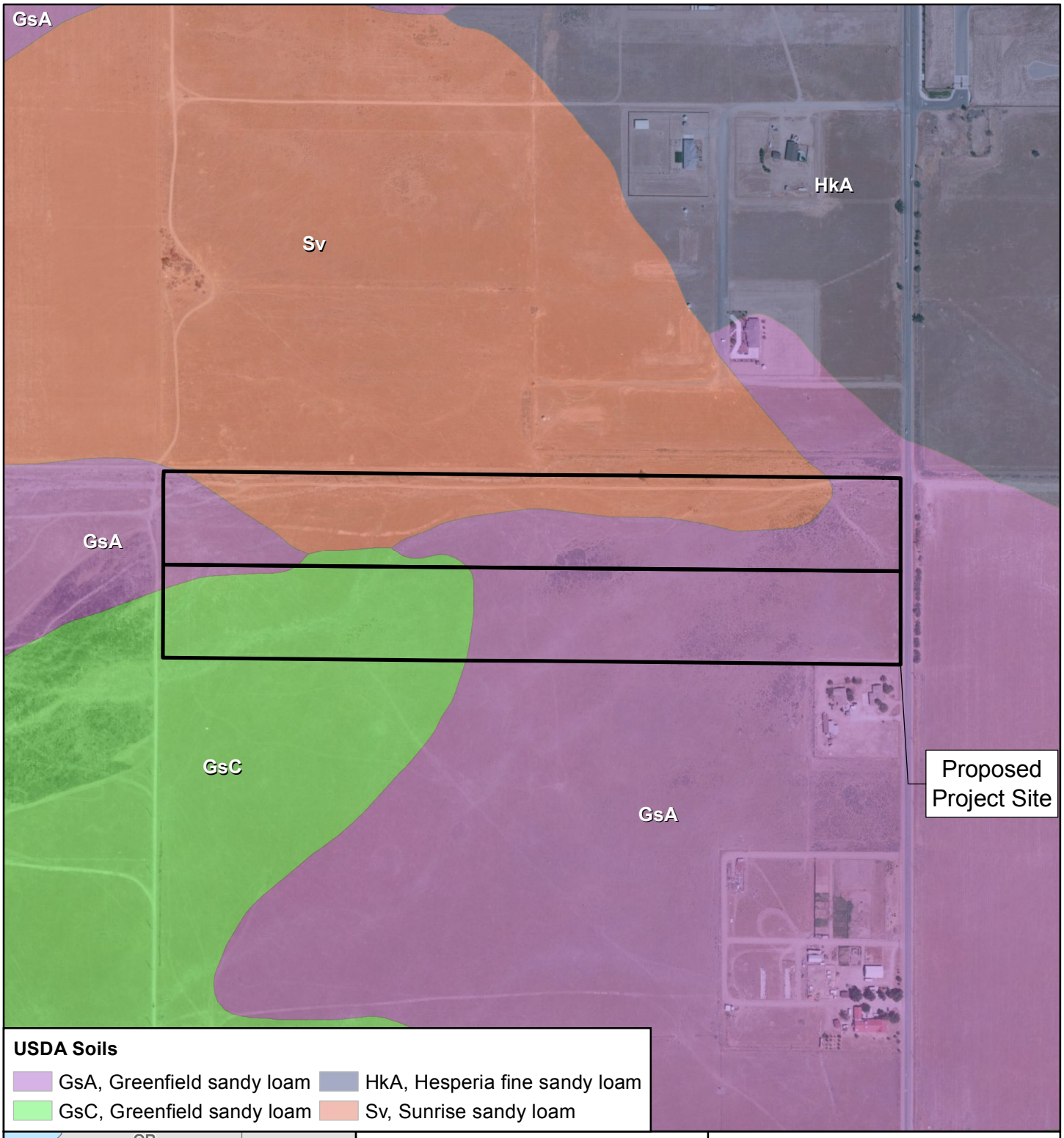
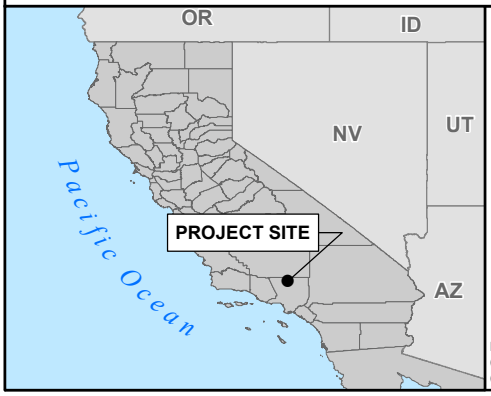


USDA Soils

- GsA, Greenfield sandy loam
- GsC, Greenfield sandy loam
- HkA, Hesperia fine sandy loam
- Sv, Sunrise sandy loam



Legend

- Proposed Project Site (Site 10-8)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

TETRA TECH EC, INC.

SILVERADO POWER - SITE 10-8

FIGURE 4-1
SITE SOILS

0 230 460 920
Feet

ATTACHMENT 1

SOIL SURVEY REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

CUP 10-8 (Antelope Solar Greenworks (Hassid))

June 1, 2011

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

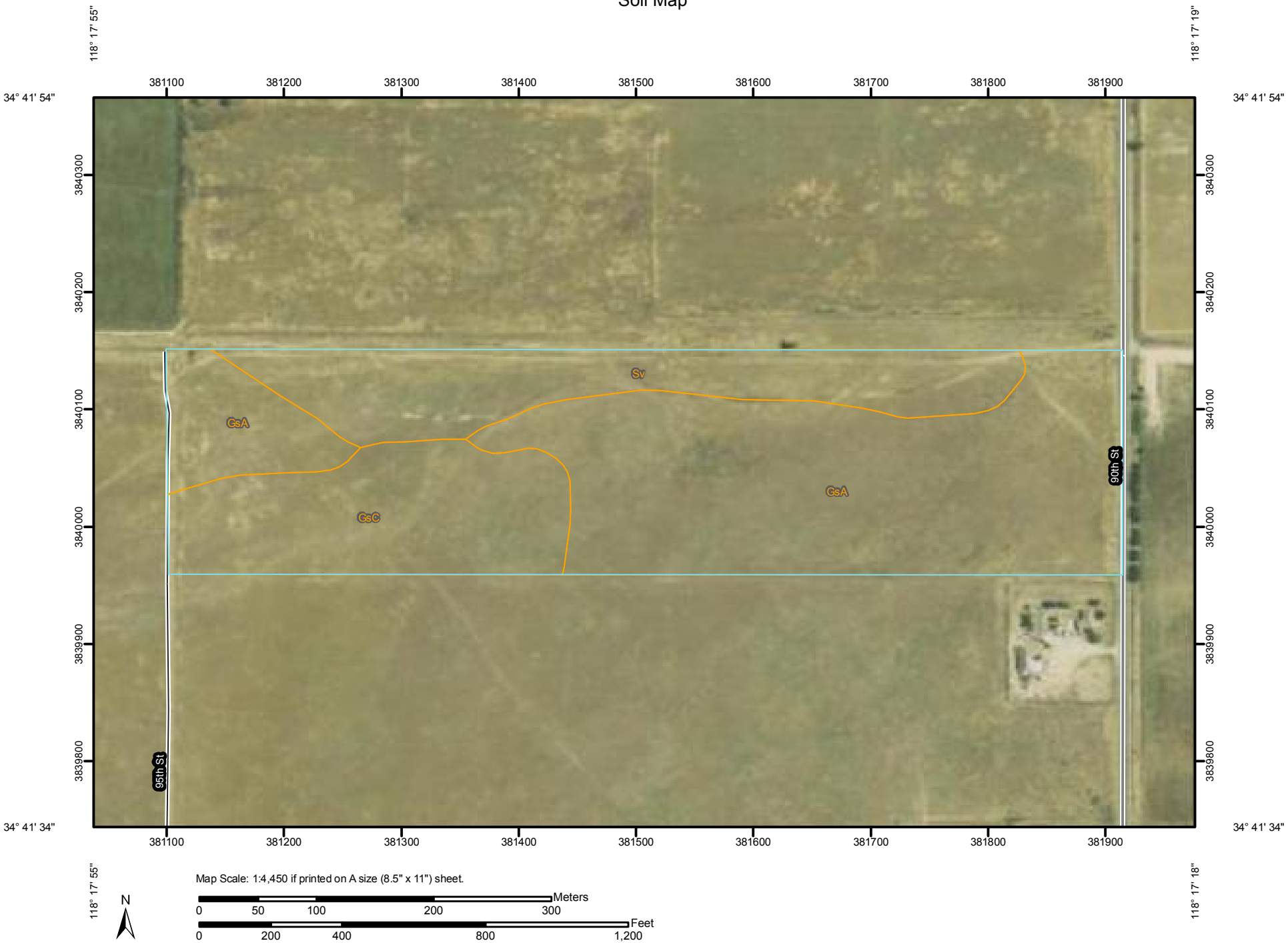
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:4,450 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 5, Jan 3, 2008

Date(s) aerial images were photographed: 6/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Antelope Valley Area, California (CA675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
GsA	Greenfield sandy loam, 0 to 2 percent slopes	21.8	56.5%
GsC	Greenfield sandy loam, 2 to 9 percent slopes	8.2	21.3%
Sv	Sunrise sandy loam	8.6	22.3%
Totals for Area of Interest		**38.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If

intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

GsA—Greenfield sandy loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 2,600 to 4,200 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 250 days

Map Unit Composition

Greenfield and similar soils: 85 percent
Minor components: 15 percent

Description of Greenfield

Setting

Landform: Terraces, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability (nonirrigated): 4c
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile

0 to 20 inches: Sandy loam
20 to 60 inches: Sandy loam
60 to 80 inches: Stratified loamy sand to coarse sandy loam

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Drainageways

Hanford

Percent of map unit: 5 percent

Sandy alluvial land

Percent of map unit: 4 percent

Unnamed
Percent of map unit: 1 percent
Landform: Swales

GsC—Greenfield sandy loam, 2 to 9 percent slopes

Map Unit Setting
Elevation: 2,600 to 4,200 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 250 days

Map Unit Composition
Greenfield and similar soils: 85 percent
Minor components: 15 percent

Description of Greenfield

Setting
Landform: Terraces, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 4e
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile
0 to 20 inches: Sandy loam
20 to 60 inches: Sandy loam
60 to 80 inches: Stratified loamy sand to coarse sandy loam

Minor Components

Hanford
Percent of map unit: 8 percent

Ramona
Percent of map unit: 5 percent

Unnamed
Percent of map unit: 1 percent

Unnamed
Percent of map unit: 1 percent

Sv—Sunrise sandy loam

Map Unit Setting
Elevation: 1,500 to 3,500 feet
Mean annual precipitation: 5 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 300 days

Map Unit Composition
Sunrise and similar soils: 85 percent
Minor components: 15 percent

Description of Sunrise

Setting
Landform: Basin floors
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Available water capacity: Low (about 4.3 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 7e
Ecological site: ALKALI FLATS 4-9" (R030XG020CA)

Typical profile
0 to 19 inches: Sandy loam
19 to 31 inches: Loam

31 to 48 inches: Cemented
48 to 65 inches: Stratified gravelly sandy loam to loam

Minor Components

Tray
Percent of map unit: 5 percent

Merrill
Percent of map unit: 5 percent

Unnamed
Percent of map unit: 4 percent

Unnamed
Percent of map unit: 1 percent
Landform: Playas

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties (CUP 10-17 (Lancaster Blue Sky Ranch (Dayan)))

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to

buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
GsA—Greenfield sandy loam, 0 to 2 percent slopes														
Greenfield	0-20	-66-	-23-	7-11- 15	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	20-60	-67-	-19-	10-14- 18	1.50-1.60	14.00-42.00	0.11-0.16	0.0-2.9	0.0-0.5	.28	.32			
	60-80	—	—	7-11- 15	1.55-1.70	14.00-42.00	0.07-0.12	0.0-2.9	0.0	.24	.32			
GsC—Greenfield sandy loam, 2 to 9 percent slopes														
Greenfield	0-20	-66-	-23-	7-11- 15	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	20-60	-67-	-19-	10-14- 18	1.50-1.60	14.00-42.00	0.11-0.16	0.0-2.9	0.0-0.5	.28	.32			
	60-80	—	—	7-11- 15	1.55-1.70	14.00-42.00	0.07-0.12	0.0-2.9	0.0	.24	.32			
Sv—Sunrise sandy loam														
Sunrise	0-19	-66-	-19-	10-15- 20	1.45-1.55	14.00-42.00	0.11-0.13	0.0-2.9	0.0-0.5	.32	.37	2	3	86
	19-31	-40-	-38-	18-23- 27	1.35-1.50	4.00-14.00	0.15-0.18	3.0-5.9	0.0	.32	.37			
	31-48	—	—	—	—	0.00	0.00	—	0.0					
	48-65	—	—	10-15- 20	1.45-1.60	4.00-14.00	0.08-0.15	0.0-2.9	0.0	.28	.37			

Physical Soil Properties (CUP 10- 8 (Antelope Solar Greenworks (Hassid)))

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

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Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion.

There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

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United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
GsA—Greenfield sandy loam, 0 to 2 percent slopes														
Greenfield	0-20	-66-	-23-	7-11- 15	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	20-60	-67-	-19-	10-14- 18	1.50-1.60	14.00-42.00	0.11-0.16	0.0-2.9	0.0-0.5	.28	.32			
	60-80	—	—	7-11- 15	1.55-1.70	14.00-42.00	0.07-0.12	0.0-2.9	0.0	.24	.32			
GsC—Greenfield sandy loam, 2 to 9 percent slopes														
Greenfield	0-20	-66-	-23-	7-11- 15	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	20-60	-67-	-19-	10-14- 18	1.50-1.60	14.00-42.00	0.11-0.16	0.0-2.9	0.0-0.5	.28	.32			
	60-80	—	—	7-11- 15	1.55-1.70	14.00-42.00	0.07-0.12	0.0-2.9	0.0	.24	.32			
Sv—Sunrise sandy loam														
Sunrise	0-19	-66-	-19-	10-15- 20	1.45-1.55	14.00-42.00	0.11-0.13	0.0-2.9	0.0-0.5	.32	.37	2	3	86
	19-31	-40-	-38-	18-23- 27	1.35-1.50	4.00-14.00	0.15-0.18	3.0-5.9	0.0	.32	.37			
	31-48	—	—	—	—	0.00	0.00	—	0.0					
	48-65	—	—	10-15- 20	1.45-1.60	4.00-14.00	0.08-0.15	0.0-2.9	0.0	.28	.37			

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APEX GREENWORKS
CUP 10 – SITE 10

DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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May 2012

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ATTACHMENT

Attachment 1 Soil Survey Report

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
CGS	California Geological Survey
DWR	Department of Water Resources
MY	million years
NRCS	Natural Resources Conservation Service
Project	Apex Greenworks Solar Project
PV	photovoltaic
SAFZ	San Andreas Fault Zone
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION

This geotechnical desktop report provides a desktop level analysis of the geotechnical issues and potential geologic hazards affecting the proposed Apex Greenworks Solar Project (Project) and site. This report is based on readily available geologic, hydrologic, and soil data and is intended to be used as a tool to determine feasibility and preliminary design. This report is not intended for use in final design or construction. Additional geotechnical studies, reports, and services will be required if the project proceeds to design and construction.

2.0 PROJECT DESCRIPTION

The Project is located in the Antelope Valley area in unincorporated northeast Los Angeles County, approximately 7.5 miles west of Lancaster. The Project site is bounded by West Avenue I-12 to the north, 90th Street West to the west, an unknown dirt road to the east, and West Avenue J to the south. The Project site, consisting of previously disturbed agricultural land that is currently fallow, comprises 256 acres, 60 of which are being analyzed in this report. The proposed Project consists of a 52 megawatt alternating current solar photovoltaic (PV) generating facility, 15 megawatts of which are being analyzed in this report. The Project will utilize crystalline silicon, or thin film, PV technology on fixed-tilt or tracker mounting supports. A regional location map (Figure 2-1) and topographic map (Figure 2-2) show the general vicinity, site boundary, and terrain for the proposed Project area.

3.0 GEOLOGY

3.1 Regional Geology

The proposed Project is located in the Antelope Valley, approximately 45 miles north of Los Angeles, and in the western corner of the Mojave Desert physiographic province. The Mojave Desert province is a topographically closed basin that contains broad expanses of desert plains and isolated mountain ranges with elevations ranging from 2,300 to 3,500 feet above mean sea level (California Geological Survey [CGS] 2002). Annual rainfall generally ranges between 5 to 10 inches and drains into interior playas (Department of Water Resources [DWR] 2003). The Project is located in the western wedge-shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada) and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary).

The geology of the region consists of Pre-Tertiary (greater than 1,000 million years [MY] to 66 MY) crystalline igneous and metamorphic rocks, Tertiary age (66 MY to 1.6 MY) sedimentary and volcanic rocks, and Quaternary age (1.6 MY to present) alluvial and sedimentary units. The Antelope Valley is underlain by up to 4,000 feet of alluvial fill from the surrounding uplands, and further underlain by basement rocks including gneiss, granite, and other metamorphic and igneous rocks. Geologic units that make up the basement complex reach the surface in some parts of the valley, and are similar to the surrounding uplands. The uplands are primarily Pre-Tertiary and Tertiary uplifted granite, gneiss, schist, and volcanic rocks, with uplifted sedimentary units in the traverse ranges to the west. Much of these units have undergone extensive deformation throughout their geologic history and continue to undergo additional folding and faulting from the tectonic processes associated with movement along the San Andreas Fault (the North American and Pacific Plate boundary). Regional geology is shown in Figure 3-1.

3.2 Local Geology

The site is located on the Del Sur United States Geological Survey (USGS) 7.5 minute topographic quadrangle. Elevations at the site range from approximately 2,421 feet in the west portion of the Project site to 2,400 feet in the east portion of the site. The site is located on relatively flat alluvial Quaternary sediments and is located approximately 4 miles away from the San Andreas Fault zone (SAFZ).

The general underlying geology of the site is Pleistocene and Holocene alluvial and lacustrine deposits. These deposits typically consist of compacted gravels, sand, silt, and clay; and deposits generally fine towards the central parts of the valley (Duell 1987). Coarse alluvial deposits make up the upper and lower aquifers and are separated by confining layers of clay lake deposits up to 400 feet thick. The confining layers have minor interbeds of coarser material, and experience some leakage between aquifers (Planert and Williams 1995).

4.0 SOILS

Attachment 1 includes a soil survey map and the physical properties report generated from the National Resources Conservation Service (NRCS) Web Soil Survey (U.S. Department of Agriculture [USDA] 2011). Greenfield sandy loam is dominant at the site (Attachment 1 and Figure 4-1). Also present at the site is the Sunrise sandy loam. Soils have been disturbed and soil horizons may be lacking. General soil descriptions and soil erosion factors based on the soil survey map and the physical properties report (Attachment 1) are summarized below in Table 4-1.

Table 4-1 Project Area Soil Descriptions

Soil Name (Symbol)	Soil Description
Greenfield sandy loam, 0 to 2 percent slopes (GsA), 2 to 9 percent slopes (GsC)	• Well drained • Typical profile includes: o 0 to 20 inches: Sandy loam o 20 to 60 inches: Sandy loam o 60 to 80 inches: Stratified loamy sand to coarse sandy loam • The capacity of the most limiting layer to transmit water is high. • Shrink swell potential is low.
Sunrise sandy loam (Sv)	• Moderately well drained • Typical profile includes: o 0 to 19 inches: Sandy loam o 19 to 31 inches: Loam o 31 to 48 inches: Cemented o 48 to 65 inches: Stratified gravelly sandy loam to loam • The capacity of the most limiting layer to transmit water is very low. • Shrink swell potential is low to moderate.

4.1 Erodibility

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The two primary types of erosion, water erosion and wind erosion, are further described in the following sections.

4.1.1 Water Erosion

Water erosion of soils typically occurs during flooding or when there is surface water runoff. The erosion potential of a soil is compared using the erosion factor or the K factor which indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range from 0.02 to 0.69 with higher values indicating increased susceptibility to erosion. Table 4-2 below includes the erosion factors for the subject project site.

Table 4-2 Soil Erosion Characteristics

Soil Map Unit (Symbol)	Erosion Factor (K Factor) (Kw in Attachment 1)	Wind Erodibility Group
Greenfield sandy loam (GsA)	0.24-0.28	3
Sunrise sandy loam (Sv)	0.28-0.32	3
Greenfield sandy loam, 2 to 9 percent slopes (GsC)	0.24-0.28	3

Notes:

1. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. The range stated is for the entire soil profile.

Soils at the site have K factors that range from 0.24 to 0.32 (for the entire soil profile) indicating a low to medium susceptibility to sheet and rill erosion. It is important to note that land disturbance and construction impacts could increase the susceptibility to soil erosion. However, with the implementation of appropriate erosion and sediment control Best Management Practices, the amount of soil loss due to water erosion is expected to be less than significant.

4.1.2 Wind Erosion

Wind erosion of soil is typical in areas with poor vegetative cover or where there is soil disturbance. Wind erodibility groups are used to assess the susceptibility of soil to wind erosion. Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The wind erodibility group is 3 for the soils at the subject site (Table 4-2) indicating somewhat low to medium susceptibility to wind erosion.

5.0 GROUNDWATER

Water levels near the property ranged from approximately 217.30 feet below ground surface (bgs) in 2005 to 235 bgs in 2008, and have historically been documented in different wells at depths up to 290 feet bgs (DWR 2010). Groundwater typically flows toward topographic lows and playa lakes from the San Gabriel Mountains to the south and the Tehachapi Mountains to the west and north. However, local groundwater flow paths are often controlled by groundwater pumping conditions near Lancaster and Edwards Air Force Base. Groundwater pumping has contributed to a significant decline in water levels, and as a result, 292 square miles of Antelope Valley subsided more than 1 foot (Sneed and Galloway 2000; Ikehara and Phillips 1994).

6.0 GEOLOGICAL AND SOIL RELATED HAZARDS

Geologic hazards are natural physical conditions that may result in damage to the land and structures or injury to people. Such hazards include seismicity (earthquakes, ground shaking, and fault rupture), landslides, liquefaction, and subsidence.

6.1 Ground Shaking/Seismicity

Seismicity near the Project site is primarily generated from the Garlock Fault zone and the SAFZ. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones, however, and could also occur at any number of active faults in the regional vicinity.

Regionally, seismicity has mostly been attributed to crustal deformation resulting from the San Andreas Fault and other local fault zones. Faults are considered active if there has been displacement in the last 11,000 years, and potentially active if there has been movement over the Quaternary period (1.6 MY to present). Several active faults and fault zones have been noted in the vicinity of the Project on both federal (USGS) and state (CGS) databases (Figure 3-1). These active faults have the ability to cause significant seismic activity in the region:

- San Andreas Fault Zone – The SAFZ is the transform boundary between the Pacific Plate and the North American Plate and has a right-lateral sense of displacement between 1.5 to 2.5 inches per year (Wallace 1990). The SAFZ has the highest probability of producing a magnitude 6.7 earthquake or greater, and has produced two 8+ magnitude earthquakes in Parkfield (150 miles from the site) and San Francisco (320 miles from the site) in the last 153 years.
- Garlock Fault Zone – The Garlock Fault is a left-lateral strike slip fault that forms the northern portion of the Antelope Valley at the base of the Tehachapi Mountains. The fault extends 200 miles northeast from the Castaic Lake region, is approximately 20 miles from the Project area, and has historically produced magnitude 5.7 earthquakes within 22 miles of the Project area.
- Sierra Madre and San Fernando Fault Zones – These fault zones are reverse thrust faults located approximately 28 to 35 miles south to southwest of the Project area. These faults zones have produced multiple 5+ magnitude earthquakes over the last 100 years.

Based on the USGS National Seismic Hazard Map (2008), the Project is located in areas mapped from 40 to 60 percent gravity for peak horizontal acceleration with a 10 percent probability of exceedance in the next 50 years. According to the USGS, and dependent on structural design, 10 percent gravity is the lower threshold at which damages to structures are likely to occur. Seismicity will affect the site and proper mitigation and structural design of facilities will be required. Structures must be designed to comply with latest California Building Code or International Building Code requirements.

6.2 Fault Rupture/Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was created to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Within these zones, development permits are withheld until geologic investigations

demonstrate that ground rupture is not a threat. Local county and city data indicate that the closest fault zone is the SAFZ and that the Project is located outside of identified Alquist-Priolo Fault Zones.

6.3 Liquefaction

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. The Project site has poorly sorted coarse grained material, and with groundwater typically greater than 150 feet bgs (USGS 2008), the site has very low susceptibility to liquefaction.

6.4 Landslides and Slope Failure

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the generally low slope of approximately 1 percent, the site is not at risk for landslides or slope failure. Because development of a solar facility would not result in significant changes to existing site grades, the proposed development would not increase the susceptibility to slope failure.

6.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence in the Project area are groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster to closer to 1 to 2 feet near the Project site (Sneed and Galloway 2000). Fissures and differential settling have not been observed near the site. However, historical and continued depletion of water is expected to result in future land subsidence throughout the Antelope Valley.

6.6 Collapsible Soil

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. The site is located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage will continue to follow most natural drainage patterns or drainage channels where roads or permanent grading exist. A site-specific geotechnical investigation that would identify site-specific soil characteristics is necessary to confirm the presence of such soils. If such soils exist within the upper 5 feet, mitigation could include removal of low-density soils. If soils are found at greater depths, prewatering may be a more feasible alternative.

6.7 Expansive Soil

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the years and lead to differential settlement beneath foundations. Soil series in the site are rated for a low shrink/swell potential.

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FIGURES

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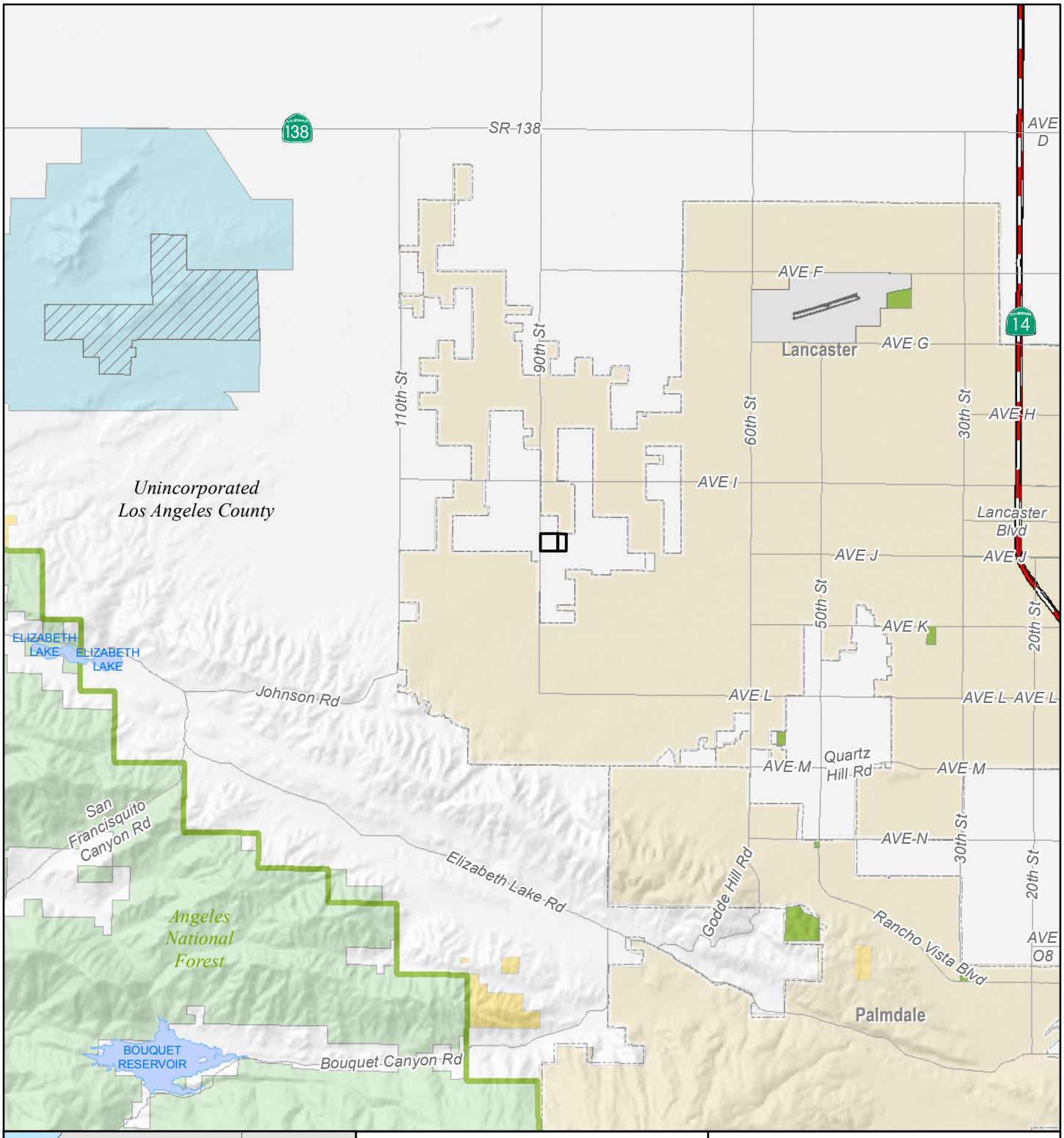

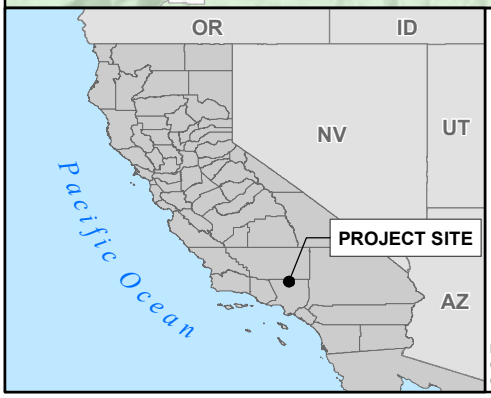

Legend

Proposed Project Site (Site 10-10)

Land Jurisdiction

- Bureau of Land Management
- State
- US Forest Service

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - SITE 10-10

FIGURE 2-1
REGIONAL LOCATION MAP

0 1 2 4
Miles

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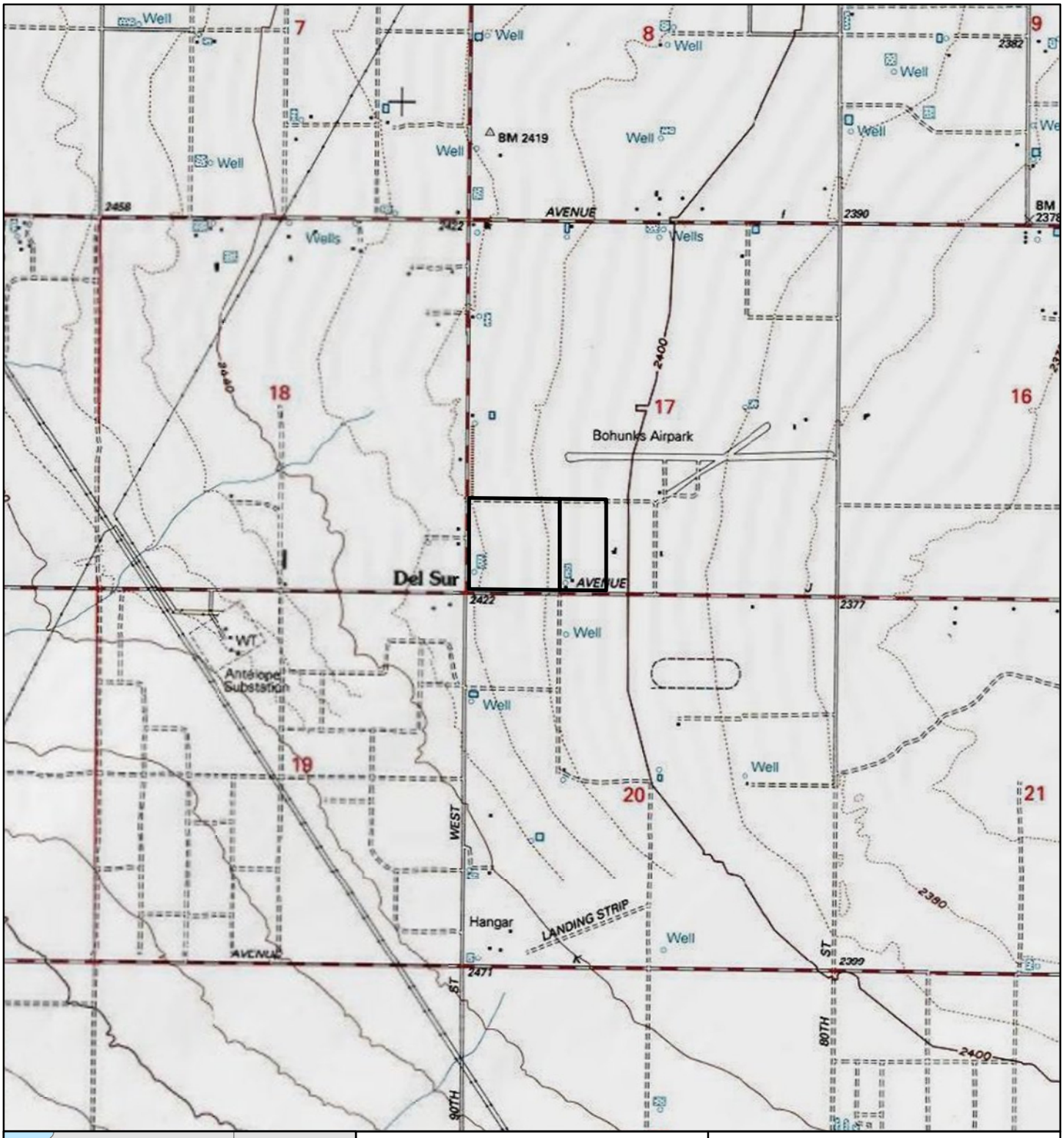

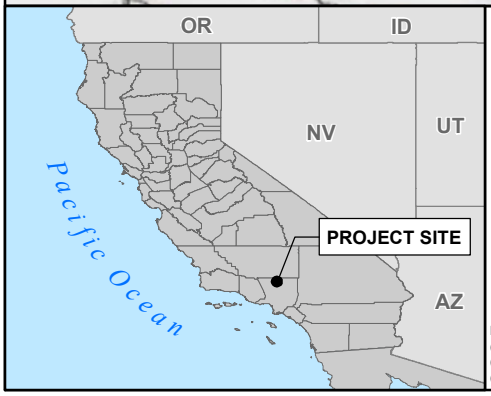

Legend

Proposed Project Site (Site 10-10)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Del Sur 7.5' Topographic Map DRG.

SILVERADO power

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SILVERADO SOLAR - SITE 10-10

FIGURE 2-2
SITE TOPOGRAPHIC MAP

0 1,000 2,000 4,000
Feet

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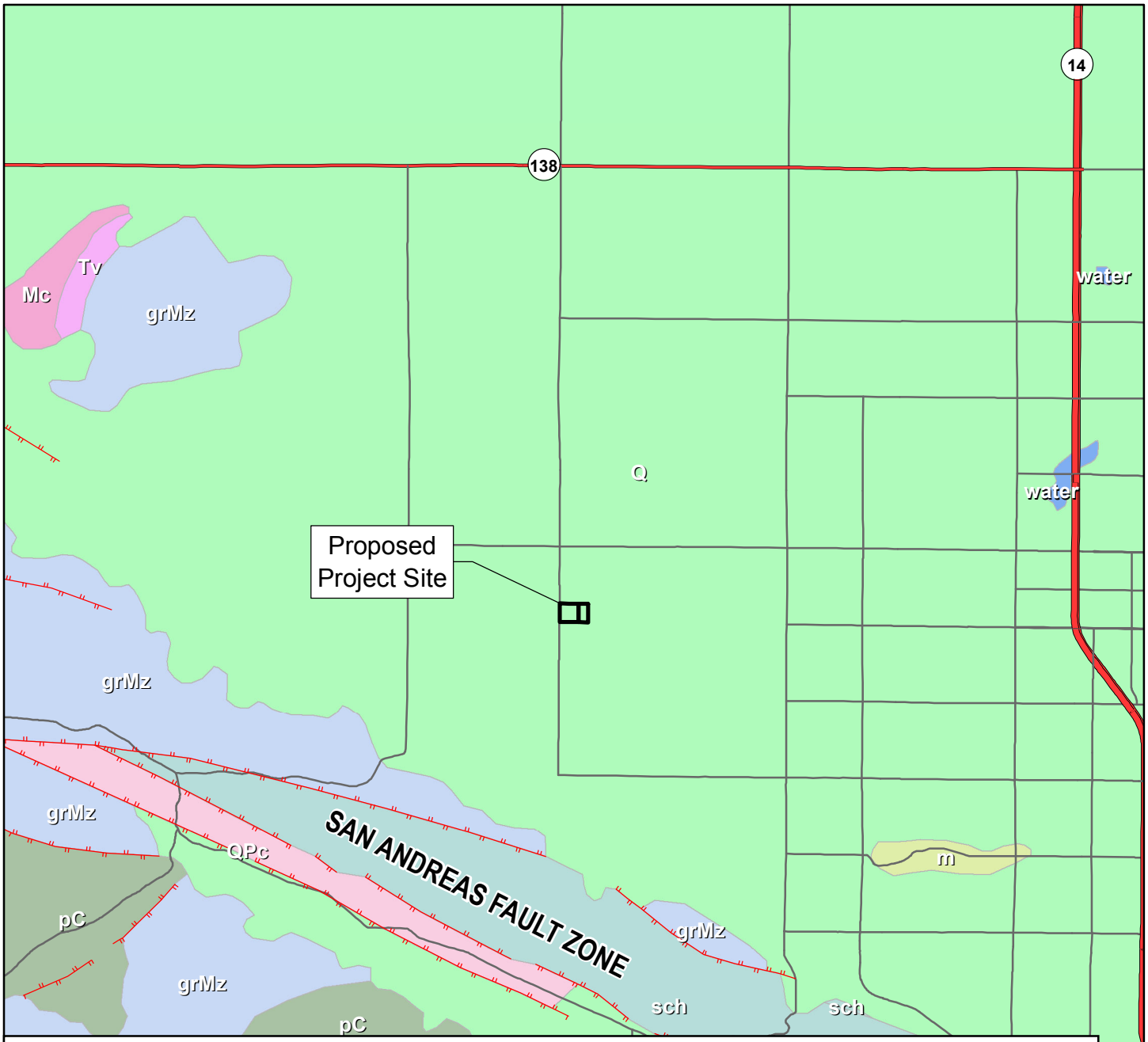
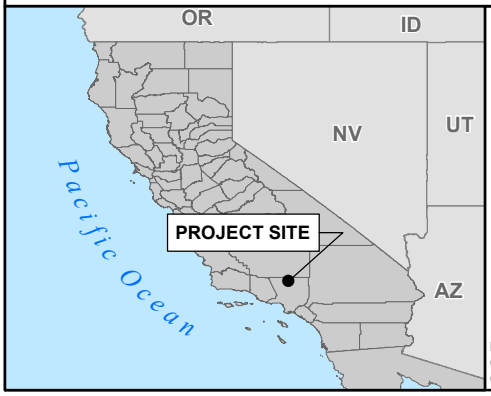


Geological Units

- Ep, Paleocene, sandstone; mudstone
- Mc, Oligocene to Pleistocene, sandstone; conglomerate
- Q, Pliocene to Holocene, alluvium; terrace
- QPc, Miocene to Pleistocene, sandstone; conglomerate
- Tv, Tertiary (22-24 Ma), rhyolite; pyroclastic
- grMz, Permian to Tertiary; most Mesozoic, granodiorite; quartz monzonite
- m, Early Proterozoic to Cretaceous, schist; gneiss
- pC, Early Proterozoic to Miocene, gneiss; granitoid
- sch, Late Cretaceous to Eocene, mica schist; mica schist
- water, Holocene, water



Legend

- Proposed Project Site (Site 10-10)
- Faults*

*Note: Unnamed faults are inactive.

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

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SILVERADO POWER - SITE 10-10

FIGURE 3-1
REGIONAL GEOLOGY

0 1 2 4
Miles

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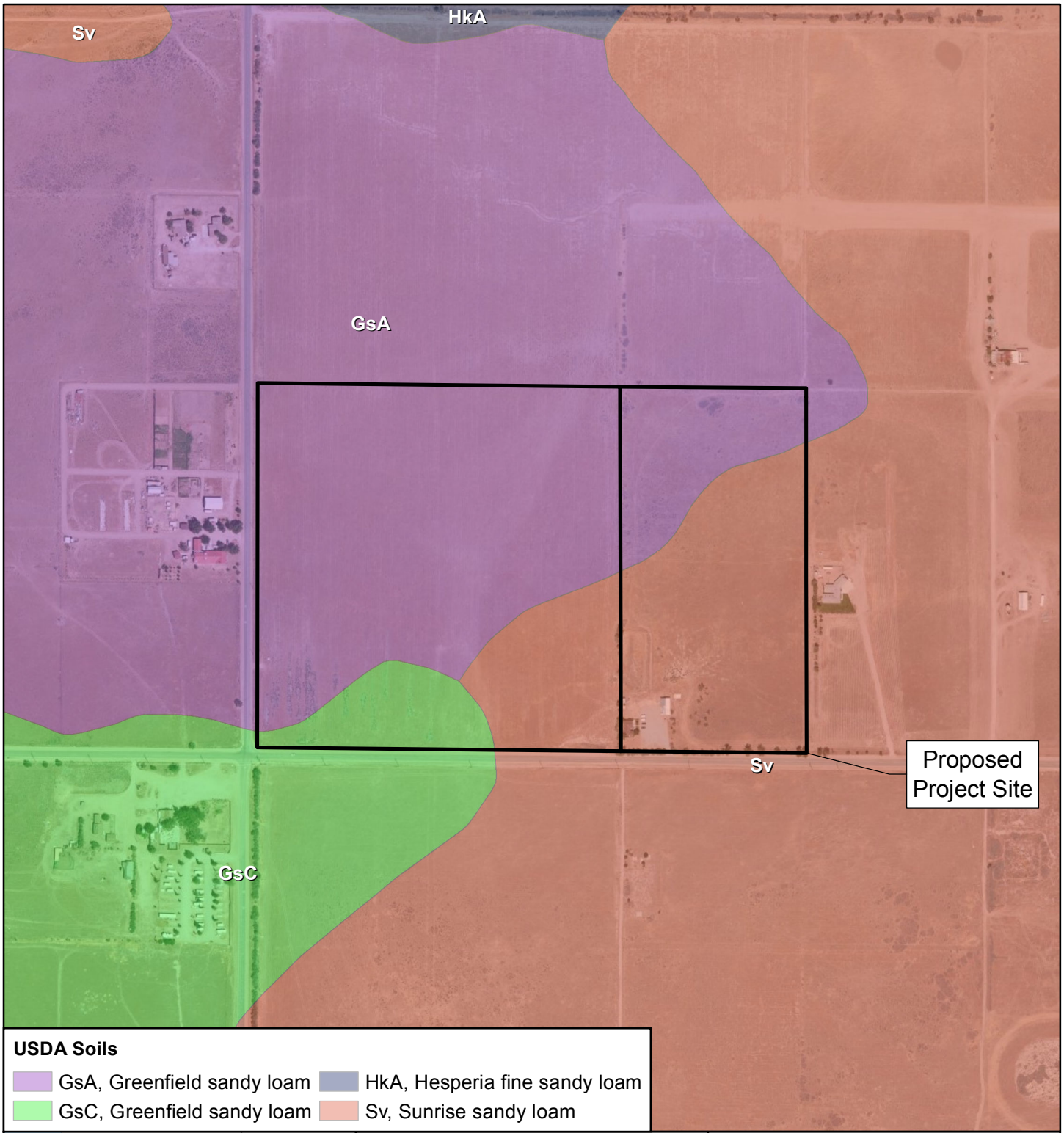
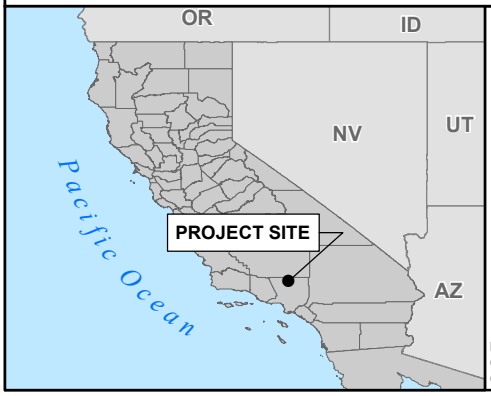


USDA Soils

- GsA, Greenfield sandy loam
- HkA, Hesperia fine sandy loam
- GsC, Greenfield sandy loam
- Sv, Sunrise sandy loam



Legend

Proposed Project Site (Site 10-10)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

TETRA TECH EC, INC.

SILVERADO POWER - SITE 10-10

FIGURE 4-1
SITE SOILS

0 230 460 920
Feet

ATTACHMENT 1

SOIL SURVEY REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

CUP 10-10 (Apex Greenworks (Stevens))

June 1, 2011

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:3,380 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 5, Jan 3, 2008

Date(s) aerial images were photographed: 6/19/2005; 6/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Antelope Valley Area, California (CA675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
GsA	Greenfield sandy loam, 0 to 2 percent slopes	34.3	58.5%
GsC	Greenfield sandy loam, 2 to 9 percent slopes	3.9	6.6%
Sv	Sunrise sandy loam	20.5	34.9%
Totals for Area of Interest		**58.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If

intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

GsA—Greenfield sandy loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 2,600 to 4,200 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 250 days

Map Unit Composition

Greenfield and similar soils: 85 percent
Minor components: 15 percent

Description of Greenfield

Setting

Landform: Terraces, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability (nonirrigated): 4c
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile

0 to 20 inches: Sandy loam
20 to 60 inches: Sandy loam
60 to 80 inches: Stratified loamy sand to coarse sandy loam

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Drainageways

Hanford

Percent of map unit: 5 percent

Sandy alluvial land

Percent of map unit: 4 percent

Unnamed
Percent of map unit: 1 percent
Landform: Swales

GsC—Greenfield sandy loam, 2 to 9 percent slopes

Map Unit Setting
Elevation: 2,600 to 4,200 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 250 days

Map Unit Composition
Greenfield and similar soils: 85 percent
Minor components: 15 percent

Description of Greenfield

Setting
Landform: Terraces, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 4e
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile
0 to 20 inches: Sandy loam
20 to 60 inches: Sandy loam
60 to 80 inches: Stratified loamy sand to coarse sandy loam

Minor Components

Hanford
Percent of map unit: 8 percent

Ramona
Percent of map unit: 5 percent

Unnamed
Percent of map unit: 1 percent

Unnamed
Percent of map unit: 1 percent

Sv—Sunrise sandy loam

Map Unit Setting
Elevation: 1,500 to 3,500 feet
Mean annual precipitation: 5 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 300 days

Map Unit Composition
Sunrise and similar soils: 85 percent
Minor components: 15 percent

Description of Sunrise

Setting
Landform: Basin floors
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Available water capacity: Low (about 4.3 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 7e
Ecological site: ALKALI FLATS 4-9" (R030XG020CA)

Typical profile
0 to 19 inches: Sandy loam
19 to 31 inches: Loam

31 to 48 inches: Cemented
48 to 65 inches: Stratified gravelly sandy loam to loam

Minor Components

Tray
Percent of map unit: 5 percent

Merrill
Percent of map unit: 5 percent

Unnamed
Percent of map unit: 4 percent

Unnamed
Percent of map unit: 1 percent
Landform: Playas

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties (CUP 10-10 (Apex Greenworks (Stevens)))

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to

buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
GsA—Greenfield sandy loam, 0 to 2 percent slopes														
Greenfield	0-20	-66-	-23-	7-11- 15	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	20-60	-67-	-19-	10-14- 18	1.50-1.60	14.00-42.00	0.11-0.16	0.0-2.9	0.0-0.5	.28	.32			
	60-80	—	—	7-11- 15	1.55-1.70	14.00-42.00	0.07-0.12	0.0-2.9	0.0	.24	.32			
GsC—Greenfield sandy loam, 2 to 9 percent slopes														
Greenfield	0-20	-66-	-23-	7-11- 15	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	20-60	-67-	-19-	10-14- 18	1.50-1.60	14.00-42.00	0.11-0.16	0.0-2.9	0.0-0.5	.28	.32			
	60-80	—	—	7-11- 15	1.55-1.70	14.00-42.00	0.07-0.12	0.0-2.9	0.0	.24	.32			
Sv—Sunrise sandy loam														
Sunrise	0-19	-66-	-19-	10-15- 20	1.45-1.55	14.00-42.00	0.11-0.13	0.0-2.9	0.0-0.5	.32	.37	2	3	86
	19-31	-40-	-38-	18-23- 27	1.35-1.50	4.00-14.00	0.15-0.18	3.0-5.9	0.0	.32	.37			
	31-48	—	—	—	—	0.00	0.00	—	0.0					
	48-65	—	—	10-15- 20	1.45-1.60	4.00-14.00	0.08-0.15	0.0-2.9	0.0	.28	.37			

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CENTRAL ANTELOPE DRY FARM RANCH, LLC
CUP 10 – SITE 11

DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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May 2012

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ATTACHMENT

Attachment 1 Soil Survey Report

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
CGS	California Geological Survey
DWR	Department of Water Resources
MY	million years
NRCS	Natural Resources Conservation Service
Project	Central Antelope Dry Farm Ranch Solar Project
PV	photovoltaic
SAFZ	San Andreas Fault Zone
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION

This geotechnical desktop report provides a desktop level analysis of the geotechnical issues and potential geologic hazards affecting the proposed Central Antelope Dry Farm Ranch Solar Project (Project) and site. This report is based on readily available geologic, hydrologic, and soil data and is intended to be used as a tool to determine feasibility and preliminary design. This report is not intended for use in final design or construction. Additional geotechnical studies, reports, and services will be required if the project proceeds to design and construction.

2.0 PROJECT DESCRIPTION

The Project is located in the Antelope Valley area in unincorporated northeast Los Angeles County, approximately 8 miles west of Lancaster. The Project site is bounded by West Avenue I to the north, 97th Street West to the west, 95th Street West to the east, and an unknown dirt road to the south. The Project site, consisting of previously disturbed agricultural land that is currently fallow, comprises 256 acres, 98 of which are being analyzed in this report. The proposed Project consists of a 52 megawatt alternating current solar photovoltaic (PV) generating facility, 16 megawatts of which are being analyzed in this report. The Project will utilize crystalline silicon, or thin film, PV technology on fixed-tilt or tracker mounting supports. A regional location map (Figure 2-1) and topographic map (Figure 2-2) show the general vicinity, site boundary, and terrain for the proposed Project area.

3.0 GEOLOGY

3.1 Regional Geology

The proposed Project is located in the Antelope Valley, approximately 45 miles north of Los Angeles, and in the western corner of the Mojave Desert physiographic province. The Mojave Desert province is a topographically closed basin that contains broad expanses of desert plains and isolated mountain ranges with elevations ranging from 2,300 to 3,500 feet above mean sea level (California Geological Survey [CGS] 2002). Annual rainfall generally ranges between 5 to 10 inches and drains into interior playas (Department of Water Resources [DWR] 2003). The Project is located in the western wedge-shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada) and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary).

The geology of the region consists of Pre-Tertiary (greater than 1,000 million years [MY] to 66 MY) crystalline igneous and metamorphic rocks, Tertiary age (66 MY to 1.6 MY) sedimentary and volcanic rocks, and Quaternary age (1.6 MY to present) alluvial and sedimentary units. The Antelope Valley is underlain by up to 4,000 feet of alluvial fill from the surrounding uplands, and further underlain by basement rocks including gneiss, granite, and other metamorphic and igneous rocks. Geologic units that make up the basement complex reach the surface in some parts of the valley, and are similar to the surrounding uplands. The uplands are primarily Pre-Tertiary and Tertiary uplifted granite, gneiss, schist, and volcanic rocks, with uplifted sedimentary units in the traverse ranges to the west. Much of these units have undergone extensive deformation throughout their geologic history and continue to undergo additional folding and faulting from the tectonic processes associated with movement along the San Andreas Fault (the North American and Pacific Plate boundary). Regional geology is shown in Figure 3-1.

3.2 Local Geology

The site is located on the Del Sur United States Geological Survey (USGS) 7.5 minute topographic quadrangle. Elevations at the site range from approximately 2,445 feet in the west portion of the Project site to 2,435 feet in the east portion of the site. The site is located on relatively flat alluvial Quaternary sediments and is located approximately 4 miles away from the San Andreas Fault zone (SAFZ).

The general underlying geology of the site is Pleistocene and Holocene alluvial and lacustrine deposits. These deposits typically consist of compacted gravels, sand, silt, and clay; and deposits generally fine towards the central parts of the valley (Duell 1987). Coarse alluvial deposits make up the upper and lower aquifers and are separated by confining layers of clay lake deposits up to 400 feet thick. The confining layers have minor interbeds of coarser material, and experience some leakage between aquifers (Planert and Williams 1995).

4.0 SOILS

Attachment 1 includes a soil survey map and the physical properties report generated from the National Resources Conservation Service (NRCS) Web Soil Survey (U.S. Department of Agriculture [USDA] 2011). Greenfield sandy loam and Sunrise sandy loam are dominant at the site (Attachment 1 and Figure 4-1). Also present at the site is the Ramona coarse sandy loam which occupies a relatively small site area. Soils have been disturbed and soil horizons may be lacking. General soil descriptions and soil erosion factors based on the soil survey map and the physical properties report (Attachment 1) are summarized below in Table 4-1.

Table 4-1 Project Area Soil Descriptions

Soil Name (Symbol)	Soil Description
Greenfield sandy loam, 0 to 2 percent slopes (GsA), 2 to 9 percent slopes (GsC)	• Well drained • Typical profile includes: o 0 to 20 inches: Sandy loam o 20 to 60 inches: Sandy loam o 60 to 80 inches: Stratified loamy sand to coarse sandy loam • The capacity of the most limiting layer to transmit water is high. • Shrink swell potential is low.
Ramona coarse sandy loam, 0 to 2 percent slopes (RcA)	• Well drained • Typical profile includes: o 0 to 20 inches: Coarse sandy loam o 20 to 31 inches: Fine sandy loam o 31 to 90 inches: Sandy clay loam • The capacity of the most limiting layer to transmit water is moderately high. • Shrink swell potential is low.
Sunrise sandy loam (Sv)	• Moderately well drained • Typical profile includes: o 0 to 19 inches: Sandy loam o 19 to 31 inches: Loam o 31 to 48 inches: Cemented o 48 to 65 inches: Stratified gravelly sandy loam to loam • The capacity of the most limiting layer to transmit water is very low. • Shrink swell potential is low to moderate.

4.1 Erodibility

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The two primary types of erosion, water erosion and wind erosion, are further described in the following sections.

4.1.1 Water Erosion

Water erosion of soils typically occurs during flooding or when there is surface water runoff. The erosion potential of a soil is compared using the erosion factor or the K factor which indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range from 0.02 to 0.69 with higher values indicating increased susceptibility to erosion. Table 4-2 below includes the erosion factors for the subject project site.

Table 4-2 Soil Erosion Chracteristics

Soil Map Unit (Symbol)	Erosion Factor (K Factor) (Kw in Attachment 1)	Wind Erodibility Group
Greenfield sandy loam (GsA)	0.24-0.28	3
Ramona coarse sandy loam, 0 to 2 percent slopes (RcA)	0.28	3
Sunrise sandy loam (Sv)	0.28-0.32	3

Notes:

1. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. The range stated is for the entire soil profile.

Soils at the site have K factors that range from 0.24 to 0.32 (for the entire soil profile) indicating a low to medium susceptibility to sheet and rill erosion. It is important to note that land disturbance and construction impacts could increase the susceptibility to soil erosion. However, with the implementation of appropriate erosion and sediment control Best Management Practices, the amount of soil loss due to water erosion is expected to be less than significant.

4.1.2 Wind Erosion

Wind erosion of soil is typical in areas with poor vegetative cover or where there is soil disturbance. Wind erodibility groups are used to assess the susceptibility of soil to wind erosion. Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The wind erodibility group is 3 for the soils at the subject site (Table 4-2) indicating somewhat low to medium susceptibility to wind erosion.

5.0 GROUNDWATER

Water levels near the property ranged from approximately 173 to 236 feet below ground surface (bgs) in 2005 and 178 to 239 bgs in 2008, and have historically been documented in different wells at depths up to 290 feet bgs (DWR 2011). Groundwater typically flows toward topographic lows and playa lakes from the San Gabriel Mountains to the south and the Tehachapi Mountains to the west and north. However, local groundwater flow paths are often controlled by groundwater pumping conditions near Lancaster and Edwards Air Force Base. Groundwater pumping has contributed to a significant decline in water levels, and as a result, 292 square

miles of Antelope Valley subsided more than 1 foot (Sneed and Galloway 2000; Ikehara and Phillips 1994).

6.0 GEOLOGICAL AND SOIL RELATED HAZARDS

Geologic hazards are natural physical conditions that may result in damage to the land and structures or injury to people. Such hazards include seismicity (earthquakes, ground shaking, and fault rupture), landslides, liquefaction, and subsidence.

6.1 Ground Shaking/Seismicity

Seismicity near the Project site is primarily generated from the Garlock Fault zone and the San Andreas Fault zone. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones, however, and could also occur at any number of active faults in the regional vicinity.

Regionally, seismicity has mostly been attributed to crustal deformation resulting from the San Andreas Fault and other local fault zones. Faults are considered active if there has been displacement in the last 11,000 years, and potentially active if there has been movement over the Quaternary period (1.6 MY to present). Several active faults and fault zones have been noted in the vicinity of the Project on both federal (USGS) and state (CGS) databases (Figure 3-1). These active faults have the ability to cause significant seismic activity in the region:

- San Andreas Fault Zone – The SAFZ is the transform boundary between the Pacific Plate and the North American Plate and has a right-lateral sense of displacement between 1.5 to 2.5 inches per year (Wallace 1990). The SAFZ has the highest probability of producing a magnitude 6.7 earthquake or greater, and has produced two 8+ magnitude earthquakes in Parkfield (145 miles from the site) and San Francisco (320 miles from the site) in the last 153 years.
- Garlock Fault Zone – The Garlock Fault is a left-lateral strike slip fault that forms the northern portion of the Antelope Valley at the base of the Tehachapi Mountains. The fault extends 200 miles northeast from the Castaic Lake region, is approximately 20 miles from the Project area, and has historically produced magnitude 5.7 earthquakes within 22 miles of the Project area.
- Sierra Madre and San Fernando Fault Zones – These fault zones are reverse thrust faults located approximately 30 to 40 miles south to southwest of the Project area. These faults zones have produced multiple 5+ magnitude earthquakes over the last 100 years.

Based on the USGS National Seismic Hazard Map (2008), the Project is located in areas mapped from 40 to 60 percent gravity for peak horizontal acceleration with a 10 percent probability of exceedance in the next 50 years. According to the USGS, and dependent on structural design, 10 percent gravity is the lower threshold at which damages to structures are likely to occur. Seismicity will affect the site and proper mitigation and structural design of facilities will be required. Structures must be designed to comply with latest California Building Code or International Building Code requirements.

6.2 Fault Rupture/Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was created to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Within these zones, development permits are withheld until geologic investigations demonstrate that ground rupture is not a threat. Local county and city data indicate that the closest fault zone is the SAFZ and that the Project is located outside of identified Alquist-Priolo Fault Zones.

6.3 Liquefaction

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. The Project site has poorly sorted coarse grained material, and with groundwater typically greater than 100 feet bgs (USGS 2008), the site has very low susceptibility to liquefaction.

6.4 Landslides and Slope Failure

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the generally low slope less than 1 percent, the site is not at risk for landslides or slope failure. Because development of a solar facility would not result in significant changes to existing site grades, the proposed development would not increase the susceptibility to slope failure.

6.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence in the Project area are groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster to closer to 1 to 2 feet near the Project site (Sneed and Galloway 2000). Fissures and differential settling have not been observed near the site. However, historical and continued depletion of water is expected to result in future land subsidence throughout the Antelope Valley.

6.6 Collapsible Soil

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. The site is located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage will continue to follow most natural drainage patterns or drainage channels where roads or permanent grading exist. A site-specific geotechnical investigation that would identify site-specific soil characteristics is necessary to confirm the presence of such soils. If such soils exist within the upper 5 feet, mitigation could include removal of low-density soils. If soils are found at greater depths, prewatering may be a more feasible alternative.

6.7 Expansive Soil

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the years and lead to differential settlement beneath foundations. Soil series in the site are rated for a moderate shrink/swell potential. A site-specific geotechnical investigation that would identify site-specific soil characteristics is necessary to confirm the presence of such soils. If soils with a moderate or higher shrink/swell potential exist within the site boundaries, mitigation efforts may be required which could include, but are not limited to, grouting, recompaction, and replacement with non-expansive material.

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FIGURES

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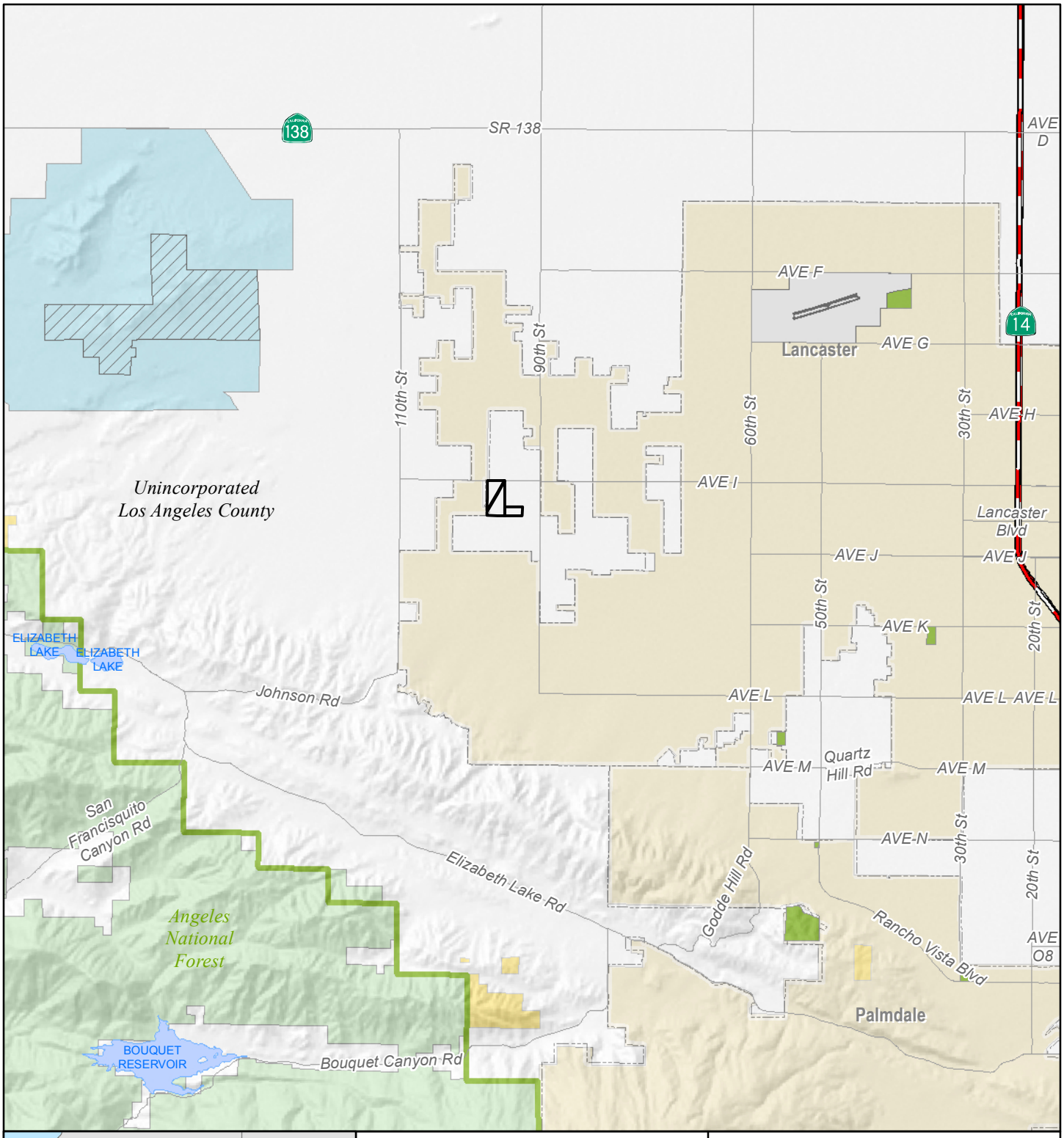

Legend

Proposed Project Site (Site 10-11)

Land Jurisdiction

Bureau of Land Management
State
US Forest Service

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - SITE 10-11

FIGURE 2-1
REGIONAL LOCATION MAP

0 1 2 4
Miles

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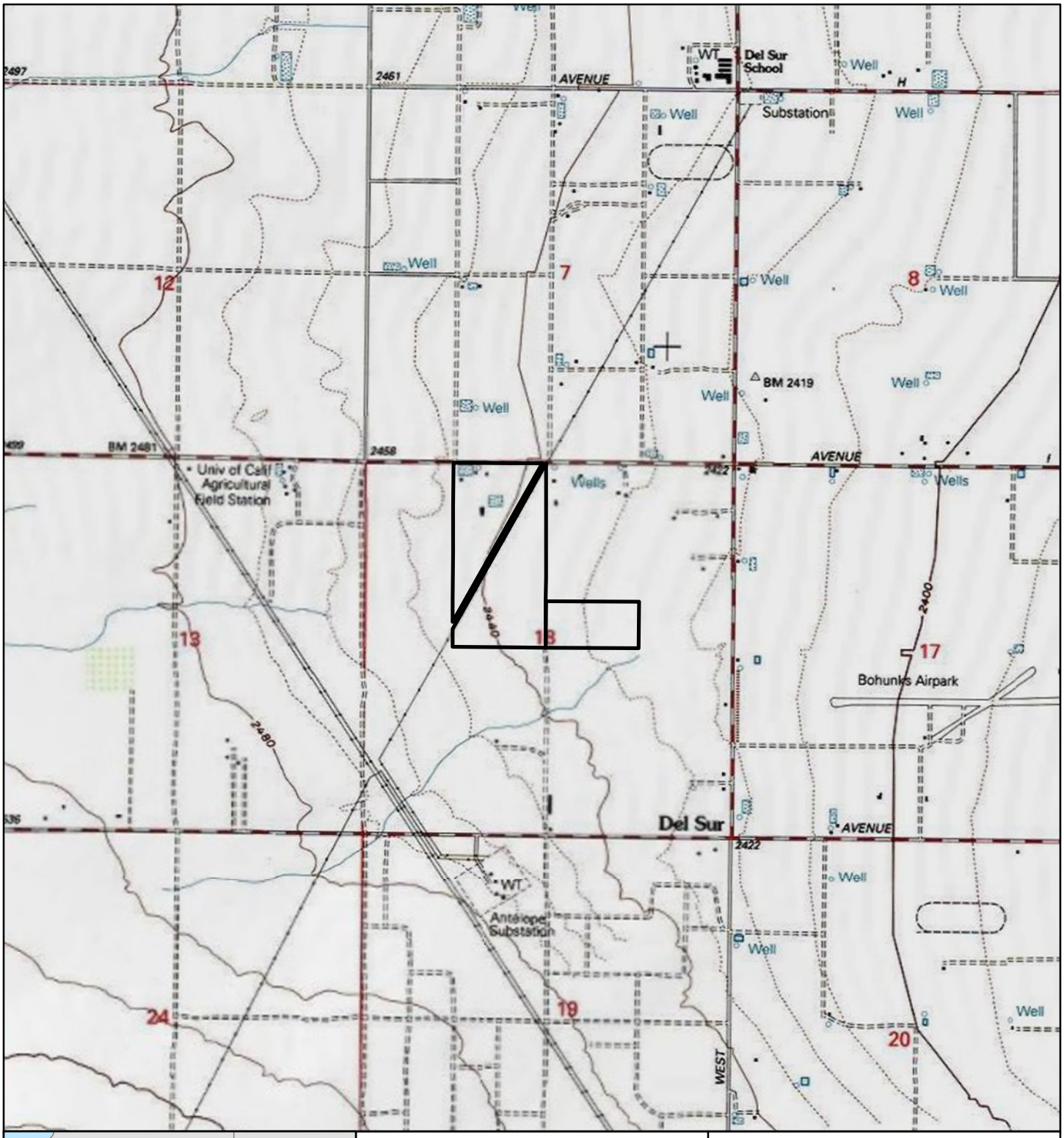

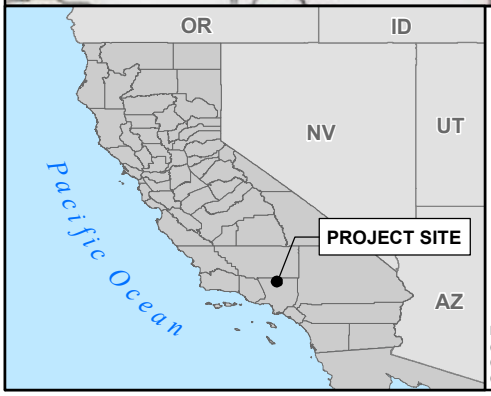

Legend

Proposed Project Site (Site 10-11)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Del Sur 7.5' Topographic Map DRG.

SILVERADO power

SILVERADO SOLAR - SITE 10-11

FIGURE 2-2
SITE TOPOGRAPHIC MAP

0 1,000 2,000 4,000
Feet

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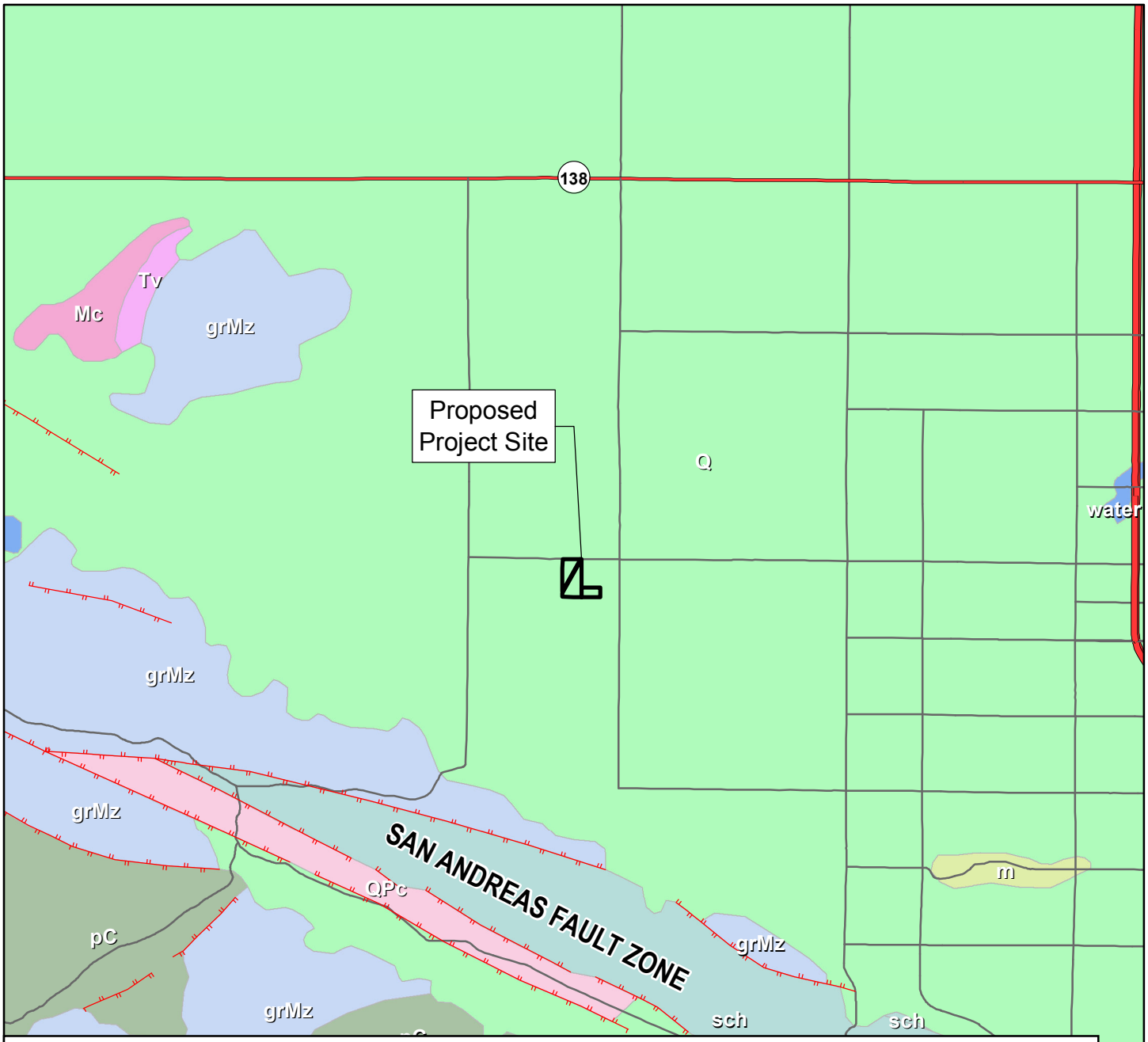
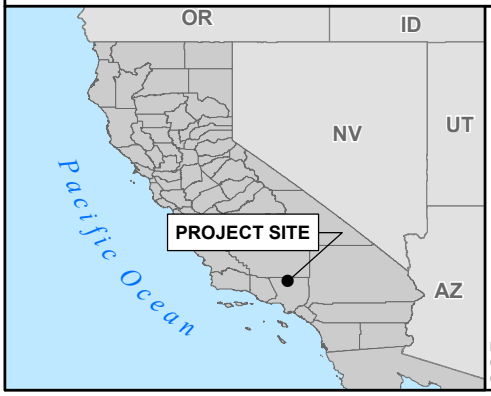


Geological Units

- Ep, Paleocene, sandstone; mudstone
- Mc, Oligocene to Pleistocene, sandstone; conglomerate
- Q, Pliocene to Holocene, alluvium; terrace
- QPc, Miocene to Pleistocene, sandstone; conglomerate
- Tv, Tertiary (22-24 Ma), rhyolite; pyroclastic
- grMz, Permian to Tertiary; most Mesozoic, granodiorite; quartz monzonite
- m, Early Proterozoic to Cretaceous, schist; gneiss
- pC, Early Proterozoic to Miocene, gneiss; granitoid
- sch, Late Cretaceous to Eocene, mica schist; mica schist
- water, Holocene, water



Legend

- Proposed Project Site (Site 10-11)
- Faults*

*Note: Unnamed faults are inactive.

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

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SILVERADO POWER - SITE 10-11

FIGURE 3-1
REGIONAL GEOLOGY

0 1 2 4
Miles

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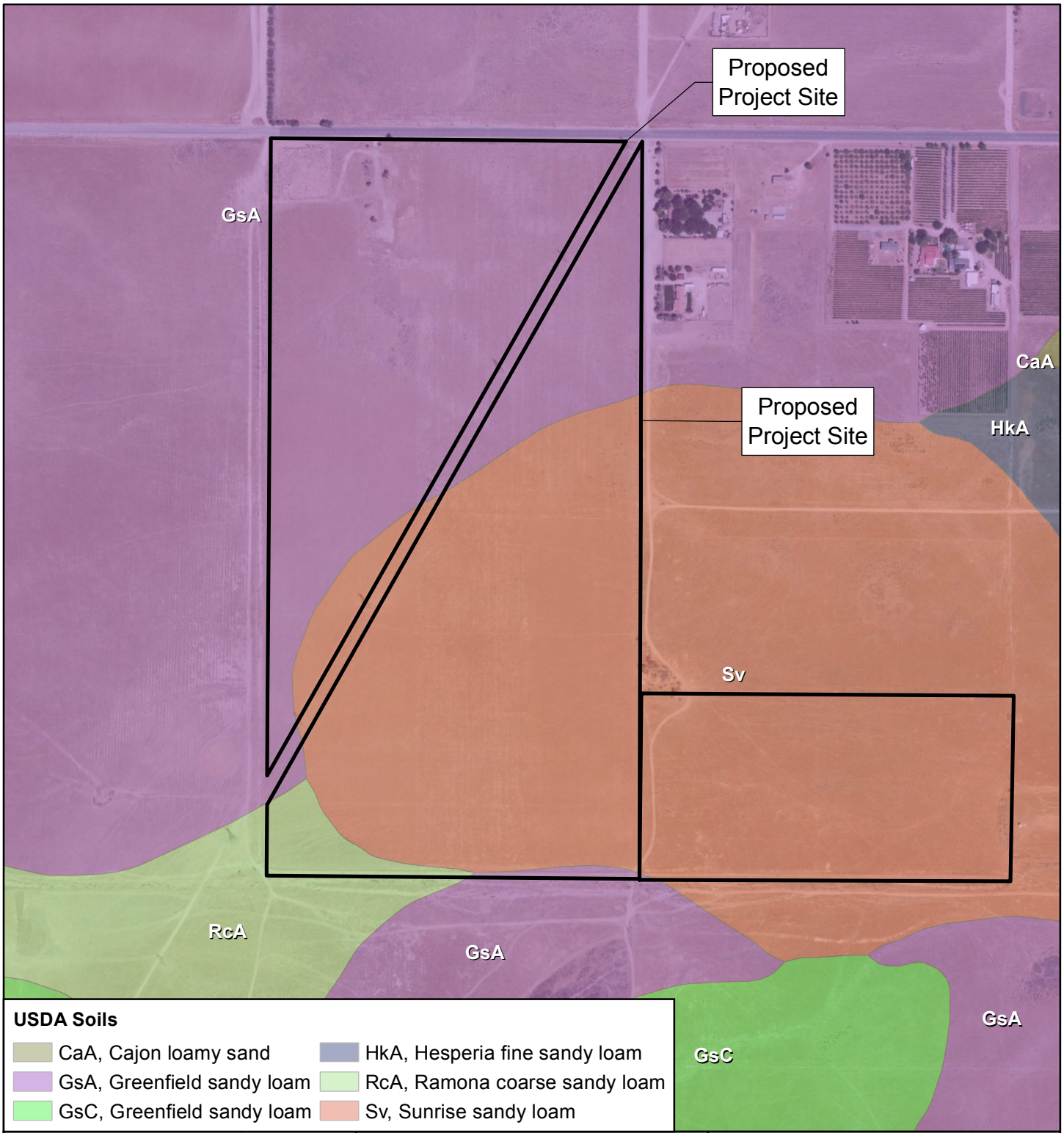
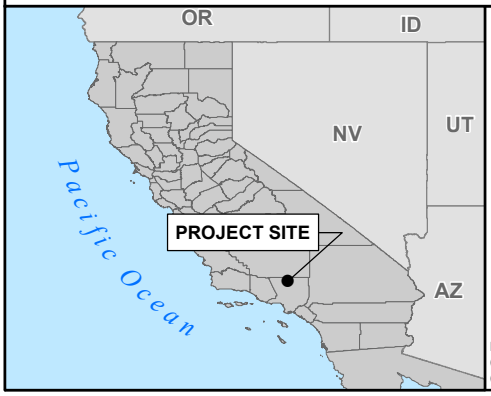


USDA Soils

- CaA, Cajon loamy sand
- GsA, Greenfield sandy loam
- GsC, Greenfield sandy loam
- HkA, Hesperia fine sandy loam
- RcA, Ramona coarse sandy loam
- Sv, Sunrise sandy loam



Legend

Proposed Project Site (Site 10-11)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

SILVERADO POWER - SITE 10-11

FIGURE 4-1
SITE SOILS

0 230 460 920
Feet

TETRA TECH EC, INC.

ATTACHMENT 1

SOIL SURVEY REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

CUP10-11 (Central Antelope Dry Farm Ranch (Investco))

June 1, 2011

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:6,920 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 5, Jan 3, 2008

Date(s) aerial images were photographed: 6/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Antelope Valley Area, California (CA675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
GsA	Greenfield sandy loam, 0 to 2 percent slopes	40.3	40.3%
RcA	Ramona coarse sandy loam, 0 to 2 percent slopes	1.8	1.8%
Sv	Sunrise sandy loam	57.9	57.9%
Totals for Area of Interest		**100.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If

intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

GsA—Greenfield sandy loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 2,600 to 4,200 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 250 days

Map Unit Composition

Greenfield and similar soils: 85 percent
Minor components: 15 percent

Description of Greenfield

Setting

Landform: Terraces, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability (nonirrigated): 4c
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile

0 to 20 inches: Sandy loam
20 to 60 inches: Sandy loam
60 to 80 inches: Stratified loamy sand to coarse sandy loam

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Drainageways

Hanford

Percent of map unit: 5 percent

Sandy alluvial land

Percent of map unit: 4 percent

Unnamed
Percent of map unit: 1 percent
Landform: Swales

RcA—Ramona coarse sandy loam, 0 to 2 percent slopes

Map Unit Setting
Elevation: 2,700 to 3,900 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 210 to 240 days

Map Unit Composition
Ramona and similar soils: 85 percent
Minor components: 15 percent

Description of Ramona

Setting
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups
Land capability classification (irrigated): 1
Land capability (nonirrigated): 4e
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile
0 to 20 inches: Coarse sandy loam
20 to 31 inches: Fine sandy loam
31 to 90 inches: Sandy clay loam

Minor Components

Greenfield
Percent of map unit: 10 percent

Hanford
Percent of map unit: 4 percent

Unnamed
Percent of map unit: 1 percent
Landform: Swales

Sv—Sunrise sandy loam

Map Unit Setting
Elevation: 1,500 to 3,500 feet
Mean annual precipitation: 5 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 300 days

Map Unit Composition
Sunrise and similar soils: 85 percent
Minor components: 15 percent

Description of Sunrise

Setting
Landform: Basin floors
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Available water capacity: Low (about 4.3 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 7e
Ecological site: ALKALI FLATS 4-9" (R030XG020CA)

Typical profile
0 to 19 inches: Sandy loam
19 to 31 inches: Loam
31 to 48 inches: Cemented
48 to 65 inches: Stratified gravelly sandy loam to loam

Minor Components

Tray
Percent of map unit: 5 percent

Merrill
Percent of map unit: 5 percent

Unnamed
Percent of map unit: 4 percent

Unnamed
Percent of map unit: 1 percent
Landform: Playas

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties (CUP10-11 (Central Antelope Dry Farm Ranch (Investco)))

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to

buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
GsA—Greenfield sandy loam, 0 to 2 percent slopes														
Greenfield	0-20	-66-	-23-	7-11- 15	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	20-60	-67-	-19-	10-14- 18	1.50-1.60	14.00-42.00	0.11-0.16	0.0-2.9	0.0-0.5	.28	.32			
	60-80	—	—	7-11- 15	1.55-1.70	14.00-42.00	0.07-0.12	0.0-2.9	0.0	.24	.32			
RcA—Ramona coarse sandy loam, 0 to 2 percent slopes														
Ramona	0-20	-70-	-23-	5- 8- 10	1.60-1.65	14.00-42.00	0.09-0.11	0.0-2.9	0.5-1.0	.28	.37	5	3	86
	20-31	-68-	-21-	8-12- 15	1.45-1.60	4.00-14.00	0.10-0.15	0.0-2.9	0.0	.28	.37			
	31-90	-57-	-18-	20-25- 30	1.70-1.90	1.40-4.00	0.12-0.17	0.0-2.9	0.0	.28	.37			
Sv—Sunrise sandy loam														
Sunrise	0-19	-66-	-19-	10-15- 20	1.45-1.55	14.00-42.00	0.11-0.13	0.0-2.9	0.0-0.5	.32	.37	2	3	86
	19-31	-40-	-38-	18-23- 27	1.35-1.50	4.00-14.00	0.15-0.18	3.0-5.9	0.0	.32	.37			
	31-48	—	—	—	—	0.00	0.00	—	0.0					
	48-65	—	—	10-15- 20	1.45-1.60	4.00-14.00	0.08-0.15	0.0-2.9	0.0	.28	.37			

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CUP 10 – SITE 15

DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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ATTACHMENT

Attachment 1 Soil Survey Report

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
CGS	California Geological Survey
DWR	Department of Water Resources
MY	million years
NRCS	Natural Resources Conservation Service
Project	Halcyon Solar Project
PV	photovoltaic
SAFZ	San Andreas Fault Zone
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION

This geotechnical desktop report provides a desktop level analysis of the geotechnical issues and potential geologic hazards affecting the proposed Halcyon Solar Project (Project) and site. This report is based on readily available geologic, hydrologic, and soil data and is intended to be used as a tool to determine feasibility and preliminary design. This report is not intended for use in final design or construction. Additional geotechnical studies, reports, and services will be required if the project proceeds to design and construction.

2.0 PROJECT DESCRIPTION

The Project is located in the Antelope Valley area in unincorporated northeast Los Angeles County, approximately 7.5 miles west of Lancaster. The Project site is bounded by Lancaster Boulevard to the north, 90th Street West to the west, 87th Street West to the east and West Avenue 1-12 to the south.

The Project site, consisting of previously disturbed agricultural land that is currently fallow, comprises 256 acres, 40 of which are being analyzed in this report. The proposed Project consists of a 52 megawatt alternating current solar photovoltaic (PV) generating facility, 10 megawatts of which are being analyzed in this report. The Project will utilize crystalline silicon, or thin film, PV technology on fixed-tilt or tracker mounting supports. A regional location map (Figure 2-1) and topographic map (Figure 2-2) show the general vicinity, site boundary, and terrain for the proposed Project area.

3.0 GEOLOGY

3.1 Regional Geology

The proposed Project is located in the Antelope Valley, approximately 45 miles north of Los Angeles, and in the western corner of the Mojave Desert physiographic province. The Mojave Desert province is a topographically closed basin that contains broad expanses of desert plains and isolated mountain ranges with elevations ranging from 2,300 to 3,500 feet above mean sea level (California Geological Survey [CGS] 2002). Annual rainfall generally ranges between 5 to 10 inches and drains into interior playas (Department of Water Resources [DWR] 2003).The Project is located in the western wedge-shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada) and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary).

The geology of the region consists of Pre-Tertiary (greater than 1,000 million years [MY] to 66 MY) crystalline igneous and metamorphic rocks, Tertiary age (66 MY to 1.6 MY) sedimentary and volcanic rocks, and Quaternary age (1.6 MY to present) alluvial and sedimentary units. The Antelope Valley is underlain by up to 4,000 feet of alluvial fill from the surrounding uplands, and further underlain by basement rocks including gneiss, granite, and other metamorphic and igneous rocks. Geologic units that make up the basement complex reach the surface in some parts of the valley, and are similar to the surrounding uplands. The uplands are primarily Pre-Tertiary and Tertiary uplifted granite, gneiss, schist, and volcanic rocks, with uplifted sedimentary units in the traverse ranges to the west. Much of these units have undergone extensive deformation throughout their geologic history and continue to undergo additional folding and faulting from the tectonic processes associated with movement along the San Andreas Fault (the North American and Pacific Plate boundary). Regional geology is shown in Figure 3-1.

3.2 Local Geology

The site is located on the Del Sur United States Geological Survey (USGS) 7.5 minute topographic quadrangle. Elevations at the site range from approximately 2,418 feet in the west portion of the Project site to 2,408 feet in the east portion of the site. The site is located on relatively flat alluvial Quaternary sediments and is located approximately 4 miles away from the San Andreas Fault zone.

The general underlying geology of the site is Pleistocene and Holocene alluvial and lacustrine deposits. These deposits typically consist of compacted gravels, sand, silt, and clay; and deposits generally fine towards the central parts of the valley (Duell 1987). Coarse alluvial deposits make up the upper and lower aquifers and are separated by confining layers of clay lake deposits up to 400 feet thick. The confining layers have minor interbeds of coarser material, and experience some leakage between aquifers (Planert and Williams 1995).

4.0 SOILS

Attachment 1 includes a soil survey map and the physical properties report generated from the National Resources Conservation Service (NRCS) Web Soil Survey (U.S. Department of Agriculture [USDA] 2011). Greenfield sandy loam is dominant at the site (Attachment 1 and Figure 4-1). Also present at the site are Hesperia fine sandy loam and the Sunrise sandy loam. Soils have been disturbed and soil horizons may be lacking. General soil descriptions and soil erosion factors based on the soil survey map and the physical properties report (Attachment 1) are summarized below in Table 4-1.

Table 4-1 Project Area Soil Descriptions

Soil Name (Symbol)	Soil Description
Greenfield sandy loam, 0 to 2 percent slopes (GsA)	• Well drained • Typical profile includes: o 0 to 20 inches: Sandy loam o 20 to 60 inches: Sandy loam o 60 to 80 inches: Stratified loamy sand to coarse sandy loam • The capacity of the most limiting layer to transmit water is high. • Shrink swell potential is low.
Hesperia fine sandy loam, 0 to 2 percent slopes (HkA)	• Well drained • Typical profile includes: o 0 to 4 inches: Fine sandy loam o 4 to 54 inches: Fine sandy loam, sandy loam o 54 to 77 inches: Sandy loam, coarse sandy loam • The capacity of the most limiting layer to transmit water is high. • Shrink swell potential is low.
Sunrise sandy loam (Sv)	• Moderately well drained • Typical profile includes: o 0 to 19 inches: Sandy loam o 19 to 31 inches: Loam o 31 to 48 inches: Cemented o 48 to 65 inches: Stratified gravelly sandy loam to loam • The capacity of the most limiting layer to transmit water is very low. • Shrink swell potential is low to moderate.

4.1 Erodibility

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The two primary types of erosion, water erosion and wind erosion, are further described in the following sections.

4.1.1 Water Erosion

Water erosion of soils typically occurs during flooding or when there is surface water runoff. The erosion potential of a soil is compared using the erosion factor or the K factor which indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range from 0.02 to 0.69 with higher values indicating increased susceptibility to erosion. Table 4-2 below includes the erosion factors for the subject project site.

Table 4-2 Soil Erosion Characteristics

Soil Map Unit (Symbol)	Erosion Factor (K Factor) (Kw in Attachment 1)	Wind Erodibility Group
Greenfield sandy loam (GsA)	0.24-0.28	3
Hesperia fine sandy loam (HkA)	0.28-0.32	3
Sunrise sandy loam (Sv)	0.28-0.32	3

Notes:

1. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. The range stated is for the entire soil profile.

Soils at the site have K factors that range from 0.24 to 0.32 (for the entire soil profile) indicating a low to medium susceptibility to sheet and rill erosion. It is important to note that land disturbance and construction impacts could increase the susceptibility to soil erosion. However, with the implementation of appropriate erosion and sediment control Best Management Practices, the amount of soil loss due to water erosion is expected to be less than significant.

4.1.2 Wind Erosion

Wind erosion of soil is typical in areas with poor vegetative cover or where there is soil disturbance. Wind erodibility groups are used to assess the susceptibility of soil to wind erosion. Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The wind erodibility group is 3 for the soils at the subject site (Table 4-2) indicating somewhat low to medium susceptibility to wind erosion.

5.0 GROUNDWATER

Water levels near the property ranged from approximately 217.30 feet below ground surface (bgs) in 2005 to 235 bgs in 2008, and have historically been documented in different wells at depths up to 290 feet bgs (DWR 2010). Groundwater typically flows toward topographic lows and playa lakes from the San Gabriel Mountains to the south and the Tehachapi Mountains to the west and north. However, local groundwater flow paths are often controlled by groundwater pumping conditions near Lancaster and Edwards Air Force Base. Groundwater pumping has contributed to a significant decline in water levels, and as a result, 292 square miles of Antelope Valley subsided more than 1 foot (Sneed and Galloway 2000; Ikehara and Phillips 1994).

6.0 GEOLOGICAL AND SOIL RELATED HAZARDS

Geologic hazards are natural physical conditions that may result in damage to the land and structures or injury to people. Such hazards include seismicity (earthquakes, ground shaking, and fault rupture), landslides, liquefaction, and subsidence.

6.1 Ground Shaking/Seismicity

Seismicity near the Project site is primarily generated from the Garlock Fault zone and the SAFZ. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones, however, and could also occur at any number of active faults in the regional vicinity.

Regionally, seismicity has mostly been attributed to crustal deformation resulting from the San Andreas Fault and other local fault zones. Faults are considered active if there has been displacement in the last 11,000 years, and potentially active if there has been movement over the Quaternary period (1.6 MY to present). Several active faults and fault zones have been noted in the vicinity of the Project on both federal (USGS) and state (CGS) databases (Figure 3-1). These active faults have the ability to cause significant seismic activity in the region:

- San Andreas Fault Zone (SAFZ) – The SAFZ is the transform boundary between the Pacific Plate and the North American Plate and has a right-lateral sense of displacement between 1.5 to 2.5 inches per year (Wallace 1990). The SAFZ has the highest probability of producing a magnitude 6.7 earthquake or greater, and has produced two 8+ magnitude earthquakes in Parkfield (146 miles from the site) and San Francisco (315 miles from the site) in the last 153 years.
- Garlock Fault Zone – The Garlock Fault is a left-lateral strike slip fault that forms the northern portion of the Antelope Valley at the base of the Tehachapi Mountains. The fault extends 200 miles northeast from the Castaic Lake region, is approximately 20 miles from the Project area, and has historically produced magnitude 5.7 earthquakes within 23 miles of the Project area.
- Sierra Madre and San Fernando Fault Zones – These fault zones are reverse thrust faults located approximately 28 to 35 miles south to southwest of the Project area. These faults zones have produced multiple 5+ magnitude earthquakes over the last 100 years.

Based on the USGS National Seismic Hazard Map (2008), the Project is located in areas mapped from 40 to 60 percent gravity for peak horizontal acceleration with a 10 percent probability of exceedance in the next 50 years. According to the USGS, and dependent on structural design, 10 percent gravity is the lower threshold at which damages to structures are likely to occur. Seismicity will affect the site and proper mitigation and structural design of facilities will be required. Structures must be designed to comply with latest California Building Code or International Building Code requirements.

6.2 Fault Rupture/Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was created to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Within these zones, development permits are withheld until geologic investigations demonstrate that ground rupture is not a threat. Local county and city data indicate that the

closest fault zone is the SAFZ and that the Project is located outside of identified Alquist-Priolo Fault Zones.

6.3 Liquefaction

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. The Project site has poorly sorted coarse grained material, and with groundwater typically greater than 150 feet bgs (USGS 2008), the site has very low susceptibility to liquefaction.

6.4 Landslides and Slope Failure

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the generally low slope less than 1 percent, the site is not at risk for landslides or slope failure. Because development of a solar facility would not result in significant changes to existing site grades, the proposed development would not increase the susceptibility to slope failure.

6.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence in the Project area are groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster to closer to 1 to 2 feet near the Project site (Sneed and Galloway 2000). Fissures and differential settling have not been observed near the site. However, historical and continued depletion of water is expected to result in future land subsidence throughout the Antelope Valley.

6.6 Collapsible Soil

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. The site is located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage will continue to follow most natural drainage patterns or drainage channels where roads or permanent grading exist. A site-specific geotechnical investigation that would indentify site-specific soil characteristics is necessary to confirm the presence of such soils. If such soils exist within the upper 5 feet, mitigation could include removal of low-density soils. If soils are found at greater depths, prewatering may be a more feasible alternative.

6.7 Expansive Soil

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the

years and lead to differential settlement beneath foundations. Soil series in the site are rated for a low shrink/swell potential.

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FIGURES

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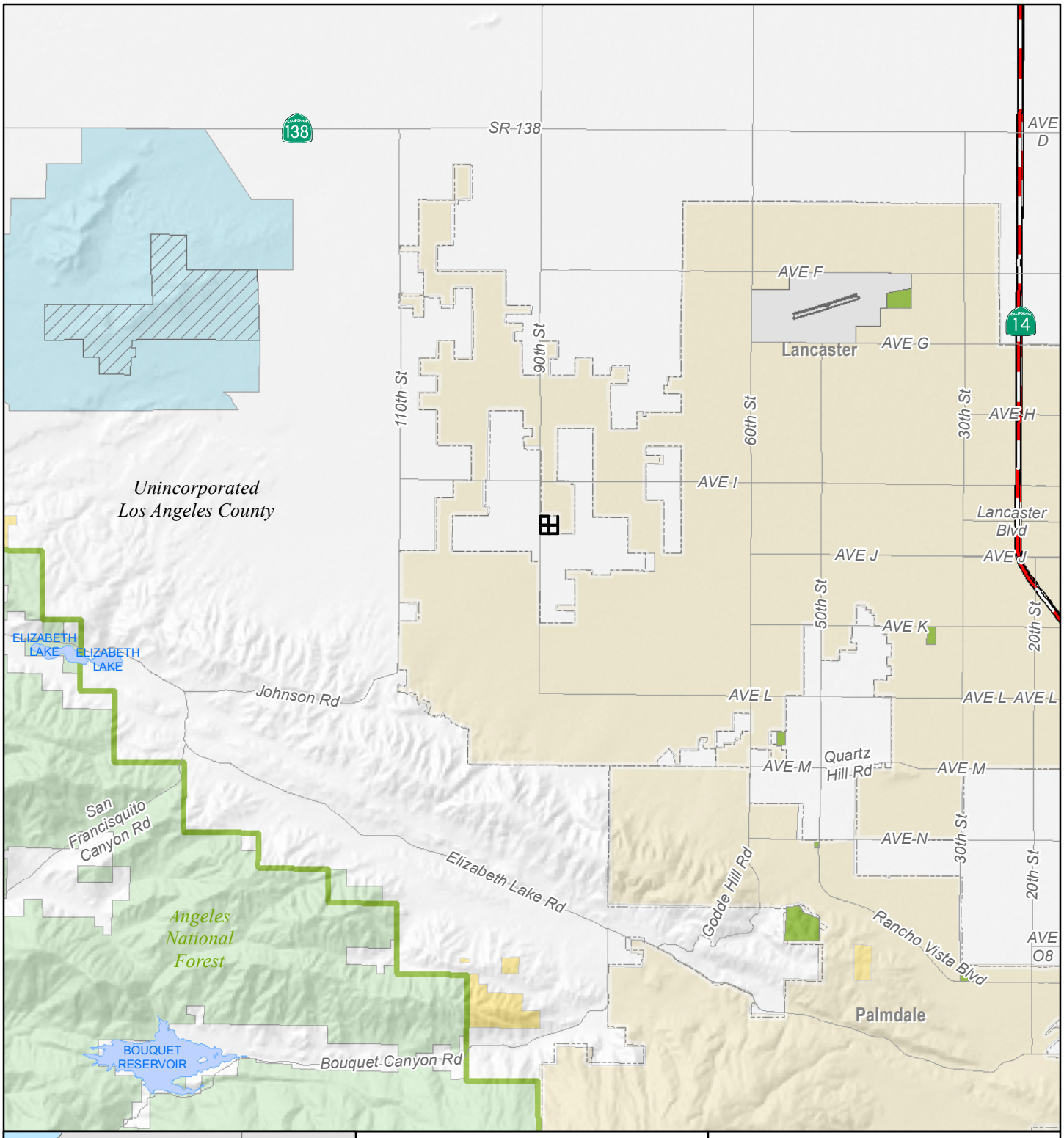

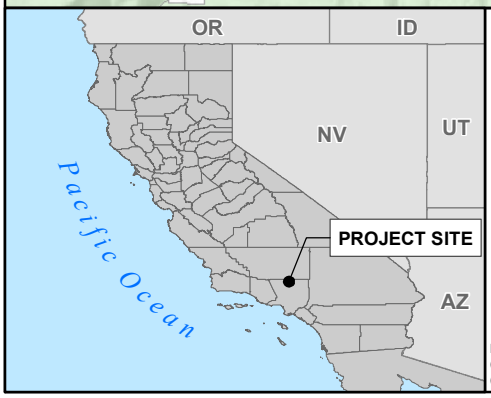

Legend

Proposed Project Site (Site 10-15)

Land Jurisdiction

Bureau of Land Management
State
US Forest Service

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - SITE 10-15

FIGURE 2-1
REGIONAL LOCATION MAP

0 1 2 4
Miles

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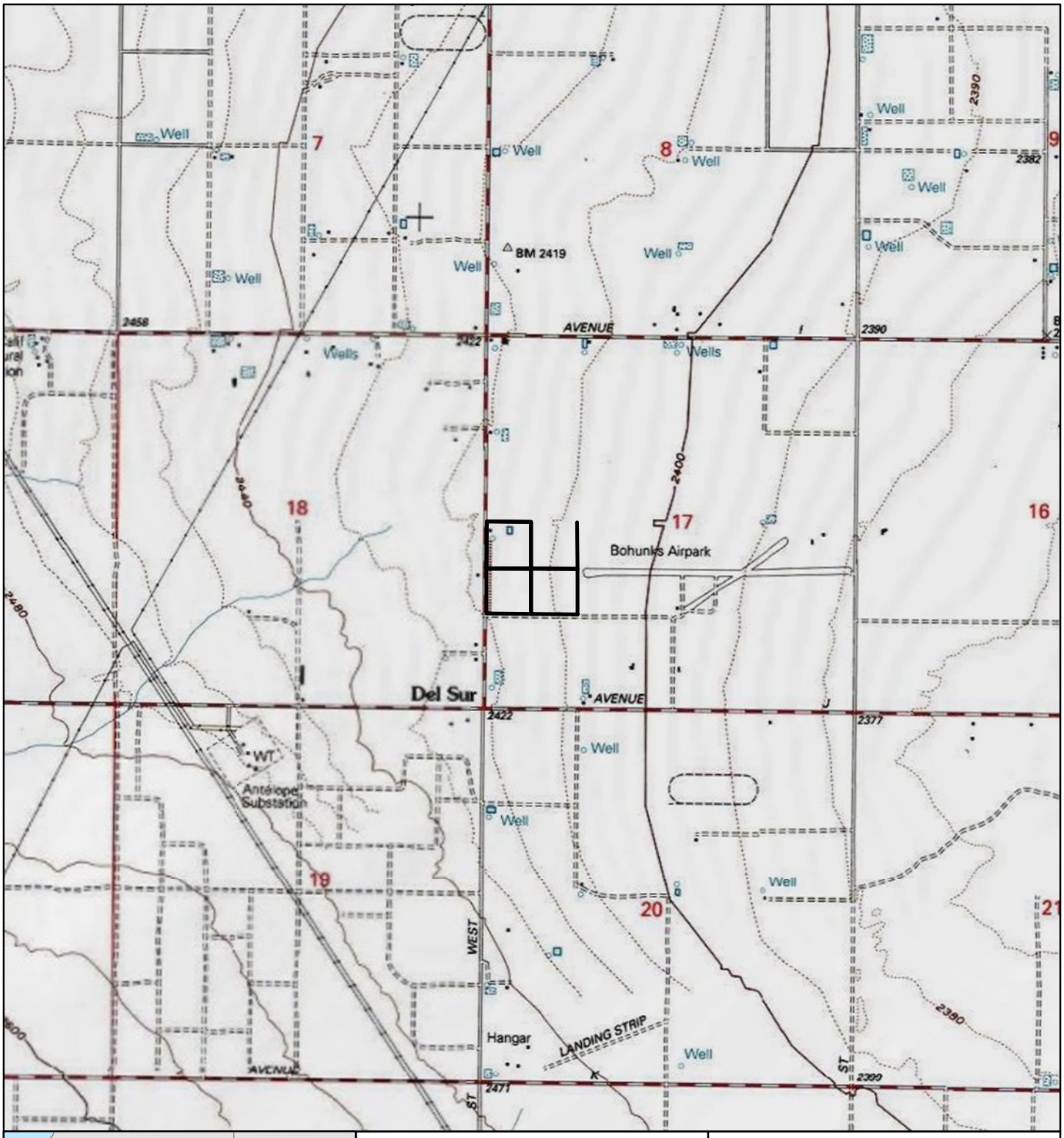

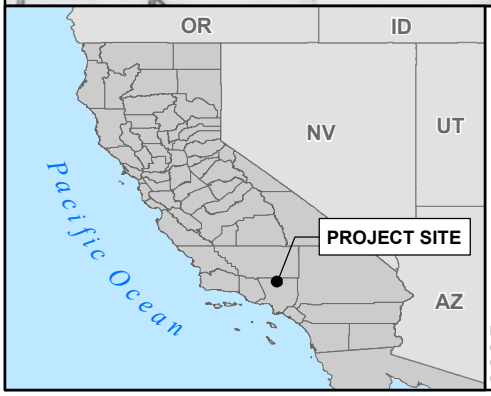

Legend

Proposed Project Site (Site 10-15)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Del Sur 7.5' Topographic Map DRG.

SILVERADO power

TETRA TECH EC, INC.

SILVERADO SOLAR - SITE 10-15

FIGURE 2-2
SITE TOPOGRAPHIC MAP

0 1,000 2,000 4,000
Feet

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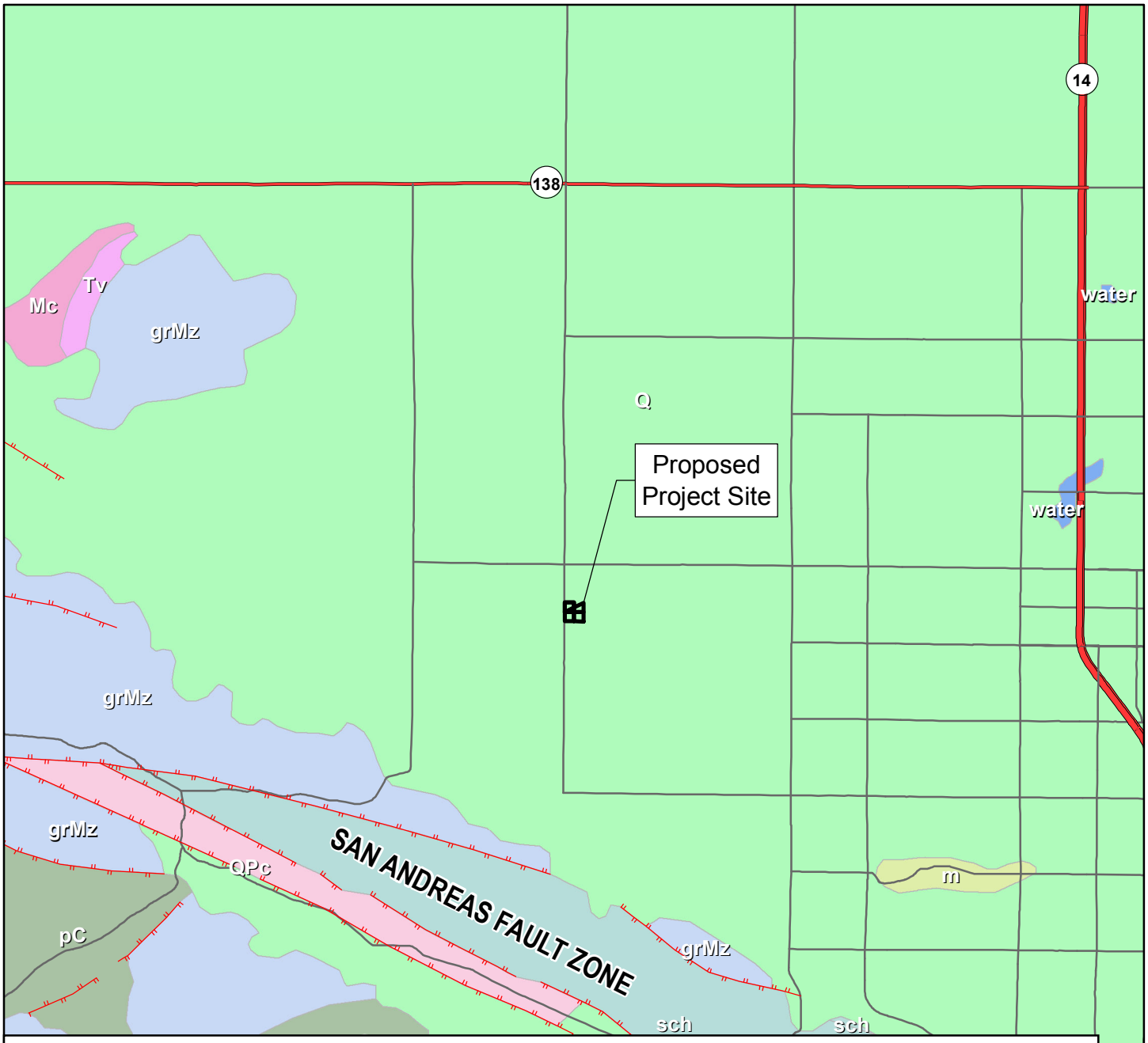
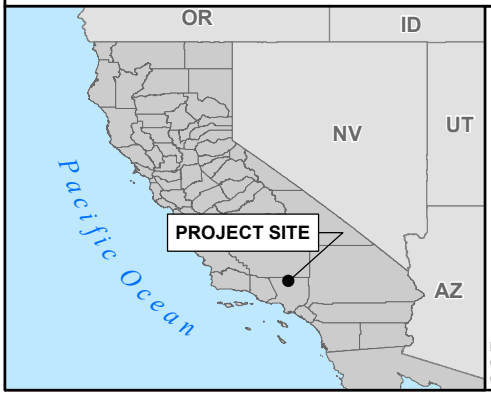


Geological Units

- Ep, Paleocene, sandstone; mudstone
- Mc, Oligocene to Pleistocene, sandstone; conglomerate
- Q, Pliocene to Holocene, alluvium; terrace
- QPc, Miocene to Pleistocene, sandstone; conglomerate
- Tv, Tertiary (22-24 Ma), rhyolite; pyroclastic
- grMz, Permian to Tertiary; most Mesozoic, granodiorite; quartz monzonite
- m, Early Proterozoic to Cretaceous, schist; gneiss
- pC, Early Proterozoic to Miocene, gneiss; granitoid
- sch, Late Cretaceous to Eocene, mica schist; mica schist
- water, Holocene, water



Legend

- Proposed Project Site (Site 10-15)
- Faults*

*Note: Unnamed faults are inactive.

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

TETRA TECH EC, INC.

SILVERADO POWER - SITE 10-15

FIGURE 3-1
REGIONAL GEOLOGY

0 1 2 4
Miles

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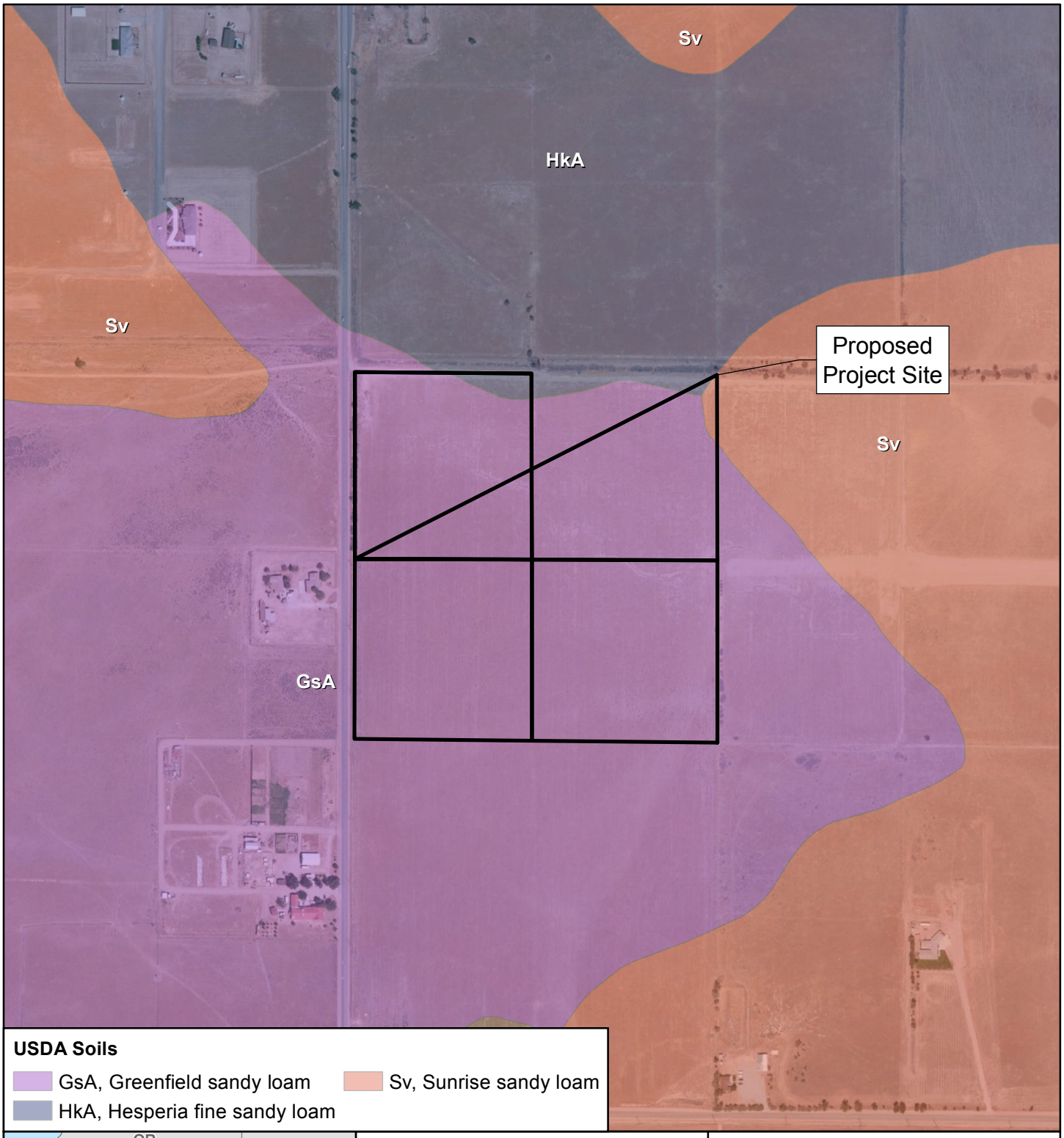
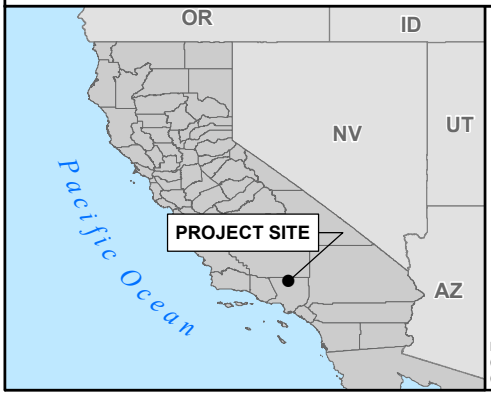


USDA Soils

- GsA, Greenfield sandy loam
- Sv, Sunrise sandy loam
- HkA, Hesperia fine sandy loam



Legend

- Proposed Project Site (Site 10-15)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

TETRA TECH EC, INC.

SILVERADO POWER - SITE 10-15

FIGURE 4-1
SITE SOILS

0 230 460 920
Feet

ATTACHMENT 1

SOIL SURVEY REPORT

United States Department of Agriculture

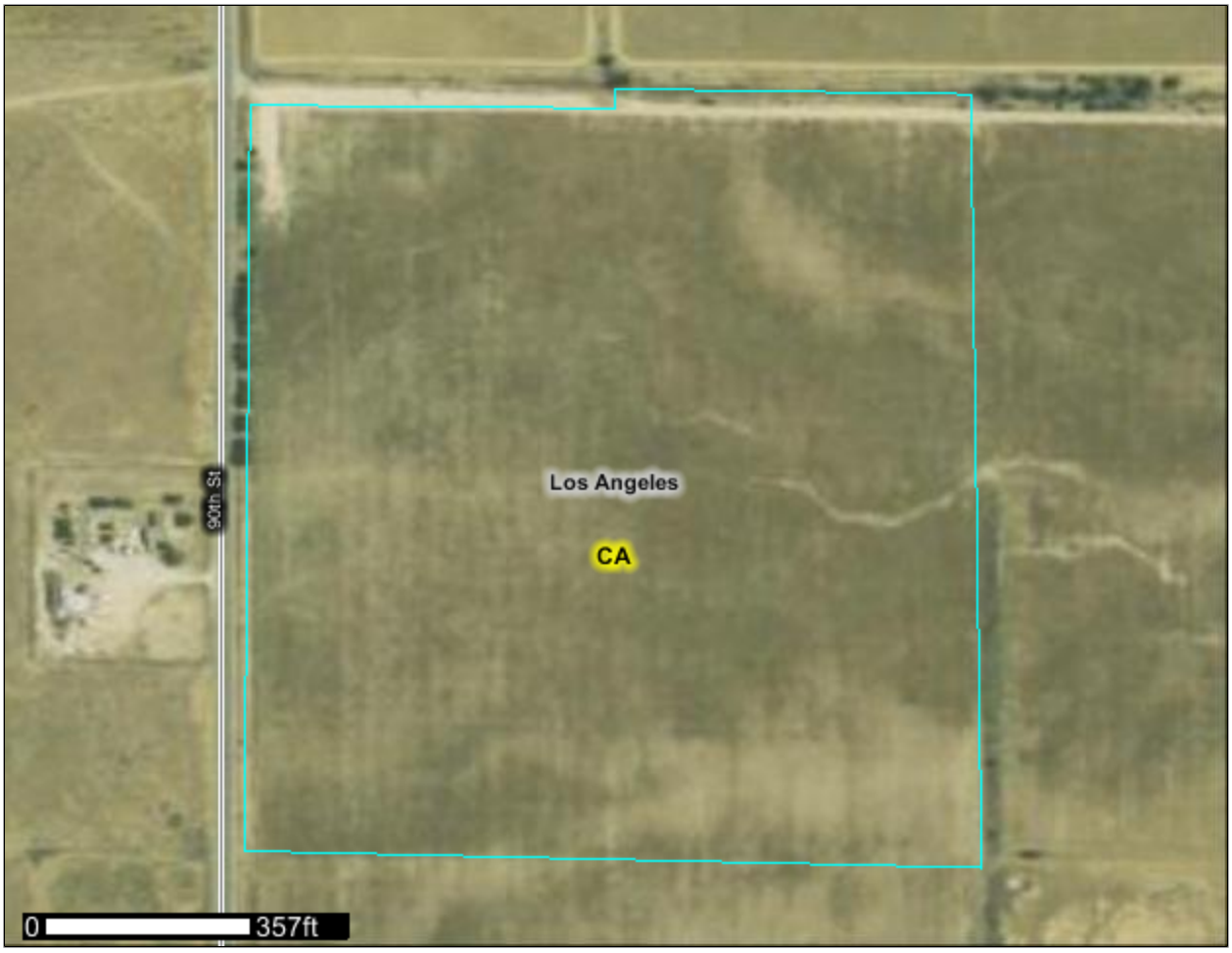
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

CUP 10-15 (Halcyon Solar (1100 Edgewater))



June 1, 2011

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:3,020 if printed on A size (8.5" x 11") sheet.

N

Meters
0 25 50 100 150

Feet
0 100 200 400 600

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:3,020 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 5, Jan 3, 2008

Date(s) aerial images were photographed: 6/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Antelope Valley Area, California (CA675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
GsA	Greenfield sandy loam, 0 to 2 percent slopes	36.0	95.7%
HkA	Hesperia fine sandy loam, 0 to 2 percent slopes	1.6	4.1%
Sv	Sunrise sandy loam	0.1	0.2%
Totals for Area of Interest		**37.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If

intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

GsA—Greenfield sandy loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 2,600 to 4,200 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 250 days

Map Unit Composition

Greenfield and similar soils: 85 percent
Minor components: 15 percent

Description of Greenfield

Setting

Landform: Terraces, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability (nonirrigated): 4c
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile

0 to 20 inches: Sandy loam
20 to 60 inches: Sandy loam
60 to 80 inches: Stratified loamy sand to coarse sandy loam

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Drainageways

Hanford

Percent of map unit: 5 percent

Sandy alluvial land

Percent of map unit: 4 percent

Unnamed

Percent of map unit: 1 percent
Landform: Swales

HkA—Hesperia fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 200 to 4,000 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 310 days

Map Unit Composition

Hesperia and similar soils: 85 percent
Minor components: 15 percent

Description of Hesperia

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very high (about 15.6 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability (nonirrigated): 7e
Ecological site: LOAMY 4-9" (R030XG021CA)

Typical profile

0 to 4 inches: Fine sandy loam
4 to 54 inches: Fine sandy loam, sandy loam
54 to 77 inches: Sandy loam, coarse sandy loam

Minor Components

Cajon
Percent of map unit: 5 percent

Rosamond
Percent of map unit: 5 percent

Tray
Percent of map unit: 3 percent

Unnamed
Percent of map unit: 2 percent
Landform: Playas

Sv—Sunrise sandy loam

Map Unit Setting
Elevation: 1,500 to 3,500 feet
Mean annual precipitation: 5 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 300 days

Map Unit Composition
Sunrise and similar soils: 85 percent
Minor components: 15 percent

Description of Sunrise

Setting
Landform: Basin floors
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Available water capacity: Low (about 4.3 inches)

Interpretive groups
Land capability classification (irrigated): 3e

Land capability (nonirrigated): 7e
Ecological site: ALKALI FLATS 4-9" (R030XG020CA)

Typical profile
0 to 19 inches: Sandy loam
19 to 31 inches: Loam
31 to 48 inches: Cemented
48 to 65 inches: Stratified gravelly sandy loam to loam

Minor Components

Tray
Percent of map unit: 5 percent

Merrill
Percent of map unit: 5 percent

Unnamed
Percent of map unit: 4 percent

Unnamed
Percent of map unit: 1 percent
Landform: Playas

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties (CUP 10-15 (Halcyon Solar (1100 Edgewater)))

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to

buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
GsA—Greenfield sandy loam, 0 to 2 percent slopes														
Greenfield	0-20	-66-	-23-	7-11- 15	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	20-60	-67-	-19-	10-14- 18	1.50-1.60	14.00-42.00	0.11-0.16	0.0-2.9	0.0-0.5	.28	.32			
	60-80	—	—	7-11- 15	1.55-1.70	14.00-42.00	0.07-0.12	0.0-2.9	0.0	.24	.32			
HkA—Hesperia fine sandy loam, 0 to 2 percent slopes														
Hesperia	0-4	-71-	-17-	8-13- 18	1.50-1.60	14.00-42.00	0.09-0.13	0.0-2.9	0.0-0.5	.32	.32	5	3	86
	4-54	-71-	-17-	8-13- 18	1.50	14.00-42.00	0.13-0.15	0.0-2.9	0.0	.28	.32			
	54-77	-67-	-20-	8-13- 18	1.50-1.60	14.00-42.00	0.08-0.11	0.0-2.9	0.0	.28	.32			
Sv—Sunrise sandy loam														
Sunrise	0-19	-66-	-19-	10-15- 20	1.45-1.55	14.00-42.00	0.11-0.13	0.0-2.9	0.0-0.5	.32	.37	2	3	86
	19-31	-40-	-38-	18-23- 27	1.35-1.50	4.00-14.00	0.15-0.18	3.0-5.9	0.0	.32	.37			
	31-48	—	—	—	—	0.00	0.00	—	0.0					
	48-65	—	—	10-15- 20	1.45-1.60	4.00-14.00	0.08-0.15	0.0-2.9	0.0	.28	.37			

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LANCASTER BLUE SKY RANCH
CUP 10 – SITE 17

DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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May 2012

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Figure 4-1 Site Soils

ATTACHMENT

Attachment 1 Soil Survey Report

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
CGS	California Geological Survey
DWR	Department of Water Resources
MY	million years
NRCS	Natural Resources Conservation Service
Project	Lancaster Blue Sky Ranch Solar Project
PV	photovoltaic
SAFZ	San Andreas Fault Zone
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION

This geotechnical desktop report provides a desktop level analysis of the geotechnical issues and potential geologic hazards affecting the proposed Lancaster Blue Sky Ranch Solar Project (Project) and site. This report is based on readily available geologic, hydrologic, and soil data and is intended to be used as a tool to determine feasibility and preliminary design. This report is not intended for use in final design or construction. Additional geotechnical studies, reports, and services will be required if the project proceeds to design and construction.

2.0 PROJECT DESCRIPTION

The Project is located in the Antelope Valley area in unincorporated northeast Los Angeles County, approximately 8 miles west of Lancaster. The Project site is bounded by 97th Street West to the west, 95th Street West to the east, and West Avenue I to the south. The Project site, consisting of previously disturbed agricultural land that is currently fallow, comprises 256 acres, 20 of which are being analyzed in this report. The proposed Project consists of a 52 megawatt alternating current solar photovoltaic (PV) generating facility, 5 megawatts of which are being analyzed in this report. The Project will utilize crystalline silicon, or thin film, PV technology on fixed-tilt or tracker mounting supports. A regional location map (Figure 2-1) and topographic map (Figure 2-2) show the general vicinity, site boundary, and terrain for the proposed Project area.

3.0 GEOLOGY

3.1 Regional Geology

The proposed Project is located in the Antelope Valley, approximately 45 miles north of Los Angeles, and in the western corner of the Mojave Desert physiographic province. The Mojave Desert province is a topographically closed basin that contains broad expanses of desert plains and isolated mountain ranges with elevations ranging from 2,300 to 3,500 feet above mean sea level (California Geological Survey [CGS] 2002). Annual rainfall generally ranges between 5 to 10 inches and drains into interior playas (Department of Water Resources [DWR] 2003).The Project is located in the western wedge-shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada), and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary).

The geology of the region consists of Pre-Tertiary (greater than 1,000 million years [MY] to 66 MY) crystalline igneous and metamorphic rocks, Tertiary age (66 MY to 1.6 MY) sedimentary and volcanic rocks, and Quaternary age (1.6 MY to present) alluvial and sedimentary units. The Antelope Valley is underlain by up to 4,000 feet of alluvial fill from the surrounding uplands, and further underlain by basement rocks including gneiss, granite, and other metamorphic and igneous rocks. Geologic units that make up the basement complex reach the surface in some parts of the valley, and are similar to the surrounding uplands. The uplands are primarily Pre-Tertiary and Tertiary uplifted granite, gneiss, schist, and volcanic rocks, with uplifted sedimentary units in the traverse ranges to the west. Much of these units have undergone extensive deformation throughout their geologic history and continue to undergo additional folding and faulting from the tectonic processes associated with movement along the San Andreas Fault (the North American and Pacific Plate boundary). Regional geology is shown in Figure 3-1.

3.2 Local Geology

The site is located on the Del Sur United States Geological Survey (USGS) 7.5 minute topographic quadrangle. Elevations at the site range from approximately 2,408 feet in the west portion of the Project site to 2,402 feet in the east portion of the site. The site is located on relatively flat alluvial Quaternary sediments and is located approximately 4 miles away from the San Andreas Fault zone (SAFZ).

The general underlying geology of the site is Pleistocene and Holocene alluvial and lacustrine deposits. These deposits typically consist of compacted gravels, sand, silt, and clay; and deposits generally fine towards the central parts of the valley (Duell 1987). Coarse alluvial deposits make up the upper and lower aquifers and are separated by confining layers of clay lake deposits up to 400 feet thick. The confining layers have minor interbeds of coarser material, and experience some leakage between aquifers (Planert and Williams 1995).

4.0 SOILS

Attachment 1 includes a soil survey map and the physical properties report generated from the National Resources Conservation Service (NRCS) Web Soil Survey (U.S. Department of Agriculture [USDA] 2011). Greenfield sandy loam unit is present at the site (Attachment 1 and Figure 4-1). Soils have been disturbed and soil horizons may be lacking. General soil descriptions and soil erosion factors based on the soil survey map and the physical properties report (Attachment 1) are summarized below in Table 4-1.

Table 4-1 Project Area Soil Descriptions

Soil Name (Symbol)	Soil Description
Greenfield sandy loam, 0 to 2 percent slopes (GsA)	• Well drained • Typical profile includes: o 0 to 20 inches: Sandy loam o 20 to 60 inches: Sandy loam o 60 to 80 inches: Stratified loamy sand to coarse sandy loam • The capacity of the most limiting layer to transmit water is high. • Shrink swell potential is low.

4.1 Erodibility

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The two primary types of erosion, water erosion and wind erosion, are further described in the following sections.

4.1.1 Water Erosion

Water erosion of soils typically occurs during flooding or when there is surface water runoff. The erosion potential of a soil is compared using the erosion factor or the K factor which indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range from 0.02 to 0.69 with higher values indicating increased susceptibility to erosion. Table 4-2 below includes the erosion factors for the subject project site.

Table 4-2 Soil Erosion Chracteristics

Soil Map Unit (Symbol)	Erosion Factor (K Factor) (Kw in Attachment 1)	Wind Erodibility Group
Greenfield sandy loam, 0 to 2 percent slopes (GsA)	0.24-0.28	3

Notes:

1. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. The range stated is for the entire soil profile.

Soils at the site have K factors that range from 0.24 to 0.28 (for the entire soil profile) and indicate a somewhat low to medium susceptibility to sheet and rill erosion. It is important to note that land disturbance and construction impacts could increase the susceptibility to soil erosion.

However, with the implementation of appropriate erosion and sediment control Best Management Practices, the amount of soil loss due to water erosion is expected to be less than significant.

4.1.2 Wind Erosion

Wind erosion of soil is typical in areas with poor vegetative cover or where there is soil disturbance. Wind erodibility groups are used to assess the susceptibility of soil to wind erosion. Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The wind erodibility group is 3 for the soils at the subject site (Table 4-2) indicating somewhat medium to high susceptibility to wind erosion.

5.0 GROUNDWATER

Water levels near the property ranged from approximately 217.30 feet below ground surface (bgs) in 2005 to 235 bgs in 2008, and have historically been documented in different wells at depths up to 290 feet bgs (DWR 2011). Groundwater typically flows toward topographic lows and playa lakes from the San Gabriel Mountains to the south and the Tehachapi Mountains to the west and north. However, local groundwater flow paths are often controlled by groundwater pumping conditions near Lancaster and Edwards Air Force Base. Groundwater pumping has contributed to a significant decline in water levels, and as a result, 292 square miles of Antelope Valley subsided more than 1 foot (Sneed and Galloway 2000; Ikehara and Phillips 1994).

6.0 GEOLOGICAL AND SOIL RELATED HAZARDS

Geologic hazards are natural physical conditions that may result in damage to the land and structures or injury to people. Such hazards include seismicity (earthquakes, ground shaking, and fault rupture), landslides, liquefaction, and subsidence.

6.1 Ground Shaking/Seismicity

Seismicity near the Project site is primarily generated from the Garlock Fault zone and the SAFZ. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones, however, and could also occur at any number of active faults in the regional vicinity.

Regionally, seismicity has mostly been attributed to crustal deformation resulting from the San Andreas Fault and other local fault zones. Faults are considered active if there has been displacement in the last 11,000 years, and potentially active if there has been movement over the Quaternary period (1.6 MY to present). Several active faults and fault zones have been noted in the vicinity of the Project on both federal (USGS) and state (CGS) databases (Figure 3-1). These active faults have the ability to cause significant seismic activity in the region:

- San Andreas Fault Zone – The SAFZ is the transform boundary between the Pacific Plate and the North American Plate and has a right-lateral sense of displacement between 1.5 to 2.5 inches per year (Wallace, 1990). The SAFZ has the highest probability of producing a magnitude 6.7 earthquake or greater, and has produced two 8+ magnitude earthquakes in Parkfield (145 miles from the site) and San Francisco (315 miles from the site) in the last 153 years.
- Garlock Fault Zone – The Garlock Fault is a left-lateral strike slip fault that forms the northern portion of the Antelope Valley at the base of the Tehachapi Mountains. The fault extends 200 miles northeast from the Castaic Lake region, is approximately 20 miles from the Project area, and has historically produced magnitude 5.7 earthquakes within 22 miles of the Project area.
- Sierra Madre and San Fernando Fault Zones – These fault zones are reverse thrust faults located approximately 28 to 35 miles south to southwest of the Project area. These faults zones have produced multiple 5+ magnitude earthquakes over the last 100 years.

Based on the USGS National Seismic Hazard Map (2008), the Project is located in areas mapped from 40 to 60 percent gravity for peak horizontal acceleration with a 10 percent probability of exceedance in the next 50 years. According to the USGS, and dependent on structural design, 10 percent gravity is the lower threshold at which damages to structures are likely to occur. Seismicity will affect the site and proper mitigation and structural design of facilities will be required. Structures must be designed to comply with latest California Building Code or International Building Code requirements.

6.2 Fault Rupture/Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was created to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Within these zones, development permits are withheld until geologic investigations demonstrate that ground rupture is not a threat. Local county and city data indicate that the closest fault zone is the SAFZ and that the Project is located outside of identified Alquist-Priolo Fault Zones.

6.3 Liquefaction

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. The Project site has poorly sorted coarse grained material, and with groundwater typically greater than 150 feet bgs (USGS 2008), the site has very low susceptibility to liquefaction.

6.4 Landslides and Slope Failure

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the generally low slope less than 1 percent, the site is not at risk for landslides or slope failure. Because development of a solar facility would not result in significant changes to existing site grades, the proposed development would not increase the susceptibility to slope failure.

6.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence in the Project area are groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster to closer to 1 to 2 feet near the Project site (Sneed and Galloway 2000). Fissures and differential settling have not been observed near the site. However, historical and continued depletion of water is expected to result in future land subsidence throughout the Antelope Valley.

6.6 Collapsible Soil

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. The site is located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage will continue to follow most natural drainage patterns or drainage channels where roads or permanent grading exist. A site-specific geotechnical investigation that would indentify site-specific soil characteristics is necessary to confirm the presence of such soils. If such soils exist within the upper 5 feet, mitigation could include removal of low-density soils. If soils are found at greater depths, prewatering may be a more feasible alternative.

6.7 Expansive Soil

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the years and lead to differential settlement beneath foundations. Soil series in the site are rated for a low shrink/swell potential.

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FIGURES

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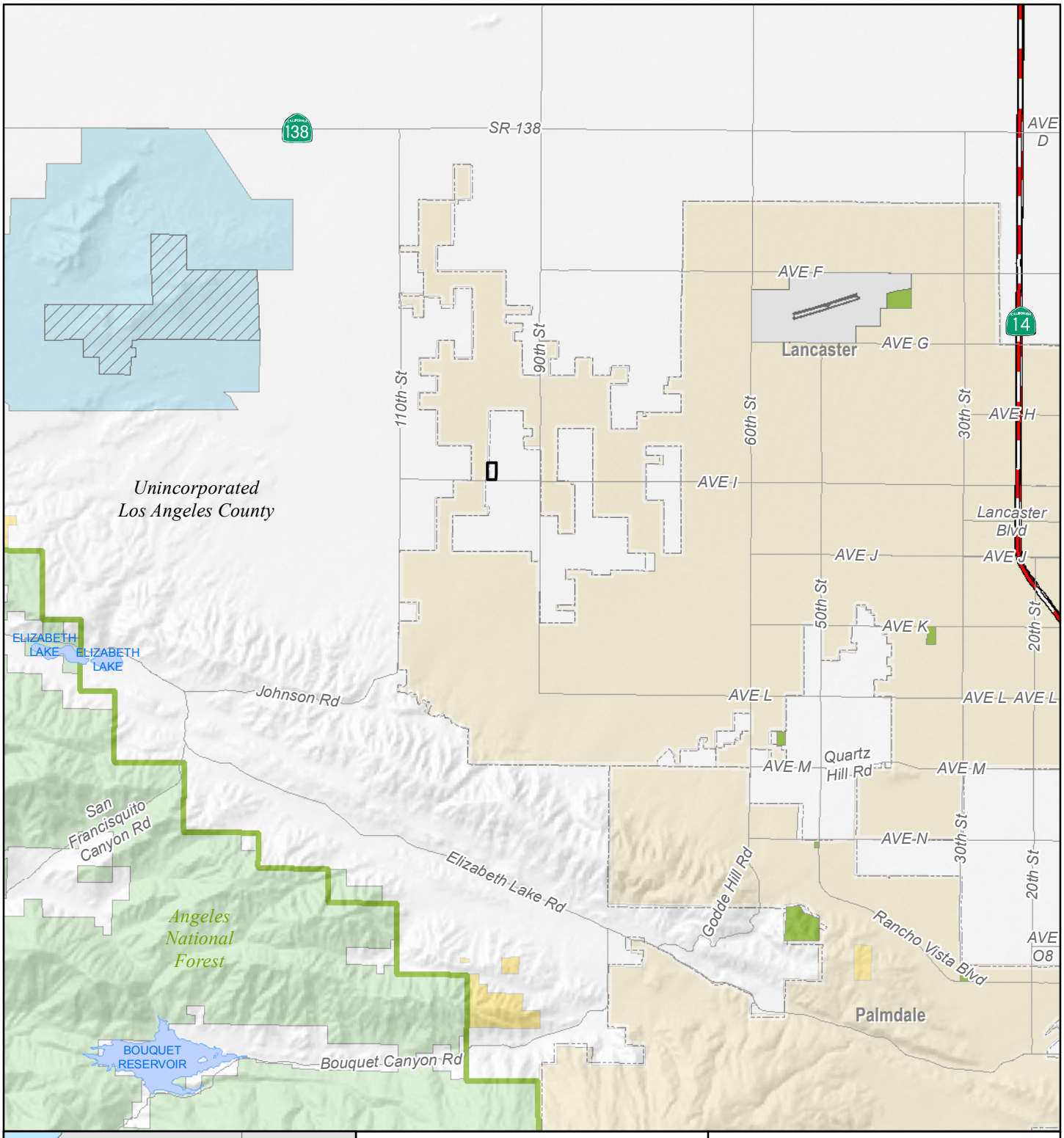

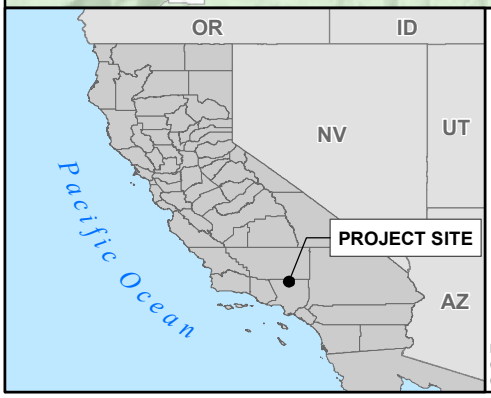

Legend

Proposed Project Site (Site 10-17)

Land Jurisdiction

Bureau of Land Management
State
US Forest Service

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - SITE 10-17

FIGURE 2-1
REGIONAL LOCATION MAP

0 1 2 4
Miles

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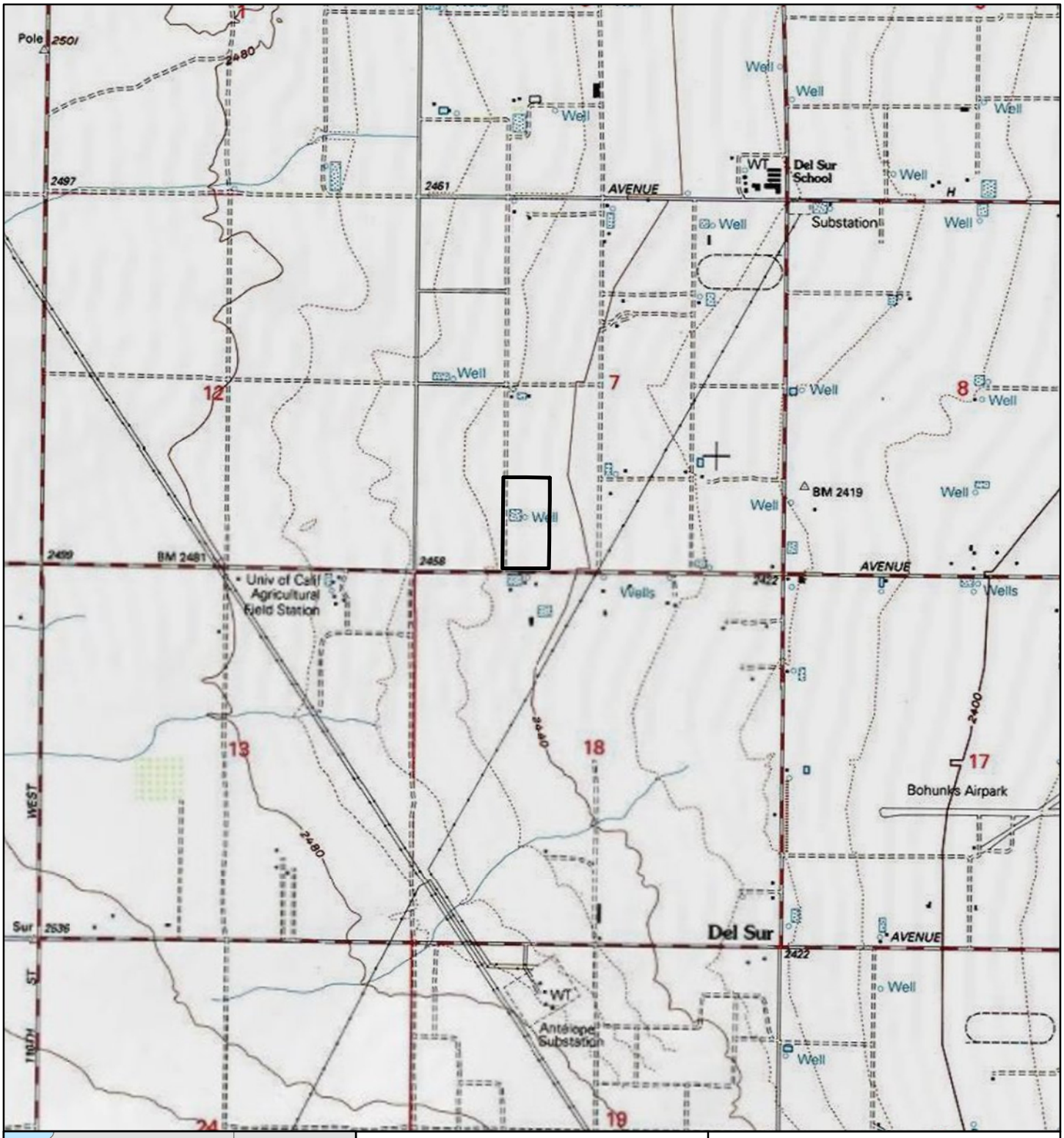

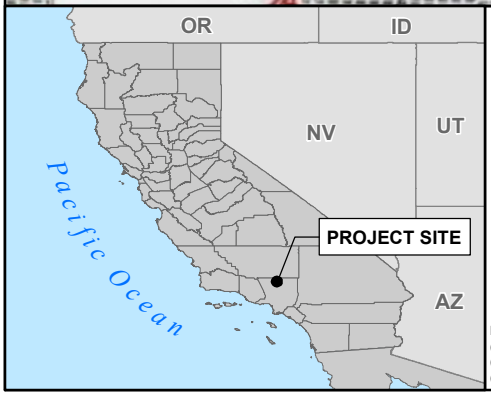

Legend

Proposed Project Site (Site 10-17)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Del Sur 7.5' Topographic Map DRG.

SILVERADO power

SILVERADO SOLAR - SITE 10-17

FIGURE 2-2
SITE TOPOGRAPHIC MAP

0 1,000 2,000 4,000
Feet

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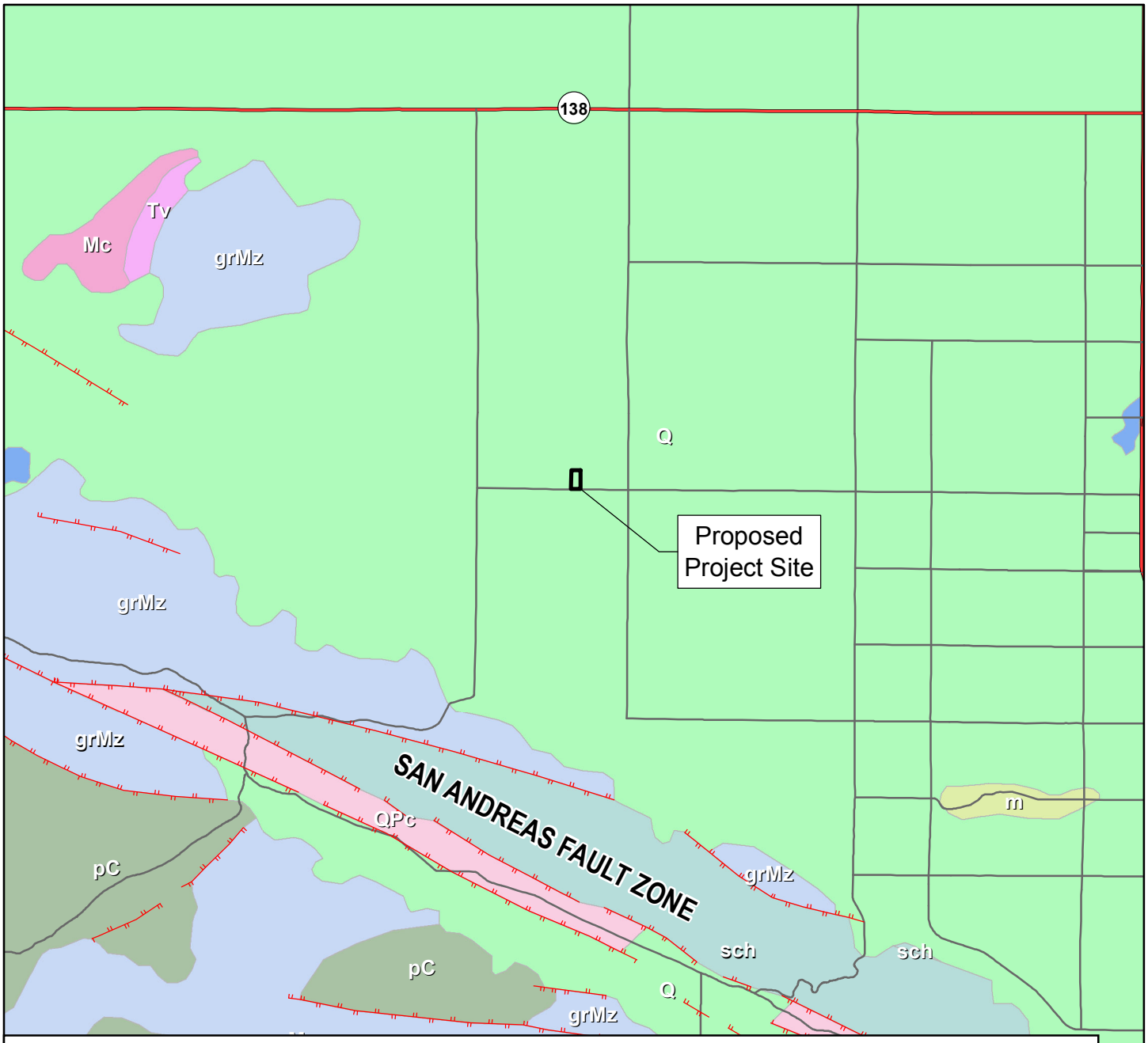
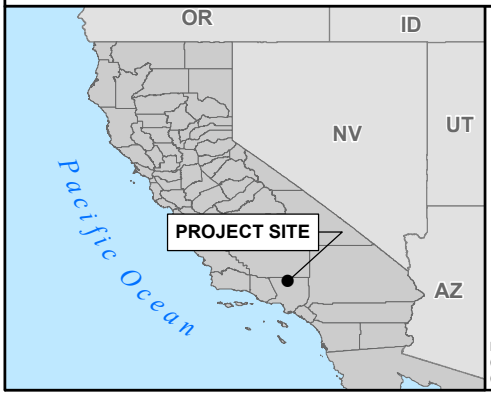


Geological Units

- Ep, Paleocene, sandstone; mudstone
- Mc, Oligocene to Pleistocene, sandstone; conglomerate
- Q, Pliocene to Holocene, alluvium; terrace
- QPc, Miocene to Pleistocene, sandstone; conglomerate
- Tv, Tertiary (22-24 Ma), rhyolite; pyroclastic
- grMz, Permian to Tertiary; most Mesozoic, granodiorite; quartz monzonite
- m, Early Proterozoic to Cretaceous, schist; gneiss
- pC, Early Proterozoic to Miocene, gneiss; granitoid
- sch, Late Cretaceous to Eocene, mica schist; mica schist
- water, Holocene, water



Legend

- Proposed Project Site (Site 10-17)
- Faults*

*Note: Unnamed faults are inactive.

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

TETRA TECH EC, INC.

SILVERADO POWER - SITE 10-17

FIGURE 3-1
REGIONAL GEOLOGY

0 1 2 4
Miles

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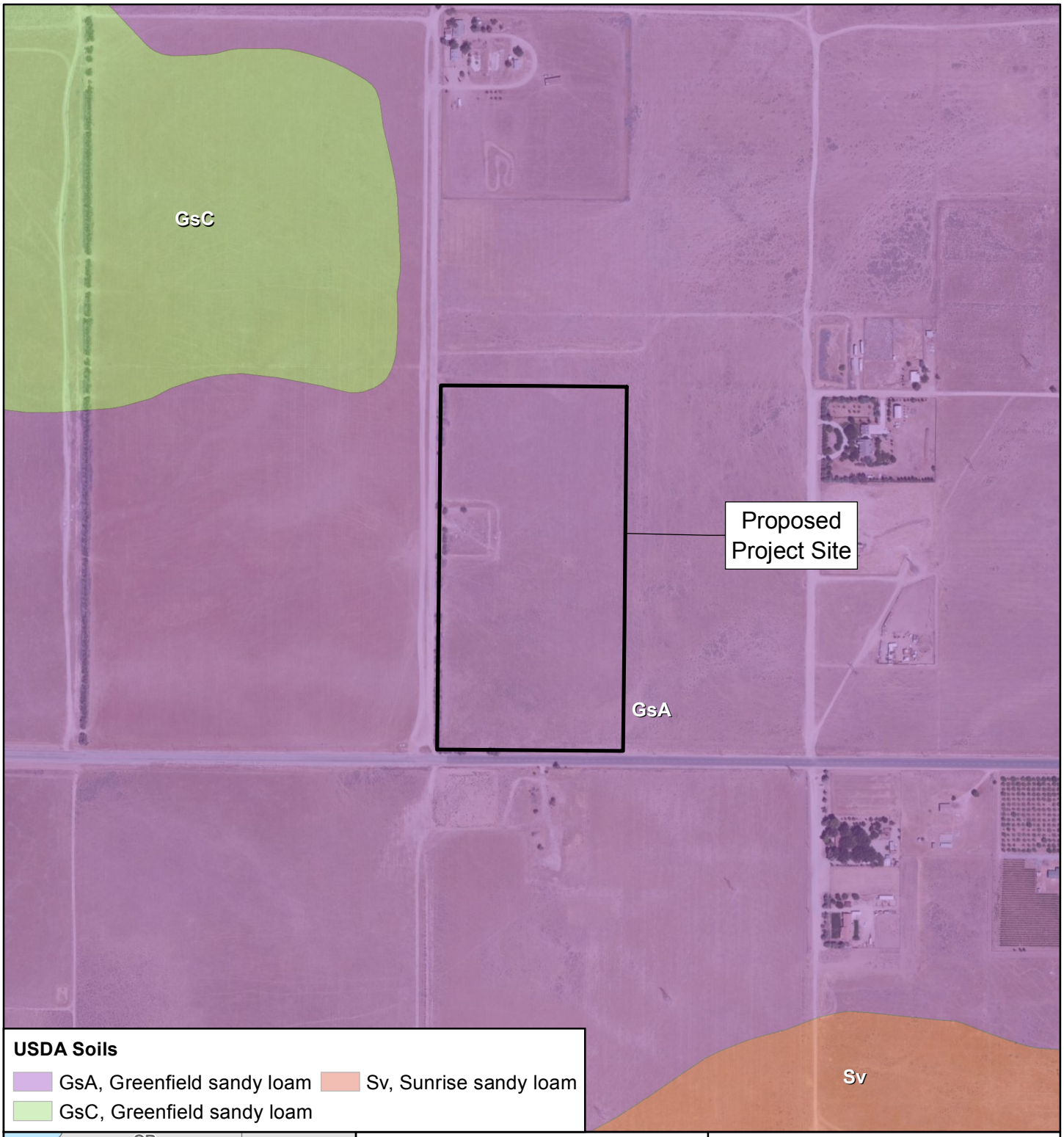
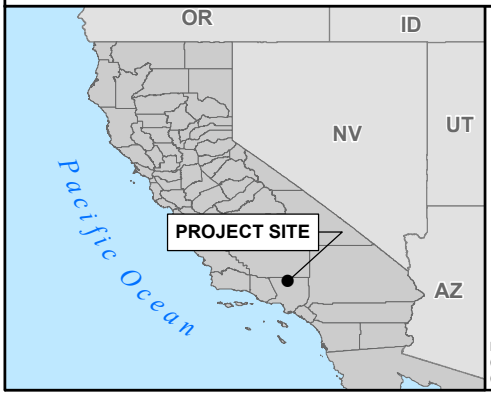


USDA Soils

- GsA, Greenfield sandy loam
- GsC, Greenfield sandy loam
- Sv, Sunrise sandy loam



Legend

Proposed Project Site (Site 10-17)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

TETRA TECH EC, INC.

SILVERADO POWER - SITE 10-17

FIGURE 4-1
SITE SOILS

0 230 460 920
Feet

ATTACHMENT 1

SOIL SURVEY REPORT

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

CUP 10-17 (Lancaster Blue Sky Ranch (Dayan))

June 1, 2011

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features

- Gully
- Short Steep Slope
- Other

Political Features

- Cities

Water Features

- Oceans
- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:2,150 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 5, Jan 3, 2008

Date(s) aerial images were photographed: 6/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Antelope Valley Area, California (CA675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
GsA	Greenfield sandy loam, 0 to 2 percent slopes	20.6	100.0%
Totals for Area of Interest		**20.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

GsA—Greenfield sandy loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 2,600 to 4,200 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 250 days

Map Unit Composition

Greenfield and similar soils: 85 percent
Minor components: 15 percent

Description of Greenfield

Setting

Landform: Terraces, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability (nonirrigated): 4c
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile

0 to 20 inches: Sandy loam
20 to 60 inches: Sandy loam
60 to 80 inches: Stratified loamy sand to coarse sandy loam

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Drainageways

Hanford

Percent of map unit: 5 percent

Sandy alluvial land

Percent of map unit: 4 percent

Unnamed

Percent of map unit: 1 percent
Landform: Swales

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties (CUP 10-17 (Lancaster Blue Sky Ranch (Dayan)))

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to

buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
GsA— Greenfield sandy loam, 0 to 2 percent slopes														
Greenfield	0-20	-66-	-23-	7-11- 15	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	20-60	-67-	-19-	10-14- 18	1.50-1.60	14.00-42.00	0.11-0.16	0.0-2.9	0.0-0.5	.28	.32			
	60-80	—	—	7-11- 15	1.55-1.70	14.00-42.00	0.07-0.12	0.0-2.9	0.0	.24	.32			

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APPENDIX B-5.5

PROJECT 5 SILVER SUN GREENWORKS
DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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SILVER SUN GREENWORKS, LLC
CUP 11 – SITE 26

DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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Updated September 2013

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Figure 3-1 Regional Geology

Figure 4-1 Site Soils

ATTACHMENT

Attachment 1 Soil Survey Report

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
CGS	California Geological Survey
DWR	Department of Water Resources
MY	million years
NRCS	Natural Resources Conservation Service
Project	Silver Sun Greenworks Solar Project
PV	photovoltaic
SAFZ	San Andreas Fault Zone
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION

This geotechnical desktop report provides a desktop level analysis of the geotechnical issues and potential geologic hazards affecting the proposed Silver Sun Greenworks Solar Project (Project) and site. This report is based on readily available geologic, hydrologic, and soil data and is intended to be used as a tool to determine feasibility and preliminary design. This report is not intended for use in final design or construction. Additional geotechnical studies, reports, and services will be required if the project proceeds to design and construction.

2.0 PROJECT DESCRIPTION

The Project is located in the Antelope Valley area in unincorporated northeast Los Angeles County, approximately 11 miles west of Lancaster. The Project site is bounded by West Avenue I to the north, and 120th Street West to the west. The Project site comprises approximately 160 acres of previously disturbed agricultural land that is currently fallow. The proposed Project consists of a 20 megawatt alternating current solar photovoltaic (PV) generating facility and a generation-tie line to the Antelope Substation. The Project will utilize crystalline silicon, or thin film, PV technology on fixed-tilt or tracker mounting supports. A regional location map (Figure 2-1) and topographic map (Figure 2-2) show the general vicinity, site boundary, and terrain for the proposed Project area.

3.0 GEOLOGY

3.1 Regional Geology

The proposed Project is located in the Antelope Valley, approximately 45 miles north of Los Angeles, and in the western corner of the Mojave Desert physiographic province. The Mojave Desert province is a topographically closed basin that contains broad expanses of desert plains and isolated mountain ranges with elevations ranging from 2,300 to 3,500 feet above mean sea level (California Geological Survey [CGS] 2002). Annual rainfall generally ranges between 5 to 10 inches and drains into interior playas (Department of Water Resources [DWR] 2003).The Project is located in the western wedge-shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada) and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary).

The geology of the region consists of Pre-Tertiary (greater than 1,000 million years [MY] to 66 MY) crystalline igneous and metamorphic rocks, Tertiary age (66 MY to 1.6 MY) sedimentary and volcanic rocks, and Quaternary age (1.6 MY to present) alluvial and sedimentary units. The Antelope Valley is underlain by up to 4,000 feet of alluvial fill from the surrounding uplands, and further underlain by basement rocks including gneiss, granite, and other metamorphic and igneous rocks. Geologic units that make up the basement complex reach the surface in some parts of the valley, and are similar to the surrounding uplands. The uplands are primarily Pre-Tertiary and Tertiary uplifted granite, gneiss, schist, and volcanic rocks, with uplifted sedimentary units in the traverse ranges to the west. Much of these units have undergone extensive deformation throughout their geologic history and continue to undergo additional folding and faulting from the tectonic processes associated with movement along the San Andreas Fault (the North American and Pacific Plate boundary). Regional geology is shown in Figure 3-1.

3.2 Local Geology

The site is located on the Del Sur United States Geological Survey (USGS) 7.5 minute topographic quadrangle. Elevations at the site range from approximately 2,560 feet in the southwest portion of the Project site to 2,525 feet in the northeast portion of the site. The site is located on relatively flat alluvial Quaternary sediments and is located approximately 2 miles away from the Mojave section of the San Andreas Fault zone (SAFZ).

The general underlying geology of the site is Pleistocene and Holocene alluvial and lacustrine deposits. These deposits typically consist of compacted gravels, sand, silt, and clay; and deposits generally fine towards the central parts of the valley (Duell 1987). Coarse alluvial deposits make up the upper and lower aquifers and are separated by confining layers of clay lake deposits up to 400 feet thick. The confining layers have minor interbeds of coarser material, and experience some leakage between aquifers (Planert and Williams 1995).

4.0 SOILS

Attachment 1 includes a soil survey map and the physical properties report generated from the National Resources Conservation Service (NRCS) Web Soil Survey (U.S. Department of Agriculture [USDA] 2011). Ramona coarse sandy loam soil map unit is dominant at the site (Attachment 1 and Figure 4-1). Also present is Greenfield sandy loam occupying a relatively small area. Soils have been disturbed and soil horizons may be lacking. General soil descriptions and soil erosion factors based on the soil survey map and the physical properties report (Attachment 1) are summarized below in Table 4-1.

Table 4-1 Project Area Soil Descriptions

Soil Name (Symbol)	Soil Description
Greenfield sandy loam, 0 to 2 percent slopes (GsA) and 2 to 9 percent slopes (GsC)	• Well drained • Typical profile includes: o 0 to 20 inches: Sandy loam o 20 to 60 inches: Sandy loam o 60 to 80 inches: Stratified loamy sand to coarse sandy loam • The capacity of the most limiting layer to transmit water is high. • Shrink swell potential is low.
Ramona coarse sandy loam, 0 to 2 percent slopes (RcA) and 2 to 5 percent slopes (RcB)	• Well drained • Typical profile includes: o 0 to 20 inches: Coarse sandy loam o 20 to 31 inches: Fine sandy loam o 31 to 90 inches: Sandy clay loam • The capacity of the most limiting layer to transmit water is moderately high. • Shrink swell potential is low.

4.1 Erodibility

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The two primary types of erosion, water erosion and wind erosion, are further described in the following sections.

4.1.1 Water Erosion

Water erosion of soils typically occurs during flooding or when there is surface water runoff. The erosion potential of a soil is compared using the erosion factor or the K factor which indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range from 0.02 to 0.69 with higher values indicating increased susceptibility to erosion. Table 4-2 below includes the erosion factors for the subject project site.

Table 4-2 Soil Erosion Chracteristics

Soil Map Unit (Symbol)	Erosion Factor (K Factor) (Kw in Attachment 1)	Wind Erodibility Group
Greenfield sandy loam, 0 to 2 percent slopes (GsA), and 2 to 9 percent slopes (GsC)	0.24-0.28	3
Ramona coarse sandy loam, 0 to 2 percent slopes (RcA) and 2 to 5 percent slopes (RcB)	0.28	3

Notes:

1. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. The range stated is for the entire soil profile.

Soils at the site have K factors that range from 0.24 to 0.28 (for the entire soil profile) and indicate a somewhat medium susceptibility to sheet and rill erosion. It is important to note that land disturbance and construction impacts could increase the susceptibility to soil erosion. However, with the implementation of appropriate erosion and sediment control Best Management Practices, the amount of soil loss due to water erosion is expected to be less than significant.

4.1.2 Wind Erosion

Wind erosion of soil is typical in areas with poor vegetative cover or where there is soil disturbance. Wind erodibility groups are used to assess the susceptibility of soil to wind erosion. Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The wind erodibility group is 3 for the soils at the subject site (Table 4-2) indicating somewhat low to medium susceptibility to wind erosion for the soils across the site.

5.0 GROUNDWATER

Water levels near the property ranged from approximately 137 to 156 feet below ground surface (bgs) in 2005 and 135.3 to 160 bgs in 2008, and have historically been documented in different wells at depths up to 280 feet bgs (DWR 2010). Groundwater typically flows toward topographic lows and playa lakes from the San Gabriel Mountains to the south and the Tehachapi Mountains to the west and north. However, local groundwater flow paths are often controlled by groundwater pumping conditions near Lancaster and Edwards Air Force Base. Groundwater pumping has contributed to a significant decline in water levels, and as a result, 292 square miles of Antelope Valley subsided more than 1 foot (Sneed and Galloway 2000; Ikehara and Phillips 1994).

6.0 GEOLOGICAL AND SOIL RELATED HAZARDS

Geologic hazards are natural physical conditions that may result in damage to the land and structures or injury to people. Such hazards include seismicity (earthquakes, ground shaking, and fault rupture), landslides, liquefaction, and subsidence.

6.1 Ground Shaking/Seismicity

Seismicity near the Project site is primarily generated from the Garlock fault zone and the SAFZ. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones, however, and could also occur at any number of active faults in the regional vicinity.

Regionally, seismicity has mostly been attributed to crustal deformation resulting from the San Andreas Fault and other local fault zones. Faults are considered active if there has been displacement in the last 11,000 years, and potentially active if there has been movement over the Quaternary period (1.6 MY to present). Several active faults and fault zones have been noted in the vicinity of the Project on both federal (USGS) and state (CGS) databases (Figure 3-1). These active faults have the ability to cause significant seismic activity in the region:

- San Andreas Fault Zone – The SAFZ is the transform boundary between the Pacific Plate and the North American Plate and has a right-lateral sense of displacement between 1.5 to 2.5 inches per year (Wallace 1990). The SAFZ has the highest probability of producing a magnitude 6.7 earthquake or greater, and has produced two 8+ magnitude earthquakes in Parkfield (143 miles from the site) and San Francisco (315 miles from the site) in the last 153 years.
- Garlock Fault Zone – The Garlock Fault is a left-lateral strike slip fault that forms the northern portion of the Antelope Valley at the base of the Tehachapi Mountains. The fault extends 200 miles northeast from the Castaic Lake region, is approximately 20 miles from the Project area, and has historically produced magnitude 5.7 earthquakes within 22 miles of the Project area.
- Sierra Madre and San Fernando Fault Zones – These fault zones are reverse thrust faults located approximately 28 to 45 miles south to southwest of the Project area. These faults zones have produced multiple 5+ magnitude earthquakes over the last 100 years.

Based on the USGS National Seismic Hazard Map (2008), the Project is located in areas mapped from 60 to 80 percent gravity for peak horizontal acceleration with a 10 percent probability of exceedance in the next 50 years. According to the USGS, and dependent on structural design, 10 percent gravity is the lower threshold at which damages to structures are likely to occur. Seismicity will affect the site and proper mitigation and structural design of facilities will be required. Structures must be designed to comply with latest California Building Code or International Building Code requirements.

6.2 Fault Rupture/Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was created to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Within these zones, development permits are withheld until geologic investigations demonstrate that ground rupture is not a threat. Local county and city data indicate that the

closest fault zone is the SAFZ and that the Project is located outside of identified Alquist-Priolo Fault Zones.

6.3 Liquefaction

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. The Project site has poorly sorted coarse grained material, and with groundwater typically greater than 100 feet bgs (USGS 2008), the site has very low susceptibility to liquefaction.

6.4 Landslides and Slope Failure

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the generally low slope from 1 to 2 percent, the site is not at risk for landslides or slope failure. Because development of a solar facility would not result in significant changes to existing site grades, the proposed development would not increase the susceptibility to slope failure.

6.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence in the Project area are groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster to closer to 1 to 2 feet near the Project site (Sneed and Galloway 2000). Fissures and differential settling have not been observed near the site. However, historical and continued depletion of water is expected to result in future land subsidence throughout the Antelope Valley.

6.6 Collapsible Soil

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. The site is located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage will continue to follow most natural drainage patterns or drainage channels where roads or permanent grading exist. A site-specific geotechnical investigation that would indentify site-specific soil characteristics is necessary to confirm the presence of such soils. If such soils exist within the upper 5 feet, mitigation could include removal of low-density soils. If soils are found at greater depths, prewatering may be a more feasible alternative.

6.7 Expansive Soil

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the

years and lead to differential settlement beneath foundations. Soil series in the site are rated for a low shrink/swell potential.

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FIGURES

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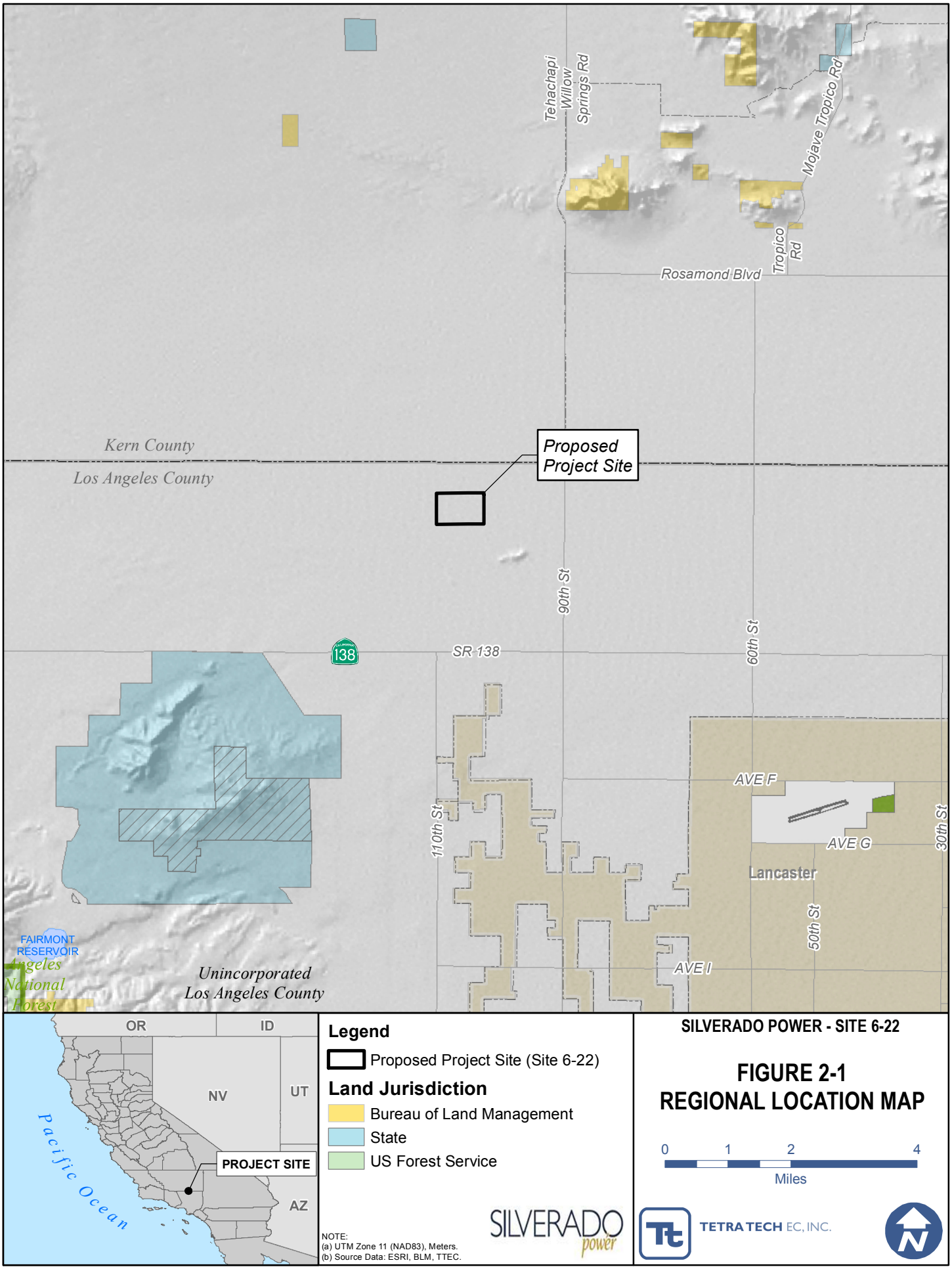

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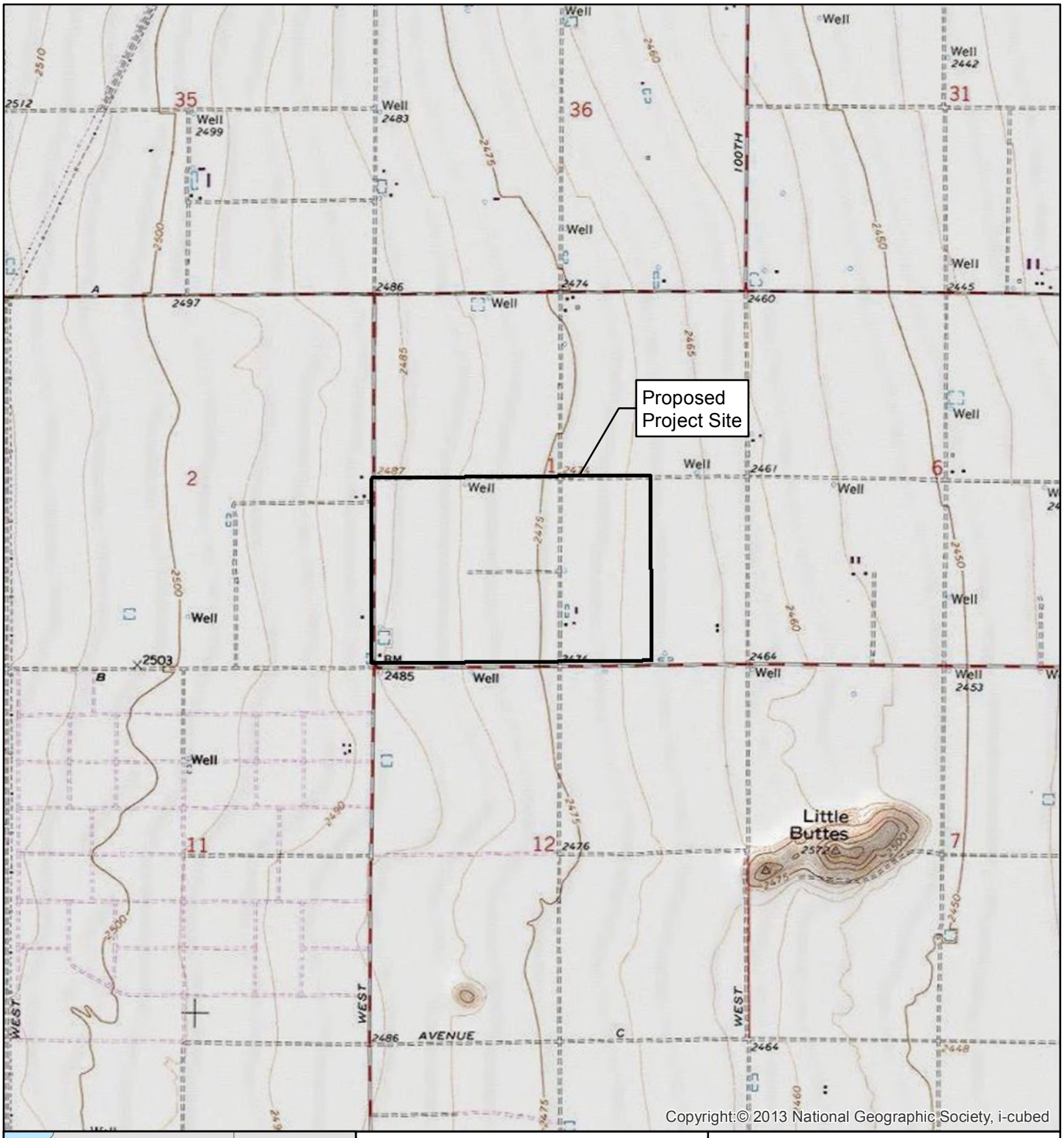

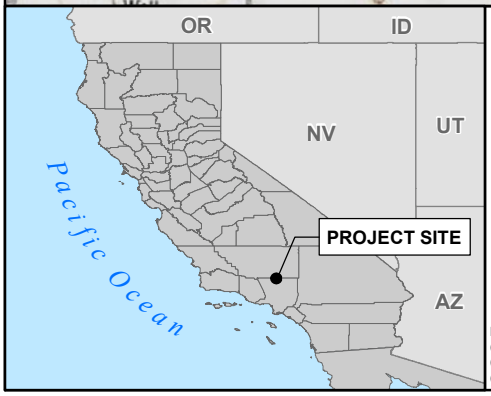

Legend

Proposed Project Site (Site 6-22)

Census Places/Towns

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Little Buttes 7.5' Topographic Map DRG.

SILVERADO power

SILVERADO POWER - SITE 6-22

FIGURE 2-2
SITE TOPOGRAPHIC MAP

0 1,000 2,000 4,000
Feet

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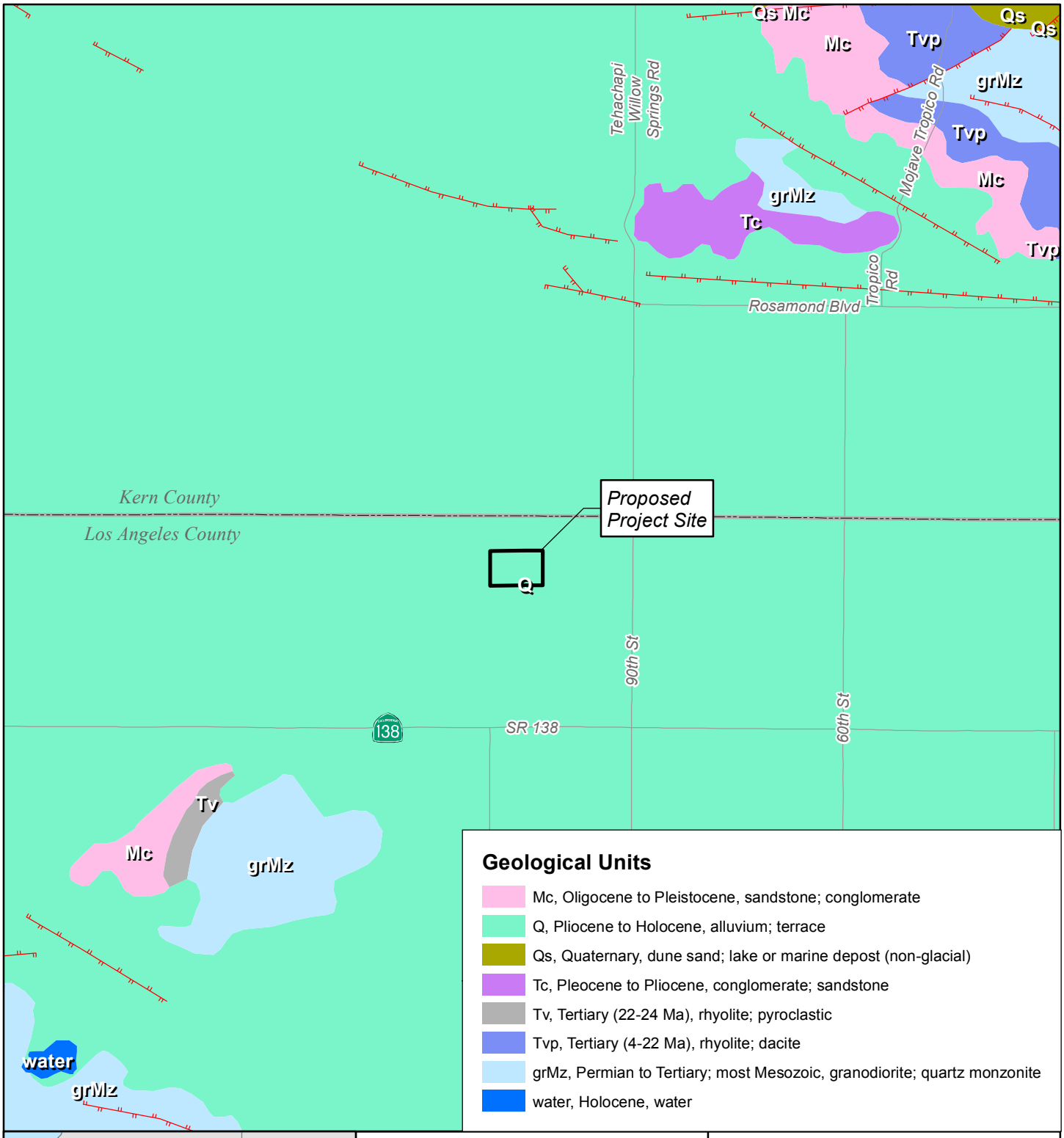

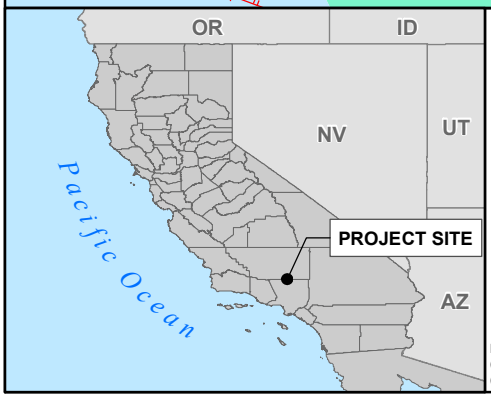

Legend

Proposed Project Site (Site 6-22)

cafaults_dd

*Note: Unnamed faults are inactive.

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - SITE 6-22

FIGURE 3-1
REGIONAL GEOLOGY

0 1 2 4
Miles

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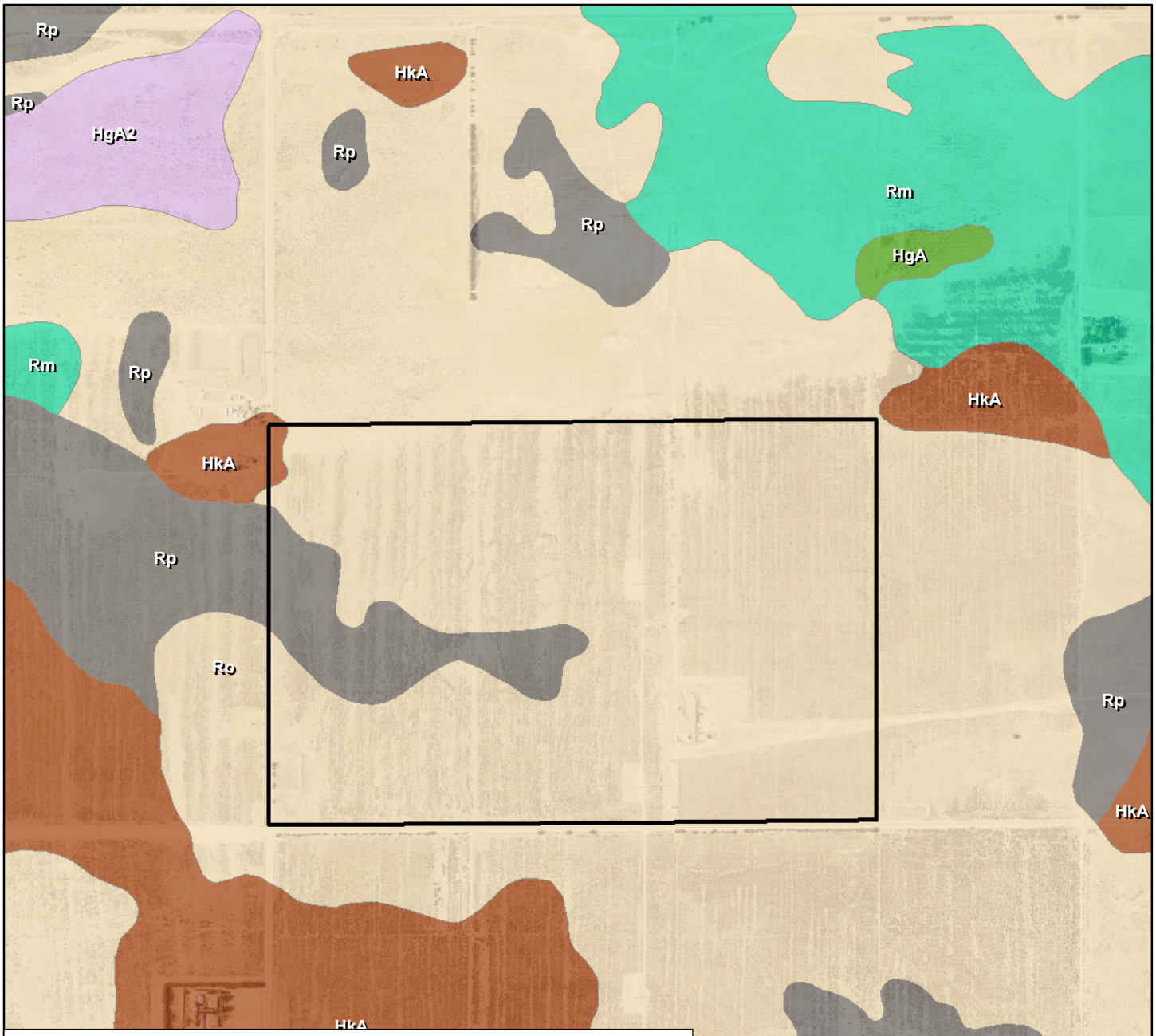

USDA Soils

- HgA - Hesperia Loamy Fine Sand
- HgA2 - Hesperia Loamy Fine Sand
- HkA - Hesperia Loamy Fine Loam
- HkB - Hesperia Loamy Fine Loam
- RhF - Rock Land
- Rm - Rosamond Loamy Find Sand
- Ro - Rosamond Fine Sandy Loam
- Rp - Rosamond Loam

Legend

Proposed Project Site (Site 6-22)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.

SILVERADO power

SILVERADO POWER - SITE 6-22

FIGURE 4-1
LAND USE MAP

0 500 1,000 2,000
Feet

TETRA TECH EC, INC.

ATTACHMENT 1

SOIL SURVEY REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

Silver Sun Greenworks

December 10, 2012

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:6,300 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 5, Jan 3, 2008

Date(s) aerial images were photographed: 6/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Antelope Valley Area, California (CA675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
GsA	Greenfield sandy loam, 0 to 2 percent slopes	5.0	3.1%
GsC	Greenfield sandy loam, 2 to 9 percent slopes	18.0	11.3%
RcA	Ramona coarse sandy loam, 0 to 2 percent slopes	61.8	38.7%
RcB	Ramona coarse sandy loam, 2 to 5 percent slopes	74.8	46.9%
Totals for Area of Interest		**159.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that

have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

GsA—Greenfield sandy loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 2,600 to 4,200 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 250 days

Map Unit Composition

Greenfield and similar soils: 85 percent
Minor components: 15 percent

Description of Greenfield

Setting

Landform: Terraces, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 1
Land capability (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile

0 to 20 inches: Sandy loam
20 to 60 inches: Sandy loam
60 to 80 inches: Stratified loamy sand to coarse sandy loam

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Drainageways

Hanford

Percent of map unit: 5 percent

Sandy alluvial land

Percent of map unit: 4 percent

Unnamed

Percent of map unit: 1 percent
Landform: Swales

GsC—Greenfield sandy loam, 2 to 9 percent slopes

Map Unit Setting

Elevation: 2,600 to 4,200 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 250 days

Map Unit Composition

Greenfield and similar soils: 85 percent
Minor components: 15 percent

Description of Greenfield

Setting

Landform: Terraces, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile

0 to 20 inches: Sandy loam
20 to 60 inches: Sandy loam
60 to 80 inches: Stratified loamy sand to coarse sandy loam

Minor Components

Hanford
Percent of map unit: 8 percent

Ramona
Percent of map unit: 5 percent

Unnamed
Percent of map unit: 1 percent

Unnamed
Percent of map unit: 1 percent

RcA—Ramona coarse sandy loam, 0 to 2 percent slopes

Map Unit Setting
Elevation: 2,700 to 3,900 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 210 to 240 days

Map Unit Composition
Ramona and similar soils: 85 percent
Minor components: 15 percent

Description of Ramona

Setting
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups
Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 1
Land capability (nonirrigated): 4e

Hydrologic Soil Group: B
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile
0 to 20 inches: Coarse sandy loam
20 to 31 inches: Fine sandy loam
31 to 90 inches: Sandy clay loam

Minor Components

Greenfield
Percent of map unit: 10 percent

Hanford
Percent of map unit: 4 percent

Unnamed
Percent of map unit: 1 percent
Landform: Swales

RcB—Ramona coarse sandy loam, 2 to 5 percent slopes

Map Unit Setting
Elevation: 2,700 to 3,900 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 210 to 240 days

Map Unit Composition
Ramona and similar soils: 85 percent
Minor components: 15 percent

Description of Ramona

Setting
Landform: Terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities
Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.8 inches)

Interpretive groups

Farmland classification: Prime farmland if irrigated
Land capability classification (irrigated): 2e
Land capability (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: LOAMY 9-20" (R019XD064CA)

Typical profile

0 to 20 inches: Coarse sandy loam
20 to 31 inches: Fine sandy loam
31 to 90 inches: Sandy clay loam

Minor Components

Greenfield

Percent of map unit: 10 percent

Hanford

Percent of map unit: 5 percent

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM,

GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash.

Engineering Properties– Antelope Valley Area, California												
Map unit symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
GsA—Greenfield sandy loam, 0 to 2 percent slopes												
Greenfield	0-20	*Sandy loam	SM	A-2, A-4	0	0	95-100	75-100	50-75	20-50	10-25	NP-5
	20-60	*Sandy loam	SM	A-2, A-4	0	0	80-100	75-100	50-75	20-50	10-25	NP-5
	60-80	*Stratified loamy sand to coarse sandy loam	SM	A-2	0	0	70-100	60-100	50-70	15-35	—	NP
GsC—Greenfield sandy loam, 2 to 9 percent slopes												
Greenfield	0-20	*Sandy loam	SM	A-2, A-4	0	0	95-100	75-100	50-75	20-50	10-25	NP-5
	20-60	*Sandy loam	SM	A-4, A-2	0	0	80-100	75-100	50-75	20-50	10-25	NP-5
	60-80	*Stratified loamy sand to coarse sandy loam	SM	A-2	0	0	70-100	60-100	50-70	15-35	—	NP
RcA—Ramona coarse sandy loam, 0 to 2 percent slopes												
Ramona	0-20	*Coarse sandy loam	SM	A-2	0	0	95-100	75-95	50-60	25-35	15-25	NP-5
	20-31	*Fine sandy loam	ML, SC-SM, SM, CL-ML	A-4	0	0	95-100	75-95	50-80	40-60	20-30	NP-10
	31-90	*Sandy clay loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	95-100	75-95	50-75	35-60	25-40	5-15

Engineering Properties– Antelope Valley Area, California												
Map unit symbol and soil name	**Depth**	**USDA texture**	**Classification**		**Fragments**		**Percentage passing sieve number—**				**Liquid limit**	**Plasticity index**
			Unified	**AASHTO**	**>10 inches**	**3-10 inches**	**4**	**10**	**40**	**200**		
	In				*Pct*	*Pct*					*Pct*	
RcB—Ramona coarse sandy loam, 2 to 5 percent slopes												
Ramona	0-20	*Coarse sandy loam	SM	A-2	0	0	95-100	75-95	50-60	25-35	15-25	NP-5
	20-31	*Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	95-100	75-95	50-80	40-60	20-30	NP-10
	31-90	*Sandy clay loam	SC, SC-SM, CL, CL-ML	A-4, A-6	0	0	95-100	75-95	50-75	35-60	25-40	5-15

Physical Soil Properties

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion.

There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
GsA—Greenfield sandy loam, 0 to 2 percent slopes														
Greenfield	0-20	-66-	-23-	7-11- 15	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	20-60	-67-	-19-	10-14- 18	1.50-1.60	14.00-42.00	0.11-0.16	0.0-2.9	0.0-0.5	.28	.32			
	60-80	—	—	7-11- 15	1.55-1.70	14.00-42.00	0.07-0.12	0.0-2.9	0.0	.24	.32			
GsC—Greenfield sandy loam, 2 to 9 percent slopes														
Greenfield	0-20	-66-	-23-	7-11- 15	1.45-1.55	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.32	5	3	86
	20-60	-67-	-19-	10-14- 18	1.50-1.60	14.00-42.00	0.11-0.16	0.0-2.9	0.0-0.5	.28	.32			
	60-80	—	—	7-11- 15	1.55-1.70	14.00-42.00	0.07-0.12	0.0-2.9	0.0	.24	.32			
RcA—Ramona coarse sandy loam, 0 to 2 percent slopes														
Ramona	0-20	-70-	-23-	5- 8- 10	1.60-1.65	14.00-42.00	0.09-0.11	0.0-2.9	0.5-1.0	.28	.37	5	3	86
	20-31	-68-	-21-	8-12- 15	1.45-1.60	4.00-14.00	0.10-0.15	0.0-2.9	0.0	.28	.37			
	31-90	-57-	-18-	20-25- 30	1.70-1.90	1.40-4.00	0.12-0.17	0.0-2.9	0.0	.28	.37			

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
RcB—Ramona coarse sandy loam, 2 to 5 percent slopes														
Ramona	0-20	-70-	-23-	5- 8- 10	1.60-1.65	14.00-42.00	0.09-0.11	0.0-2.9	0.5-1.0	.28	.37	5	3	86
	20-31	-68-	-21-	8-12- 15	1.45-1.60	4.00-14.00	0.10-0.15	0.0-2.9	0.0	.28	.37			
	31-90	-57-	-18-	20-25- 30	1.70-1.90	1.40-4.00	0.12-0.17	0.0-2.9	0.0	.28	.37			

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APPENDIX B-5.6

PROJECT 6 LANCASTER WAD DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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LANCASTER WAD, LLC
CUP 15 – SITE 21

DESKTOP GEOTECHNICAL CRITICAL ISSUES ANALYSIS

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ATTACHMENT

Attachment 1 Soil Survey Report

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
CGS	California Geological Survey
DWR	Department of Water Resources
MY	million years
NRCS	Natural Resources Conservation Service
Project	Lancaster WAD Solar Project
PV	photovoltaic
SAFZ	San Andreas Fault Zone
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 INTRODUCTION

This geotechnical desktop report provides a desktop level analysis of the geotechnical issues and potential geologic hazards affecting the proposed Lancaster WAD Solar Project (Project) and site. This report is based on readily available geologic, hydrologic, and soil data and is intended to be used as a tool to determine feasibility and preliminary design. This report is not intended for use in final design or construction. Additional geotechnical studies, reports, and services will be required if the project proceeds to design and construction.

2.0 PROJECT DESCRIPTION

The Project is located in the Antelope Valley area in unincorporated northeast Los Angeles County, approximately 7 miles north-northwest of Lancaster. The Project site is bounded by 35th Street West to the west, West Avenue D to the south, and is 1,300 feet west of 30th Street West. The Project site comprises approximately 39 acres of undisturbed desert land. The proposed Project consists of a 5 megawatt alternating current solar photovoltaic (PV) generating facility and a generation-tie line to the Antelope Substation. The Project will utilize crystalline silicon, or thin film, PV technology on fixed-tilt or tracker mounting supports. A regional location map (Figure 2-1) and topographic map (Figure 2-2) show the general vicinity, site boundary, and terrain for the proposed Project area.

3.0 GEOLOGY

3.1 Regional Geology

The proposed Project is located in the Antelope Valley, approximately 45 miles north of Los Angeles, and in the western corner of the Mojave Desert physiographic province. The Mojave Desert province is a topographically closed basin that contains broad expanses of desert plains and isolated mountain ranges with elevations ranging from 2,300 to 3,500 feet above mean sea level (California Geological Survey [CGS] 2002). Annual rainfall generally ranges between 5 to 10 inches and drains into interior playas (Department of Water Resources [DWR] 2003). The Project is located in the western wedge-shaped corner of the Mojave Desert, which is bounded to the north by the Garlock Fault and Tehachapi Mountains (southern boundary of the Sierra Nevada), and to the south by the San Andreas Fault and San Gabriel Mountains (part of the Transverse Ranges northern boundary).

The geology of the region consists of Pre-Tertiary (greater than 1,000 million years [MY] to 66 MY) crystalline igneous and metamorphic rocks, Tertiary age (66 MY to 1.6 MY) sedimentary and volcanic rocks, and Quaternary age (1.6 MY to present) alluvial and sedimentary units. The Antelope Valley is underlain by up to 4,000 feet of alluvial fill from the surrounding uplands, and further underlain by basement rocks including gneiss, granite, and other metamorphic and igneous rocks. Geologic units that make up the basement complex reach the surface in some parts of the valley, and are similar to the surrounding uplands. The uplands are primarily Pre-Tertiary and Tertiary uplifted granite, gneiss, schist, and volcanic rocks, with uplifted sedimentary units in the traverse ranges to the west. Much of these units have undergone extensive deformation throughout their geologic history and continue to undergo additional folding and faulting from the tectonic processes associated with movement along the San Andreas Fault (the North American and Pacific Plate boundary). Regional geology is shown in Figure 3-1.

3.2 Local Geology

The site is located on the Rosemond United States Geological Survey (USGS) 7.5 minute topographic quadrangle. Elevations at the site range from approximately 2,338 feet in the northwest portion of the Project site to 2,333 feet in the southeast portion of the site. The site is located on relatively flat alluvial Quaternary sediments and is located approximately 12 miles away from the San Andreas Fault zone (SAFZ).

The general underlying geology of the site is Quaternary playa deposits. Regionally, these sediments are described as compact lacustrine silt and clay with minor loose, well-sorted sand and fine gravel deposited in the shallow-water margins of the last pluvial lake that filled the lowland parts of Antelope Valley up to about 12,000 years ago. However, deposits mapped appear to contain significant amounts of loose sand and silt in the top 40 feet of the stratigraphic section (CGS 2005). Coarse alluvial deposits make up the upper and lower aquifers and are separated by confining layers of clay lake deposits up to 400 feet thick. The confining layers have minor interbeds of coarser material, and experience some leakage between aquifers (Planert and Williams 1995).

4.0 SOILS

Attachment 1 includes a soil survey map and the physical properties report generated from the National Resources Conservation Service (NRCS) Web Soil Survey (U.S. Department of Agriculture [USDA] 2011). Pond-Oban complex soil map unit is present at the site (Attachment 1 and Figure 4-1). Soils have been disturbed and soil horizons may be lacking. General soil descriptions and soil erosion factors based on the soil survey map and the physical properties report (Attachment 1) are summarized below in Table 4-1.

Table 4-1 Project Area Soil Descriptions

Soil Name (Symbol)	Soil Description
Pond-Oban Complex (Px)	Pond and Similar Soils: • Moderately well drained • Typical profile includes: o 0 to 4 inches: Fine sandy loam o 4 to 24 inches: Clay loam o 24 to 72 inches: Silt loam • The capacity of the most limiting layer to transmit water is very low. • Shrink swell potential is low to moderate. Oban and Similar Soils: • Moderately well drained • Typical profile includes: o 0 to 4 inches: Fine sandy loam o 4 to 25 inches: Clay loam o 25 to 31 inches: Loam, clay loam o 31 to 53 inches: Stratified gravelly coarse sand to gravelly coarse sandy loam • The capacity of the most limiting layer to transmit water is moderately low to moderately high. • Shrink swell potential is low to high.

4.1 Erodibility

Erosion is the chemical or physical breakdown and transportation of rock or soil from one place to another. The two primary types of erosion, water erosion and wind erosion, are further described in the following sections.

4.1.1 Water Erosion

Water erosion of soils typically occurs during flooding or when there is surface water runoff. The erosion potential of a soil is compared using the erosion factor or the K factor which indicates the susceptibility of a soil to sheet and rill erosion by water. K factor can range from 0.02 to 0.69 with higher values indicating increased susceptibility to erosion. Table 4-2 below includes the erosion factors for the subject project site.

Table 4-2 Soil Erosion Characteristics

Soil Map Unit (Symbol)	Erosion Factor (K Factor) (Kw in Attachment 1)	Wind Erodibility Group
Pond-Oban Complex (Px) – Pond and Similar Soils	0.32-0.55	3
Pond-Oban Complex (Px) – Oban and Similar Soils	0.20-0.32	3

Notes:

1. Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. The range stated is for the entire soil profile.

Soils at the site have K factors that range from 0.20 to 0.55 (for the entire soil profile) and indicate a somewhat medium low to high susceptibility to sheet and rill erosion. It is important to note that land disturbance and construction impacts could increase the susceptibility to soil erosion. However, with the implementation of appropriate erosion and sediment control Best Management Practices, the amount of soil loss due to water erosion is expected to be less than significant.

4.1.2 Wind Erosion

Wind erosion of soil is typical in areas with poor vegetative cover or where there is soil disturbance. Wind erodibility groups are used to assess the susceptibility of soil to wind erosion. Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The wind erodibility group is 3 for the soils at the subject site (Table 4-2) indicating somewhat low to medium susceptibility to wind erosion for the soils across the site.

5.0 GROUNDWATER

Water levels near the property ranged from approximately 119 feet below ground surface (bgs) in 2005 and 117 feet bgs in 2008, and have historically been documented in different wells as shallow as 34 feet bgs (DWR 2011). Groundwater typically flows toward topographic lows and playa lakes from the San Gabriel Mountains to the south and the Tehachapi Mountains to the west and north. However, local groundwater flow paths are often controlled by groundwater pumping conditions near Lancaster and Edwards Air Force Base. Groundwater pumping has contributed to a significant decline in water levels, and as a result, 292 square miles of Antelope Valley subsided more than 1 foot (Sneed and Galloway 2000; Ikehara and Phillips 1994).

6.0 GEOLOGICAL AND SOIL RELATED HAZARDS

Geologic hazards are natural physical conditions that may result in damage to the land and structures or injury to people. Such hazards include seismicity (earthquakes, ground shaking, and fault rupture), landslides, liquefaction, and subsidence.

6.1 Ground Shaking/Seismicity

Seismicity near the Project site is primarily generated from the Garlock Fault zone and the SAFZ. Seismicity in the region is not limited to the San Andreas Fault or Garlock Fault zones, however, and could also occur at any number of active faults in the regional vicinity.

Regionally, seismicity has mostly been attributed to crustal deformation resulting from the San Andreas Fault and other local fault zones. Faults are considered active if there has been displacement in the last 11,000 years, and potentially active if there has been movement over the Quaternary period (1.6 MY to present). Several active faults and fault zones have been noted in the vicinity of the Project on both federal (USGS) and state (CGS) databases (Figure 3-1). These active faults have the ability to cause significant seismic activity in the region:

- San Andreas Fault Zone – The SAFZ is the transform boundary between the Pacific Plate and the North American Plate and has a right-lateral sense of displacement between 1.5 to 2.5 inches per year (Wallace 1990). The SAFZ has the highest probability of producing a magnitude 6.7 earthquake or greater, and has produced two 8+ magnitude earthquakes in Parkfield (145 miles from the site) and San Francisco (320 miles from the site) in the last 153 years.
- Garlock Fault Zone – The Garlock fault is a left-lateral strike slip fault that forms the northern portion of the Antelope Valley at the base of the Tehachapi Mountains. The fault extends 200 miles northeast from the Castaic Lake region, is approximately 20 miles from the Project area, and has historically produced magnitude 5.7 earthquakes within 22 miles of the Project area.
- Mirage Valley Fault Zone – The Mirage Valley fault is a right-lateral strike slip fault located approximately 22 miles east of the Project area. The Mirage Valley fault is considered to be potentially active as there is evidence of movement during the late Quaternary period (USGS 2009).
- Sierra Madre and San Fernando Fault Zones – These fault zones are reverse thrust faults located approximately 35 to 45 miles south to southwest of the Project area. These faults zones have produced multiple 5+ magnitude earthquakes over the last 100 years.

Based on the USGS National Seismic Hazard Map (2008), the Project is located in areas mapped from 30 to 40 percent gravity for peak horizontal acceleration with a 10 percent probability of excedance in the next 50 years. According to the USGS, and dependent on structural design, 10 percent gravity is the lower threshold at which damages to structures are likely to occur. Seismicity will affect the site and proper mitigation and structural design of facilities will be required. Structures must be designed to comply with latest California Building Code or International Building Code requirements.

6.2 Fault Rupture/Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was created to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. Within these zones, development permits are withheld until geologic investigations demonstrate that ground rupture is not a threat. Local county and city data indicate that the closest fault zone is the SAFZ and that the Project is located outside of identified Alquist-Priolo Fault Zones.

6.3 Liquefaction

Liquefaction is the process where cohesionless soil or loosely packed sediment, typically saturated, undergoes loading or seismic shaking that causes a mass to fail and transform from a solid into liquid state. This typically occurs near the surface with poorly consolidated, highly saturated, well sorted, and finer grained materials. Although the Project site has not been mapped as an area designated as a zone requiring investigation or susceptible to liquefaction (CGS 2005), the risk of potential liquefaction cannot be ruled out. The Project site consists of loose sand and silt deposits in the top 40 feet of the stratigraphic section which are susceptible to liquefaction when saturated. Recent groundwater level data shows groundwater at approximately 117 feet bgs, and historically as shallow as 34 feet bgs. Should groundwater levels recover, the potential risk for liquefaction could develop. A site-specific geotechnical investigation, which would identify site-specific soil characteristics and the actual depth to groundwater, is necessary to confirm the level of risk.

6.4 Landslides and Slope Failure

Slope stability is a function of many factors including slope gradient, water content, rock and soil type, slope aspect, vegetation, seismic conditions, and human activities. Based on the above characteristics, and specifically the generally low slope less than 1 percent, the site is not at risk for landslides or slope failure. Because development of a solar facility would not result in significant changes to existing site grades, the proposed development would not increase the susceptibility to slope failure.

6.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface that is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence can cause significant damage to properties in the form of differential settling, sinkholes, or ground fissures. Potential sources of subsidence in the Project area are groundwater withdrawal and seismic shaking. The region has historically undergone a significant amount of subsidence ranging from greater than 6 feet near the City of Lancaster to closer to 1 to 2 feet near the Project site (Sneed and Galloway 2000). Fissures and differential settling have not been observed near the site. However, historical and continued depletion of water is expected to result in future land subsidence throughout the Antelope Valley.

6.6 Collapsible Soil

Alluvial soils in arid and semi-arid environments have a tendency to possess characteristics that make them prone to collapse with increase in moisture content even without increase in external loads. The site is located in a geologic environment where the potential exists for collapsible soils. Prolonged wetting of the on-site soils is not expected due to the nature of the proposed development, and surface drainage will continue to follow most natural drainage patterns or

drainage channels where roads or permanent grading exist. A site-specific geotechnical investigation that would indentify site-specific soil characteristics is necessary to confirm the presence of such soils. If such soils exist within the upper 5 feet, mitigation could include removal of low-density soils. If soils are found at greater depths, prewatering may be a more feasible alternative.

6.7 Expansive Soil

Expansive soil consists of fine-grained clay which occurs naturally. It is found in areas that were historically a floodplain or lake area, but can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. Excessive drying and wetting of the soil can progressively deteriorate structures over the years and lead to differential settlement beneath foundations. Soil series in the site are rated for a low shrink/swell potential.

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FIGURES

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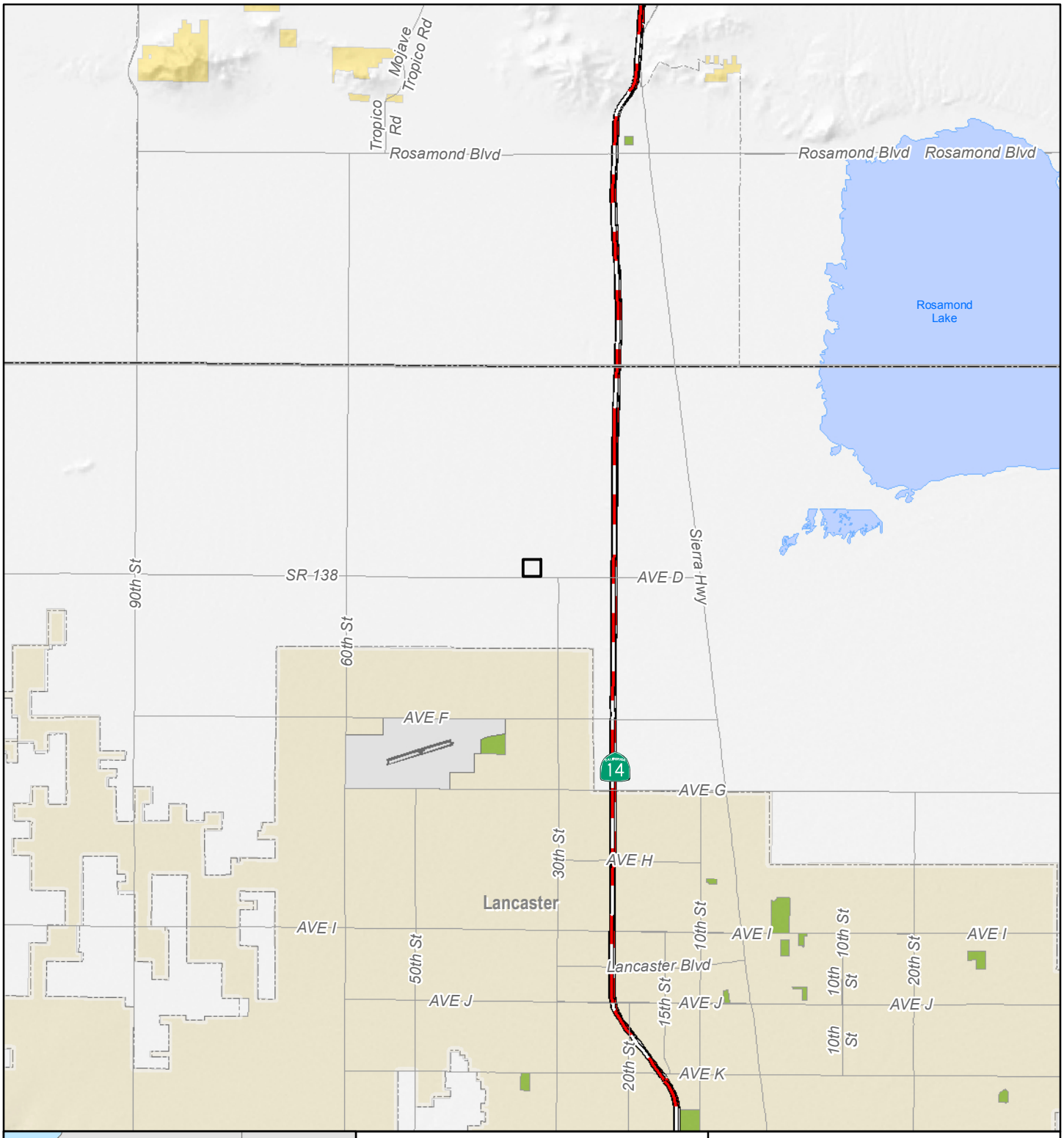

Legend

Proposed Project Site (Site 15-21)

Land Jurisdiction

Bureau of Land Management

State

US Forest Service

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.

SILVERADO power

SILVERADO POWER - SITE 15-21

FIGURE 2-1
REGIONAL LOCATION MAP

0 1 2 4
Miles

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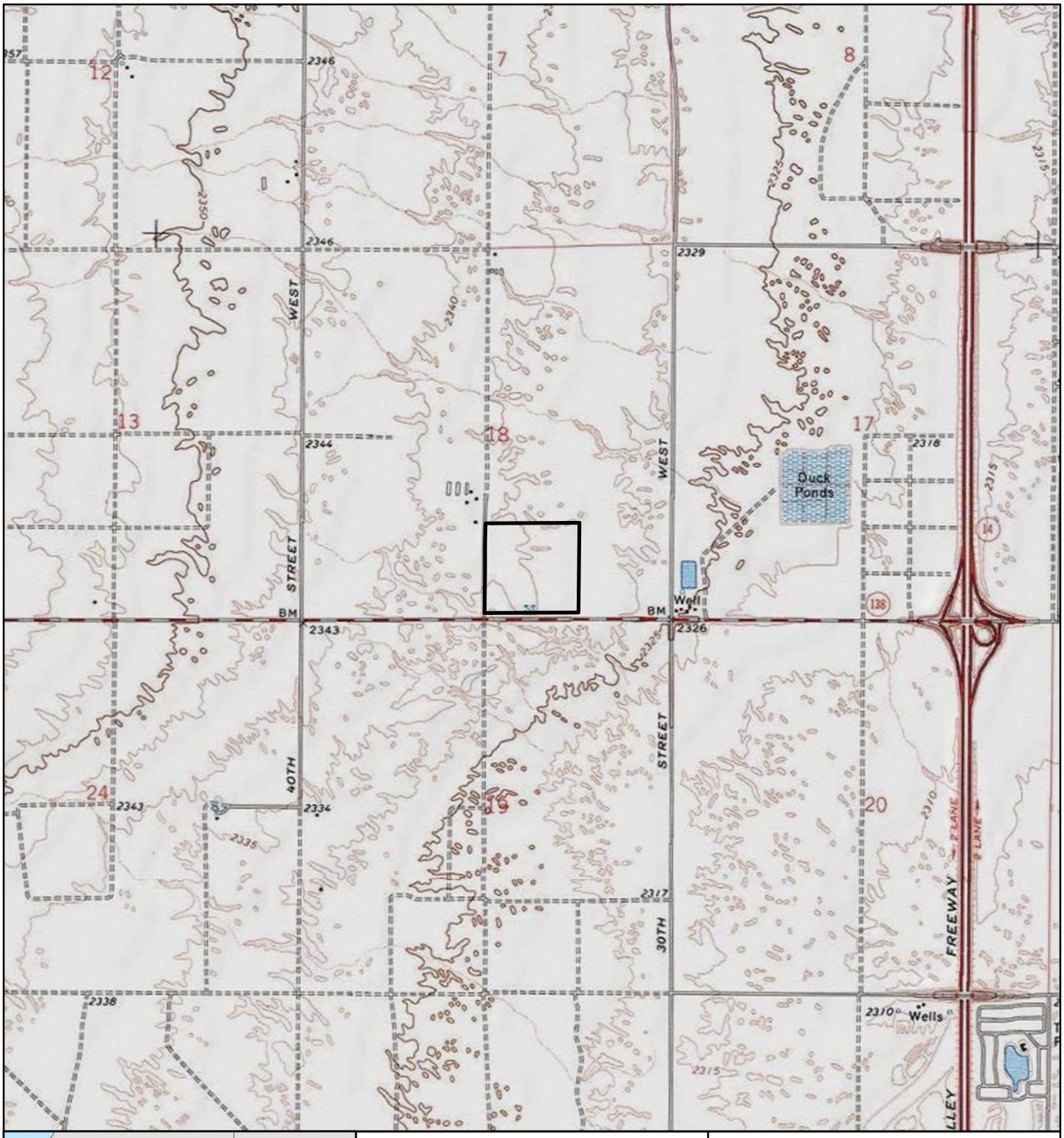

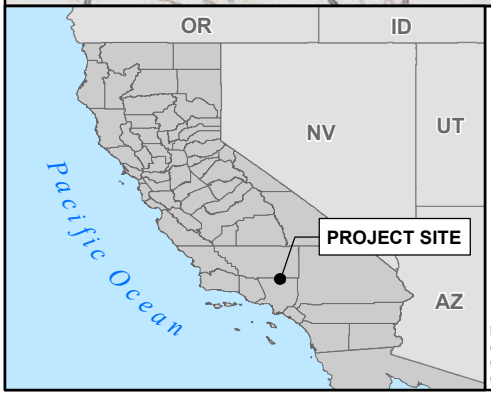

Legend

Proposed Project Site (Site 15-21)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
(c) USGS Lancaster East 7.5' Topographic Map DRG.

SILVERADO power

SILVERADO SOLAR - SITE 15-21

FIGURE 2-2
SITE TOPOGRAPHIC MAP

0 1,000 2,000 4,000
Feet

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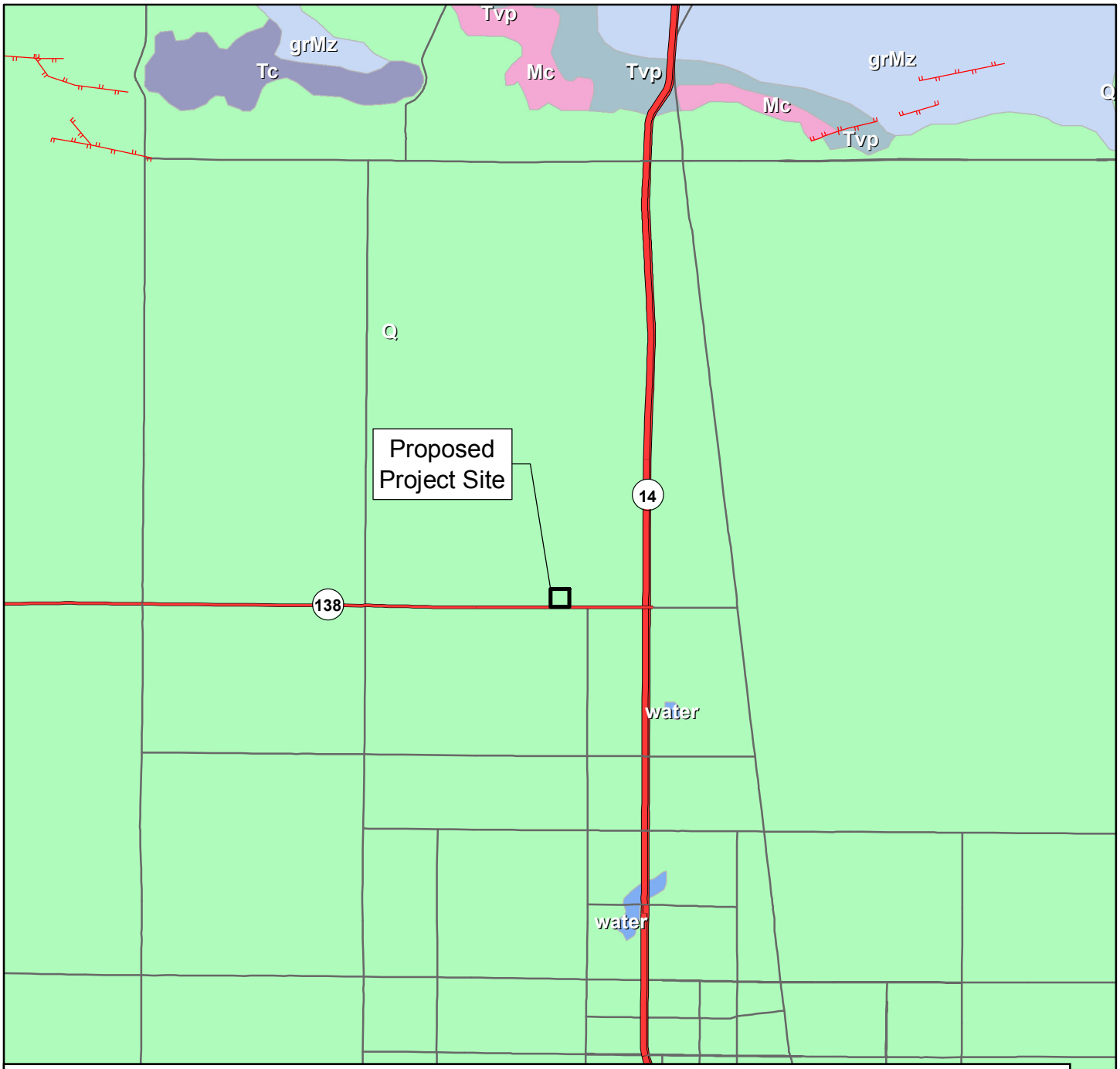

Geological Units

- Mc, Oligocene to Pleistocene, sandstone; conglomerate
- Q, Pliocene to Holocene, alluvium; terrace
- Tc, Paleocene to Pliocene, conglomerate; sandstone
- Tvp, Tertiary (4-22 Ma), rhyolite; dacite
- grMz, Permian to Tertiary; most Mesozoic, granodiorite; quartz monzonite
- water, Holocene, water

Legend

- Proposed Project Site (Site 15-21)
- Faults*

*Note: Unnamed faults are inactive.

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

SILVERADO POWER - SITE 15-21

FIGURE 3-1
REGIONAL GEOLOGY

0 1 2 4
Miles

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USDA Soils

Px, Pond-Oban complex

Legend

Proposed Project Site (Site 15-21)

NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: NRCS, ESRI, TTEC.

SILVERADO power

SILVERADO POWER - SITE 15-21

FIGURE 4-1
SITE SOILS

0 230 460 920
Feet

TETRA TECH EC, INC.

ATTACHMENT 1

SOIL SURVEY REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

CUP 15-21, Lancaster WAD (Novak)

May 31, 2011

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

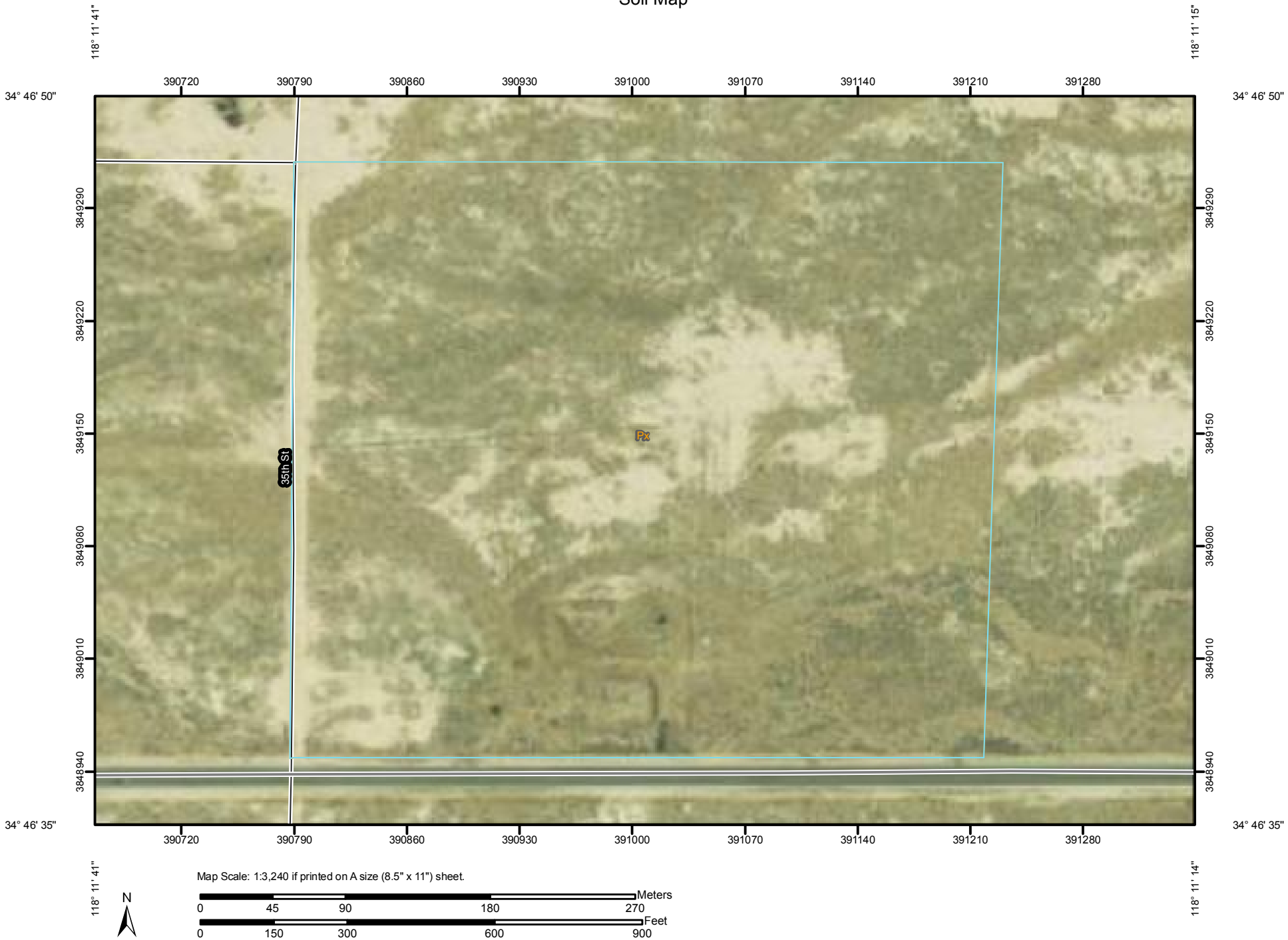
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:3,240 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 5, Jan 3, 2008

Date(s) aerial images were photographed: 6/5/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Antelope Valley Area, California (CA675)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Px	Pond-Oban complex	39.9	100.0%
Totals for Area of Interest		**39.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

Px—Pond-Oban complex

Map Unit Setting

Elevation: 40 to 2,600 feet
Mean annual precipitation: 5 to 6 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 230 to 260 days

Map Unit Composition

Pond and similar soils: 50 percent
Oban and similar soils: 30 percent
Minor components: 20 percent

Description of Pond

Setting

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Moderately saline (16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability (nonirrigated): 7s
Ecological site: ALKALI FLATS 4-9" (R030XG020CA)

Typical profile

0 to 4 inches: Fine sandy loam
4 to 24 inches: Clay loam
24 to 72 inches: Silt loam

Description of Oban

Setting

Landform: Basin floors
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Slightly saline to moderately saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability (nonirrigated): 7s
Ecological site: ALKALI FLATS 4-9" (R030XG020CA)

Typical profile

0 to 4 inches: Fine sandy loam
4 to 25 inches: Clay loam
25 to 31 inches: Loam, clay loam
31 to 53 inches: Stratified gravelly coarse sand to gravelly coarse sandy loam

Minor Components

Tray

Percent of map unit: 10 percent

Unnamed

Percent of map unit: 10 percent

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties (CUP 15-21, Lancaster WAD (Novak))

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to

buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Physical Soil Properties– Antelope Valley Area, California														
Map symbol and soil name	**Depth**	**Sand**	**Silt**	**Clay**	**Moist bulk density**	**Saturated hydraulic conductivity**	**Available water capacity**	**Linear extensibility**	**Organic matter**	**Erosion factors**			**Wind erodibility group**	**Wind erodibility index**
										Kw	**Kf**	**T**		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
Px—Pond-Oban complex														
Pond	0-4	-69-	-16-	10-15- 20	1.45-1.60	4.00-14.00	0.07-0.11	0.0-2.9	0.5-1.0	.32	.32	5	3	86
	4-24	-35-	-34-	27-31- 35	1.40-1.50	1.40-4.00	0.05-0.09	3.0-5.9	0.0	.32	.37			
	24-72	-22-	-55-	20-24- 27	1.40-1.50	0.00	0.05-0.09	3.0-5.9	0.0	.55	.55			
Oban	0-4	-69-	-16-	10-15- 20	1.50-1.60	4.00-14.00	0.08-0.11	0.0-2.9	0.5-1.0	.32	.37	2	3	86
	4-25	-30-	-30-	35-40- 45	1.50-1.65	0.42-1.40	0.06-0.10	6.0-8.9	0.0	.28	.28			
	25-31	-39-	-37-	20-25- 30	1.50-1.65	0.42-1.40	0.06-0.12	3.0-5.9	0.0	.37	.37			
	31-53	—	—	5- 9- 12	1.50-1.70	14.00-42.00	0.03-0.06	0.0-2.9	0.0	.20	.32			

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APPENDIX B-6

ENVIRONMENTAL DATA RESOURCES

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APPENDIX B-6.1

PROJECT 1 NORTH LANCASTER RANCH ENVIRONMENTAL DATA RESOURCES

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North Lancaster Ranch
22
Lancaster, CA 93536

Inquiry Number: 3089735.102
June 08, 2011

EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
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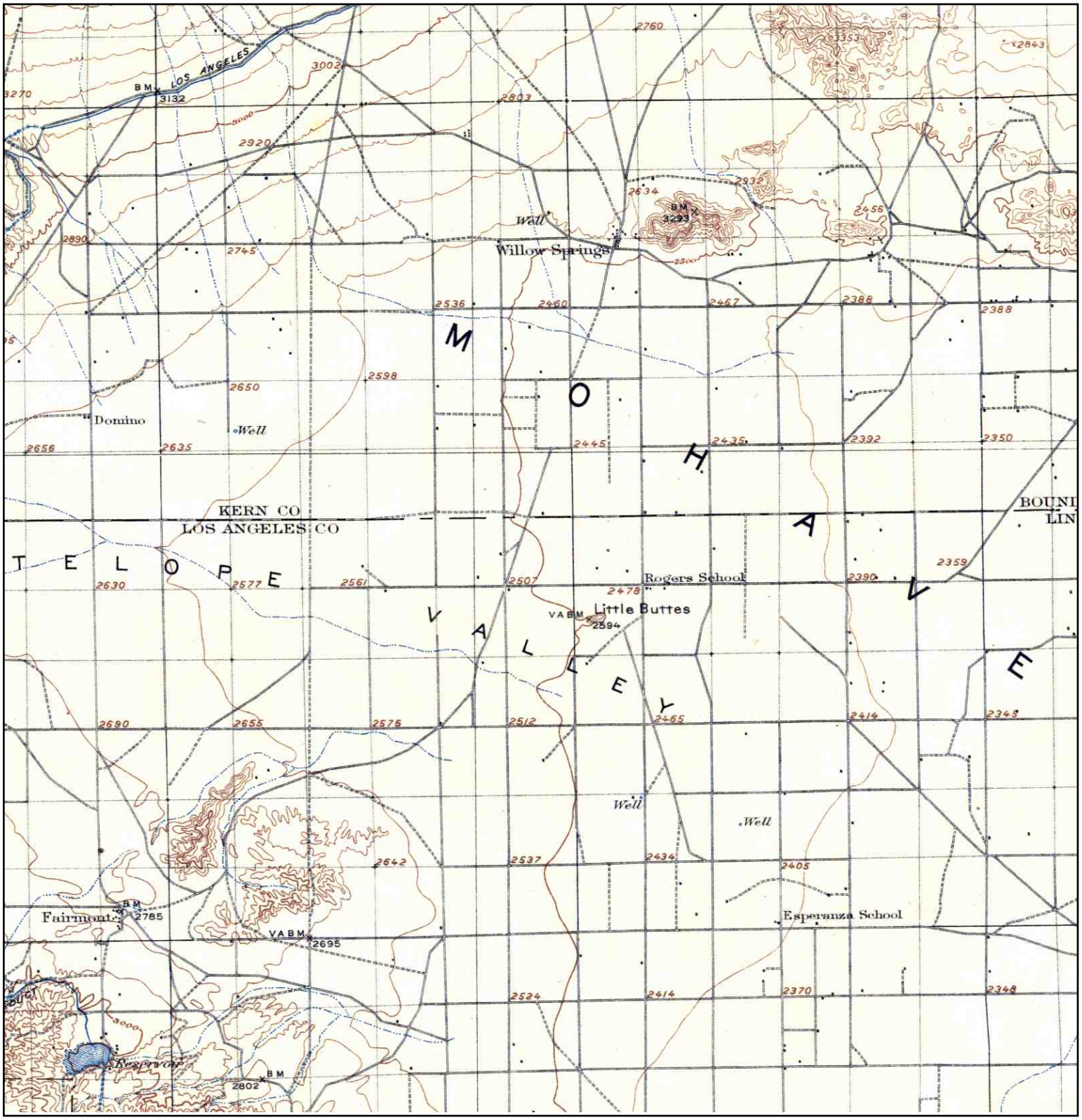
Historical Topographic Map

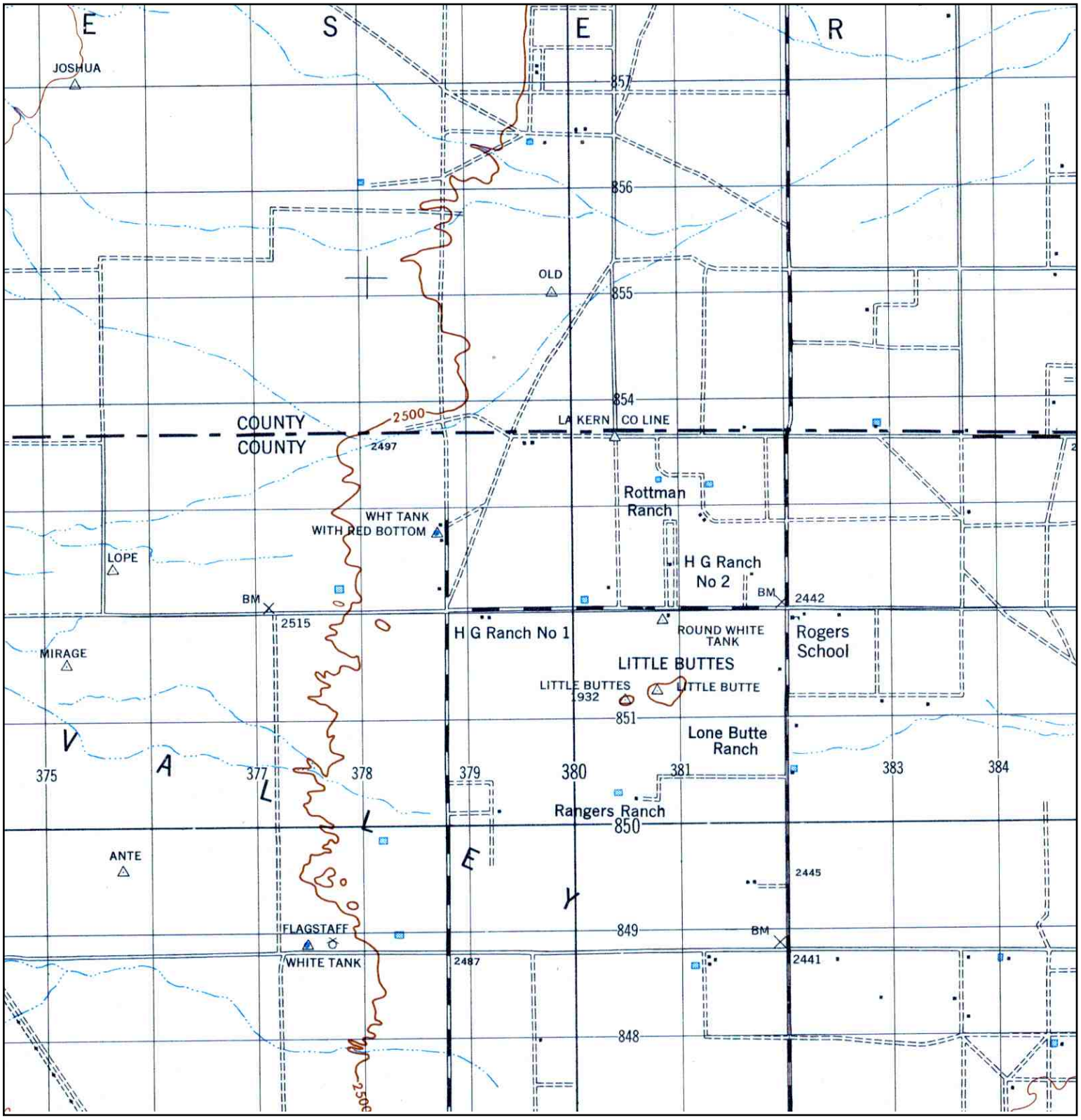


N	TARGET QUAD			
	NAME:	ELIZABETH LAKE	SITE NAME: North Lancaster Ranch	CLIENT: Tetra Tech Inc.
	MAP YEAR:	1917	ADDRESS: 22	CONTACT: Garret Bean
			Lancaster, CA 93536	INQUIRY#: 3089735.102
	SERIES:	30	LAT/LONG: 34.8091 / -118.3151	RESEARCH DATE: 06/08/2011
	SCALE:	1:125000		

Historical Topographic Map

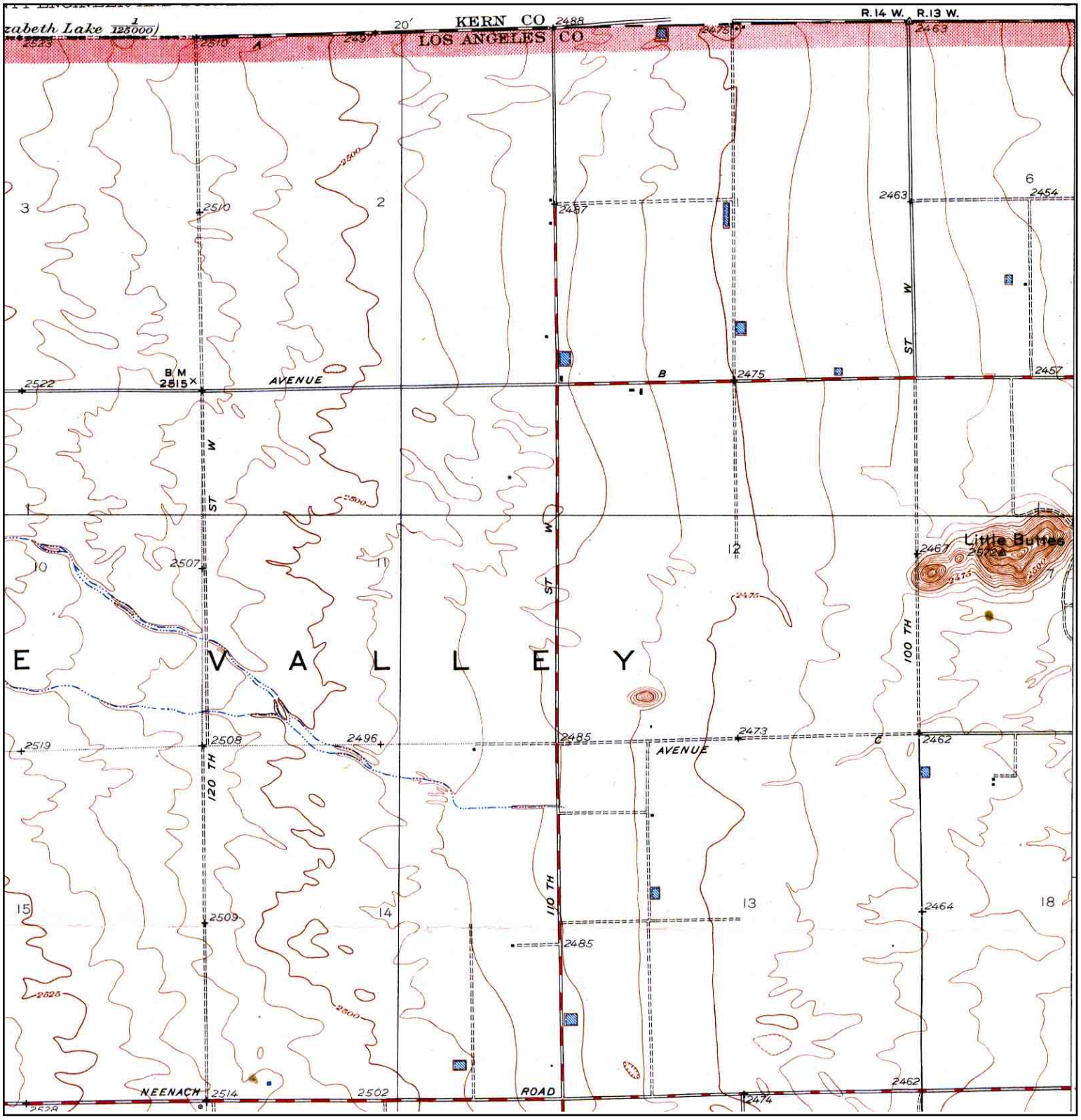
N	TARGET QUAD NAME: LITTLE BUTTES MAP YEAR: 1934 SERIES: 6 SCALE: 1:24000	SITE NAME: North Lancaster Ranch ADDRESS: 22 Lancaster, CA 93536 LAT/LONG: 34.8091 / -118.3151	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.102 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	TARGET QUAD NAME: WILLOW SPRINGS MAP YEAR: 1947 SERIES: 15 SCALE: 1:50000	SITE NAME: North Lancaster Ranch ADDRESS: 22 Lancaster, CA 93536 LAT/LONG: 34.8091 / -118.3151	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.102 RESEARCH DATE: 06/08/2011

Historical Topographic Map

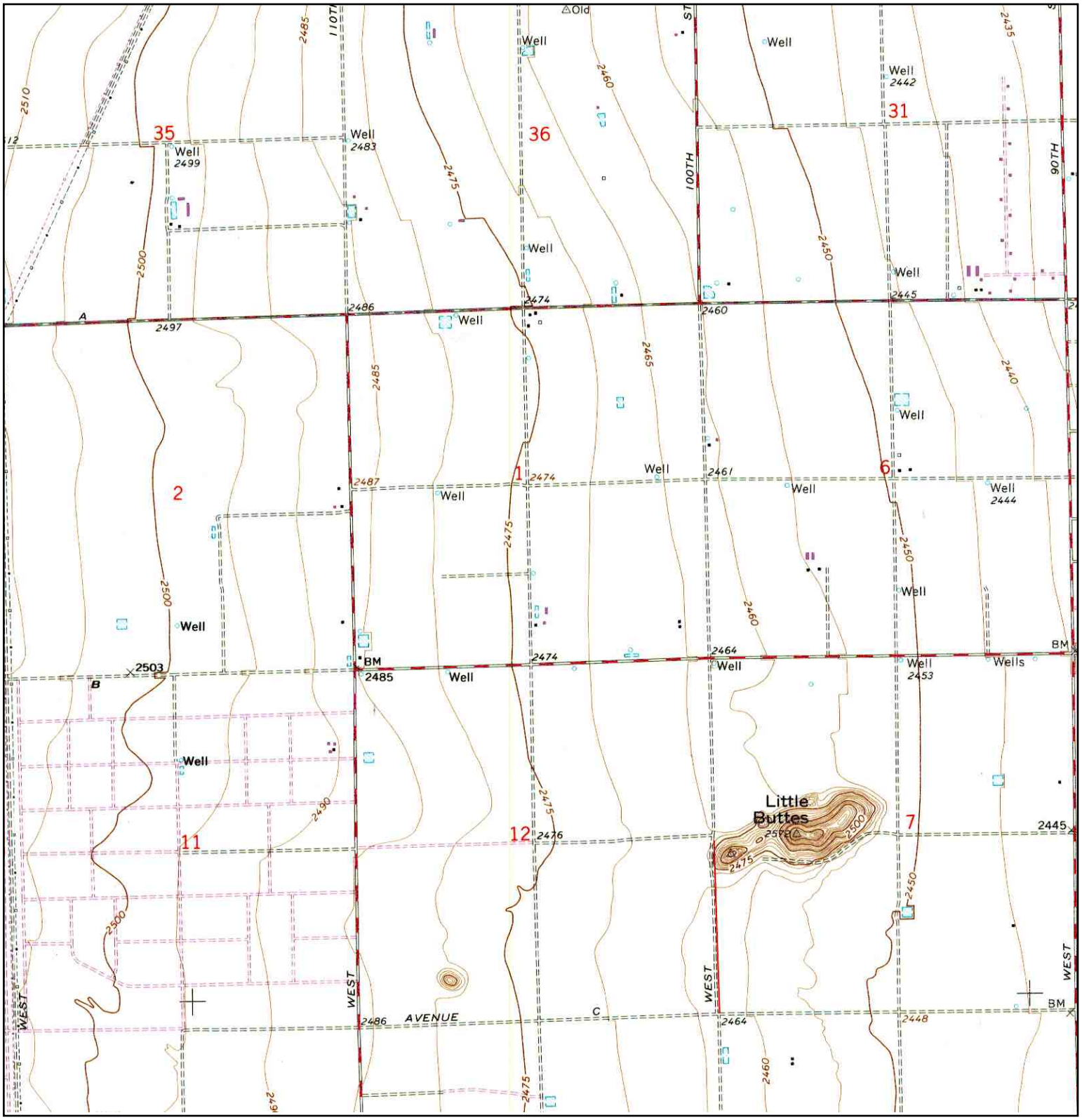


N	TARGET QUAD NAME: LITTLE BUTTES MAP YEAR: 1951 REVISED:1934 SERIES: 6 SCALE: 1:24000	SITE NAME: North Lancaster Ranch ADDRESS: 22 Lancaster, CA 93536 LAT/LONG: 34.8091 / -118.3151	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.102 RESEARCH DATE: 06/08/2011

Historical Topographic Map

N	TARGET QUAD NAME: LITTLE BUTTES MAP YEAR: 1965 SERIES: 7.5 SCALE: 1:24000	SITE NAME: North Lancaster Ranch ADDRESS: 22 Lancaster, CA 93536 LAT/LONG: 34.8091 / -118.3151	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.102 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	TARGET QUAD				
	NAME:	LITTLE BUTTES	SITE NAME:	North Lancaster Ranch	CLIENT: Tetra Tech Inc.
	MAP YEAR:	1974	ADDRESS:	22	CONTACT: Garret Bean
	PHOTOREVISED:	1965		Lancaster, CA 93536	INQUIRY#: 3089735.102
	SERIES:	7.5	LAT/LONG:	34.8091 / -118.3151	RESEARCH DATE: 06/08/2011
	SCALE:	1:24000			

North Lancaster Ranch
22
Lancaster, CA 93536

Inquiry Number: 3089735.100s
June 08, 2011

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

22
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.809100 - 34° 48' 32.8''
Longitude (West):	118.315100 - 118° 18' 54.4''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	379710.4
UTM Y (Meters):	3852464.5
Elevation:	2474 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-G3 LITTLE BUTTES, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	2006, 2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
SLIC ---------- Statewide SLIC Cases

INDIAN LUST - Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - Underground Storage Tanks on Indian Land
FEMA UST - Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP - Voluntary Cleanup Program Properties
INDIAN VCP - Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI - Open Dump Inventory
DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT - Waste Management Unit Database
SWRCY - Recycler Database
HAULERS - Registered Waste Tire Haulers Listing
INDIAN ODI - Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL - Clandestine Drug Labs
HIST Cal-Sites - Historical Calsites Database
SCH - School Property Evaluation Program
Toxic Pits - Toxic Pits Cleanup Act Sites
AOCONCERN - San Gabriel Valley Areas of Concern
CDL - Clandestine Drug Labs
US HIST CDL - National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST - Facility Inventory Database

Local Land Records

LIENS 2 - CERCLA Lien Information
LUCIS - Land Use Control Information System
LIENS - Environmental Liens Listing
DEED - Deed Restriction Listing

Records of Emergency Release Reports

HMIRS - Hazardous Materials Information Reporting System
CHMIRS - California Hazardous Material Incident Report System
LDS - Land Disposal Sites Listing

MCS Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen RCRA - Non Generators
DOT OPS Incident and Accident Data
DOD Department of Defense Sites
FUDS Formerly Used Defense Sites
CONSENT Superfund (CERCLA) Consent Decrees
ROD Records Of Decision
UMTRA Uranium Mill Tailings Sites
MINES Mines Master Index File
TRIS Toxic Chemical Release Inventory System
TSCA Toxic Substances Control Act
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
SSTS Section 7 Tracking Systems
ICIS Integrated Compliance Information System
PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database
FINDS Facility Index System/Facility Registry System
RAATS RCRA Administrative Action Tracking System
CA BOND EXP. PLAN Bond Expenditure Plan
NPDES NPDES Permits Listing
WDS Waste Discharge System
Cortese "Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE Hazardous Waste & Substance Site List
Notify 65 Proposition 65 Records
LA Co. Site Mitigation Site Mitigation List
DRYCLEANERS Cleaner Facilities
WIP Well Investigation Program Case List
LOS ANGELES CO. HMS HMS: Street Number List
HAZNET Facility and Manifest Data
EMI Emissions Inventory Data
INDIAN RESERV Indian Reservations
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
FINANCIAL ASSURANCE Financial Assurance Information Listing
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
PROC Certified Processors Database
MWMP Medical Waste Management Program Listing
COAL ASH DOE Sleam-Electric Plan Operation Data

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants EDR Proprietary Manufactured Gas Plants
EDR Historical Auto Stations EDR Proprietary Historic Gas Stations
EDR Historical Cleaners EDR Proprietary Historic Dry Cleaners

EXECUTIVE SUMMARY

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, and dated 04/29/2011 has revealed that there is 1 UST site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HARTSHORN RANCH	10455 W AVENUE B	S 1/4 - 1/2 (0.252 mi.)	A2	8

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1 HIST UST site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HARTSHORN RANCH	10455 W AVENUE B	S 1/4 - 1/2 (0.252 mi.)	A1	8

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is

EXECUTIVE SUMMARY

1 SWEEPS UST site within approximately 0.5 miles of the target property.

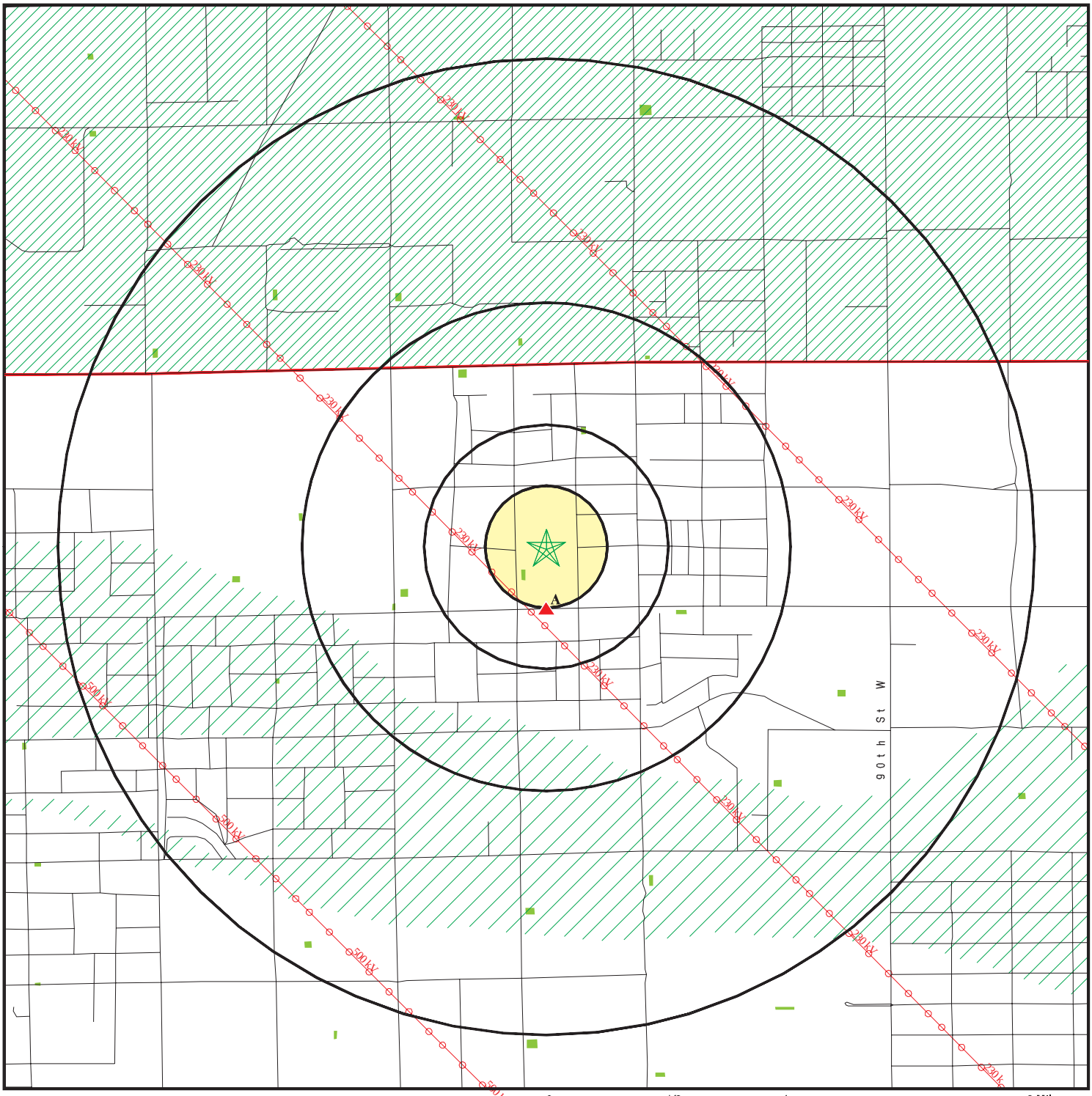
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HARTSHORN RANCH	10455 W AVE B	S 1/4 - 1/2 (0.252 mi.)	A3	8

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 20 records.

Site Name	Database(s)
AVENUE A UNAUTHORIZED DIS	HIST CORTESE
AVE E ETAL	NPDES
CAL MAT	SWEEPS UST
28.15 MI.MARKER ON ANGELES CRE	CDL
KERN CO SHERIFF DEPT: 1379 SIE	CDL
AVENUE A	CERCLIS-NFRAP
5 MI NW OF HWY 138 & 300TH ST	AST
OSO PUMPING PLANT	HAZNET
AVE H8 NORTH OF DIVISON ST	ERNS
14091 NORTH BALBOA BLVD	ERNS
LANCASTER SD, WRP	FINDS
CALANDRI/SONRISE FARMS, LP - KIM R	FINDS
CALANDRI/SONRISE FARMS, LP - LANE	FINDS
CALANDRI/SONRISE FARMS, LP - BERRY	FINDS
GREAT LAKES CARBON	FINDS,EMI
3995 AVENUE H W	CDL
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
CASTA DWR- CHECK SITE 59	EMI
SWEETSER ROAD UNAUTHORIZED DISPOSA	ENVIROSTOR

OVERVIEW MAP - 3089735.100s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: North Lancaster Ranch ADDRESS: 22 Lancaster CA 93536 LAT/LONG: 34.8091 / 118.3151	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.100s DATE: June 08, 2011 12:59 pm

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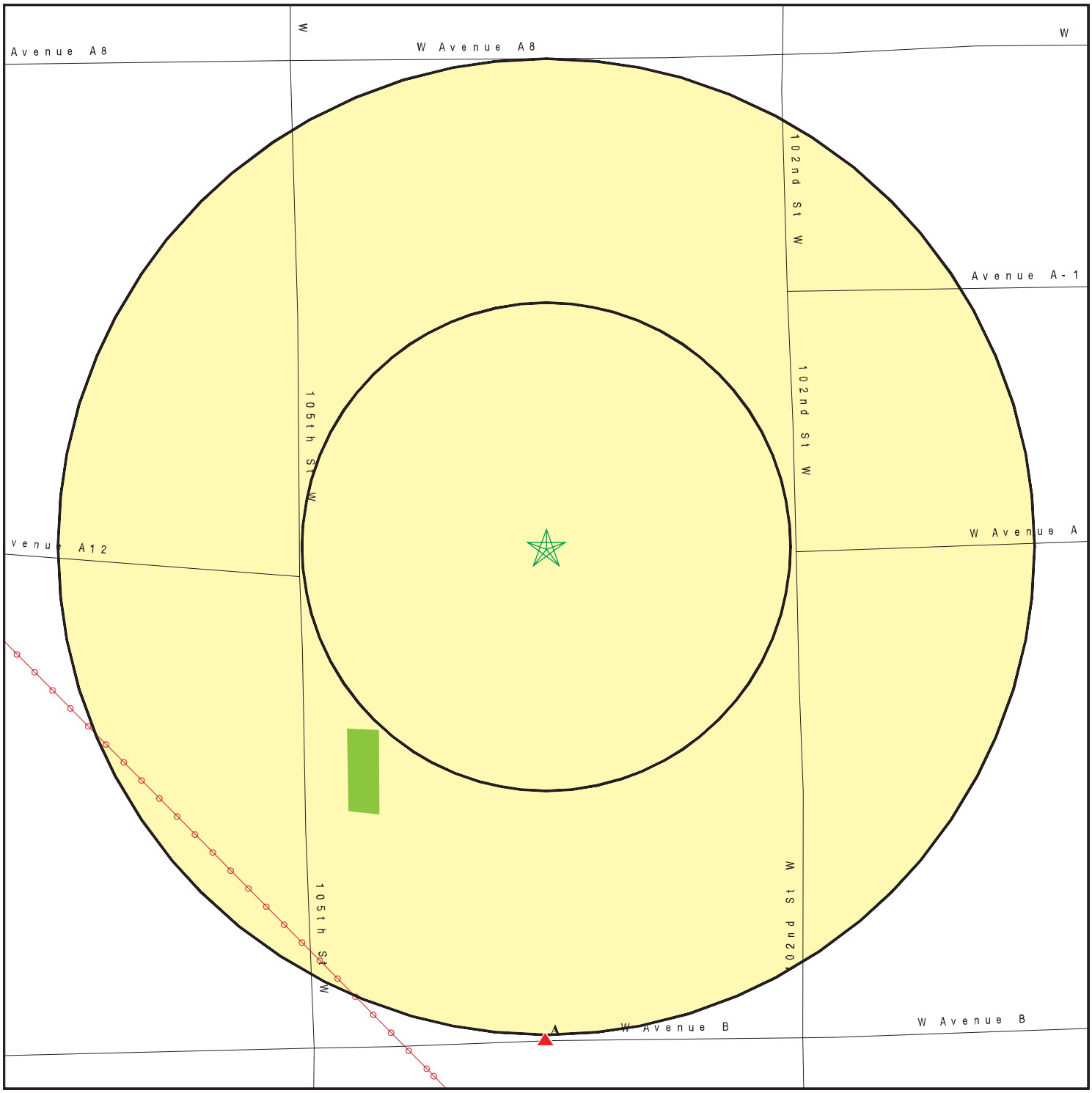
DETAIL MAP - 3089735.100s



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: North Lancaster Ranch	CLIENT: Tetra Tech Inc.
ADDRESS: 22 Lancaster CA 93536	CONTACT: Garret Bean
LAT/LONG: 34.8091 / 118.3151	INQUIRY #: 3089735.100s DATE: June 08, 2011 1:01 pm

Copyright © 2011 EDR, Inc. © 2010 Tele Atlas Rel. 07/2009.

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.250	0	0	0	0	0	0
Proposed NPL		1.250	0	0	0	0	0	0
NPL LIENS		0.250	0	0	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.250	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		0.750	0	0	0	0	NR	0
FEDERAL FACILITY		1.250	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.750	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.250	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.750	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.500	0	0	0	NR	NR	0
RCRA-SQG		0.500	0	0	0	NR	NR	0
RCRA-CESQG		0.500	0	0	0	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.750	0	0	0	0	NR	0
US INST CONTROL		0.750	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.250	0	0	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.250	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.250	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.750	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		0.750	0	0	0	0	NR	0
SLIC		0.750	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST		0.750	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.500	0	0	1	NR	NR	1
AST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.500	0	0	0	NR	NR	0
FEMA UST		0.500	0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.750	0	0	0	0	NR	0
INDIAN VCP		0.750	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.750	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		0.750	0	0	0	0	NR	0
DEBRIS REGION 9		0.750	0	0	0	0	NR	0
WMUDS/SWAT		0.750	0	0	0	0	NR	0
SWRCY		0.750	0	0	0	0	NR	0
HAULERS		0.250	0	0	NR	NR	NR	0
INDIAN ODI		0.750	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.250	0	0	NR	NR	NR	0
HIST Cal-Sites		1.250	0	0	0	0	0	0
SCH		0.500	0	0	0	NR	NR	0
Toxic Pits		1.250	0	0	0	0	0	0
AOCONCERN		1.250	0	0	0	0	0	0
CDL		0.250	0	0	NR	NR	NR	0
US HIST CDL		0.250	0	0	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.500	0	0	0	NR	NR	0
HIST UST		0.500	0	0	1	NR	NR	1
SWEEPS UST		0.500	0	0	1	NR	NR	1
Local Land Records								
LIENS 2		0.250	0	0	NR	NR	NR	0
LUCIS		0.750	0	0	0	0	NR	0
LIENS		0.250	0	0	NR	NR	NR	0
DEED		0.750	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.250	0	0	NR	NR	NR	0
CHMIRS		0.250	0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS		0.250	0	0	NR	NR	NR	0
MCS		0.250	0	0	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.500	0	0	0	NR	NR	0
DOT OPS		0.250	0	0	NR	NR	NR	0
DOD		1.250	0	0	0	0	0	0
FUDS		1.250	0	0	0	0	0	0
CONSENT		1.250	0	0	0	0	0	0
ROD		1.250	0	0	0	0	0	0
UMTRA		0.750	0	0	0	0	NR	0
MINES		0.500	0	0	0	NR	NR	0
TRIS		0.250	0	0	NR	NR	NR	0
TSCA		0.250	0	0	NR	NR	NR	0
FTTS		0.250	0	0	NR	NR	NR	0
HIST FTTS		0.250	0	0	NR	NR	NR	0
SSTS		0.250	0	0	NR	NR	NR	0
ICIS		0.250	0	0	NR	NR	NR	0
PADS		0.250	0	0	NR	NR	NR	0
MLTS		0.250	0	0	NR	NR	NR	0
RADINFO		0.250	0	0	NR	NR	NR	0
FINDS		0.250	0	0	NR	NR	NR	0
RAATS		0.250	0	0	NR	NR	NR	0
CA BOND EXP. PLAN		1.250	0	0	0	0	0	0
NPDES		0.250	0	0	NR	NR	NR	0
WDS		0.250	0	0	NR	NR	NR	0
Cortese		0.750	0	0	0	0	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.250	0	0	0	0	0	0
LA Co. Site Mitigation		0.250	0	0	NR	NR	NR	0
DRYCLEANERS		0.500	0	0	0	NR	NR	0
WIP		0.500	0	0	0	NR	NR	0
LOS ANGELES CO. HMS		0.250	0	0	NR	NR	NR	0
HAZNET		0.250	0	0	NR	NR	NR	0
EMI		0.250	0	0	NR	NR	NR	0
INDIAN RESERV		1.250	0	0	0	0	0	0
SCRD DRYCLEANERS		0.750	0	0	0	0	NR	0
FINANCIAL ASSURANCE		0.250	0	0	NR	NR	NR	0
HWP		1.250	0	0	0	0	0	0
HWT		0.500	0	0	0	NR	NR	0
COAL ASH EPA		0.750	0	0	0	0	NR	0
PCB TRANSFORMER		0.250	0	0	NR	NR	NR	0
PROC		0.750	0	0	0	0	NR	0
MWMP		0.500	0	0	0	NR	NR	0
COAL ASH DOE		0.250	0	0	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.250	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.500	0	0	0	NR	NR	0
EDR Historical Cleaners		0.500	0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 **HARTSHORN RANCH** **HIST UST** **U001586705**
South **10455 W AVENUE B** **N/A**
1/4-1/2 **LANCASTER, CA 93534**
0.252 mi.
1331 ft. **Site 1 of 3 in cluster A**

Relative:
Equal

Actual:
2474 ft.

HIST UST:

Region:	STATE
Facility ID:	00000034147
Facility Type:	Not reported
Other Type:	RANCH
Total Tanks:	0001
Contact Name:	Not reported
Telephone:	8059420664
Owner Name:	W W HARTSHORN
Owner Address:	5550 N ARCHIBALD
Owner City,St,Zip:	ALTA LOMA, CA 91701
Tank Num:	001
Container Num:	1
Year Installed:	Not reported
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Tank Construction:	Not reported
Leak Detection:	None

A2 **HARTSHORN RANCH** **UST** **U004049018**
South **10455 W AVENUE B** **N/A**
1/4-1/2 **LANCASTER, CA 93536**
0.252 mi.
1331 ft. **Site 2 of 3 in cluster A**

Relative:
Equal

Actual:
2474 ft.

UST:

Facility ID:	1377
Latitude:	34.80544
Longitude:	-118.31526

A3 **HARTSHORN RANCH** **SWEEPS UST** **S106927135**
South **10455 W AVE B** **N/A**
1/4-1/2 **LANCASTER, CA**
0.252 mi.
1331 ft. **Site 3 of 3 in cluster A**

Relative:
Equal

Actual:
2474 ft.

SWEEPS UST:

Status:	A
Comp Number:	11291
Number:	9
Board Of Equalization:	44-009222
Ref Date:	06-30-89
Act Date:	Not reported
Created Date:	06-30-89
Tank Status:	A
Owner Tank Id:	Not reported
Swrcb Tank Id:	19-000-011291-000001
Actv Date:	06-30-89
Capacity:	Not reported
Tank Use:	UNKNOWN

HARTSHORN RANCH (Continued) **S106927135**

Stg: W
Content: Not reported
Number Of Tanks: 1

Count: 20 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ROSAMOND	1003879424	AVENUE A	1/2 MI W OF W 10TH ST ALONG AV	93560	CERCLIS-NFRAP
LANCASTER	1005584611	LANCASTER SD, WRP	11043 CLARIBELL RD	93536	FINDS
ROSAMOND	1006824654	GREAT LAKES CARBON	SIERRA HIGHWAY	93560	FINDS,EMI
LANCASTER	1012055833	3995 AVENUE H W	3995 AVENUE H W		CDL
ROSAMOND	1012067167	CALANDRI/SONRISE FARMS, LP - BERRY	GASKELL ROAD AND 71ST STREET W	93560	FINDS
ROSAMOND	1012076268	CALANDRI/SONRISE FARMS, LP - LANE	WEST AVENUE A & 175TH STREET W	93560	FINDS
ROSAMOND	1012079767	CALANDRI/SONRISE FARMS, LP - KIM R	90TH STREET WEST AND GASKELL R	93560	FINDS
LANCASTER	2006819780	AVE H8 NORTH OF DIVISON ST	AVE H8 NORTH OF DIVISON ST		ERNS
	2008896364	14091 NORTH BALBOA BLVD	14091 NORTH BALBOA BLVD		ERNS
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
ROSAMOND	S100714218	SWEETSER ROAD UNAUTHORIZED DISPOSA	SWEETSER RD NEAR HWY 14 & FRON	93560	ENVIROSTOR
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 & 300TH ST	93536	HAZNET
ROMOLAND	S105025908	AVENUE A UNAUTHORIZED DIS	AVE A 11/2 MI E. HWY 14	93560	HIST CORTESE
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
	S107532211		28.15 MI.MARKER ON ANGELES CRE		CDL
ROSAMOND	S107539094		KERN CO SHERIFF DEPT: 1379 SIE	93560	CDL
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HW	93536	EMI
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HW	93536	EMI
LOS ANGELES	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPAa??s Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/15/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 05/25/2010
Date Data Arrived at EDR: 06/02/2010
Date Made Active in Reports: 10/04/2010
Number of Days to Update: 124

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/07/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 11/04/2009
Date Data Arrived at EDR: 05/04/2010
Date Made Active in Reports: 07/07/2010
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 12/02/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 57

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/03/2011
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/01/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 12/29/2010
Date Data Arrived at EDR: 12/30/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 02/24/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 46

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/07/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 03/04/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 05/02/2011
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/18/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 51

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/21/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 30

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

Other Ascertainable Records

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2011
Date Data Arrived at EDR: 02/11/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/15/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 10/29/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 5

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/21/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 99

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/02/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/08/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/17/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 94

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/07/2011
Date Data Arrived at EDR: 01/21/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/11/2011
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/04/2011
Number of Days to Update: 29

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/15/2010
Date Data Arrived at EDR: 09/16/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 13

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/07/2010
Date Made Active in Reports: 08/12/2010
Number of Days to Update: 36

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/01/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 02/28/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/04/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/09/2010
Date Data Arrived at EDR: 08/11/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 9
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 04/26/2011
Number of Days to Update: 41

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 33

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 03/29/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COLUSA COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 12/01/2010
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/06/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/31/2011
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/25/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2011
Date Data Arrived at EDR: 02/09/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 23
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/18/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/12/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 30
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/26/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 22
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 04/25/2011
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/20/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/07/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/15/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 16

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/17/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 31

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 20

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 11/16/2010
Date Made Active in Reports: 01/25/2011
Number of Days to Update: 70

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/21/2010
Next Scheduled EDR Contact: 03/28/2011
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/16/2011
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/30/2011
Date Data Arrived at EDR: 03/31/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 22
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/22/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 29
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 36
Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/14/2011
Date Data Arrived at EDR: 03/15/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 9
Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/25/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 25
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/07/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 35
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/07/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/08/2011
Number of Days to Update: 28

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 30

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 01/25/2011
Date Data Arrived at EDR: 02/03/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 29

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/26/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/22/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 05/12/2011
Date Made Active in Reports: 05/24/2011
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/12/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/06/2011
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/19/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 38

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/06/2010
Date Made Active in Reports: 07/26/2010
Number of Days to Update: 20

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

NORTH LANCASTER RANCH
22
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.80910 - 34° 48' 32.8''
Longitude (West):	118.3151 - 118° 18' 54.4''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	379710.4
UTM Y (Meters):	3852464.5
Elevation:	2474 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-G3 LITTLE BUTTES, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

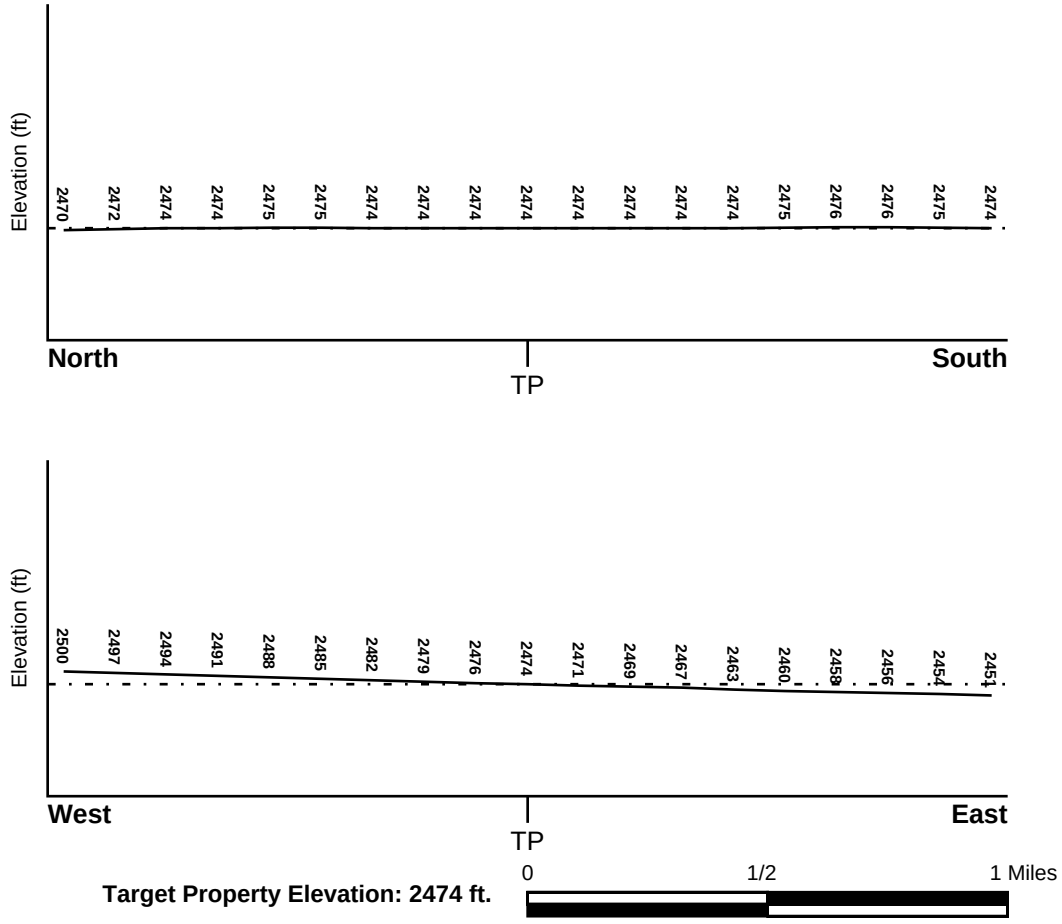
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General East

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: 06029C - FEMA DFIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
LITTLE BUTTES	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

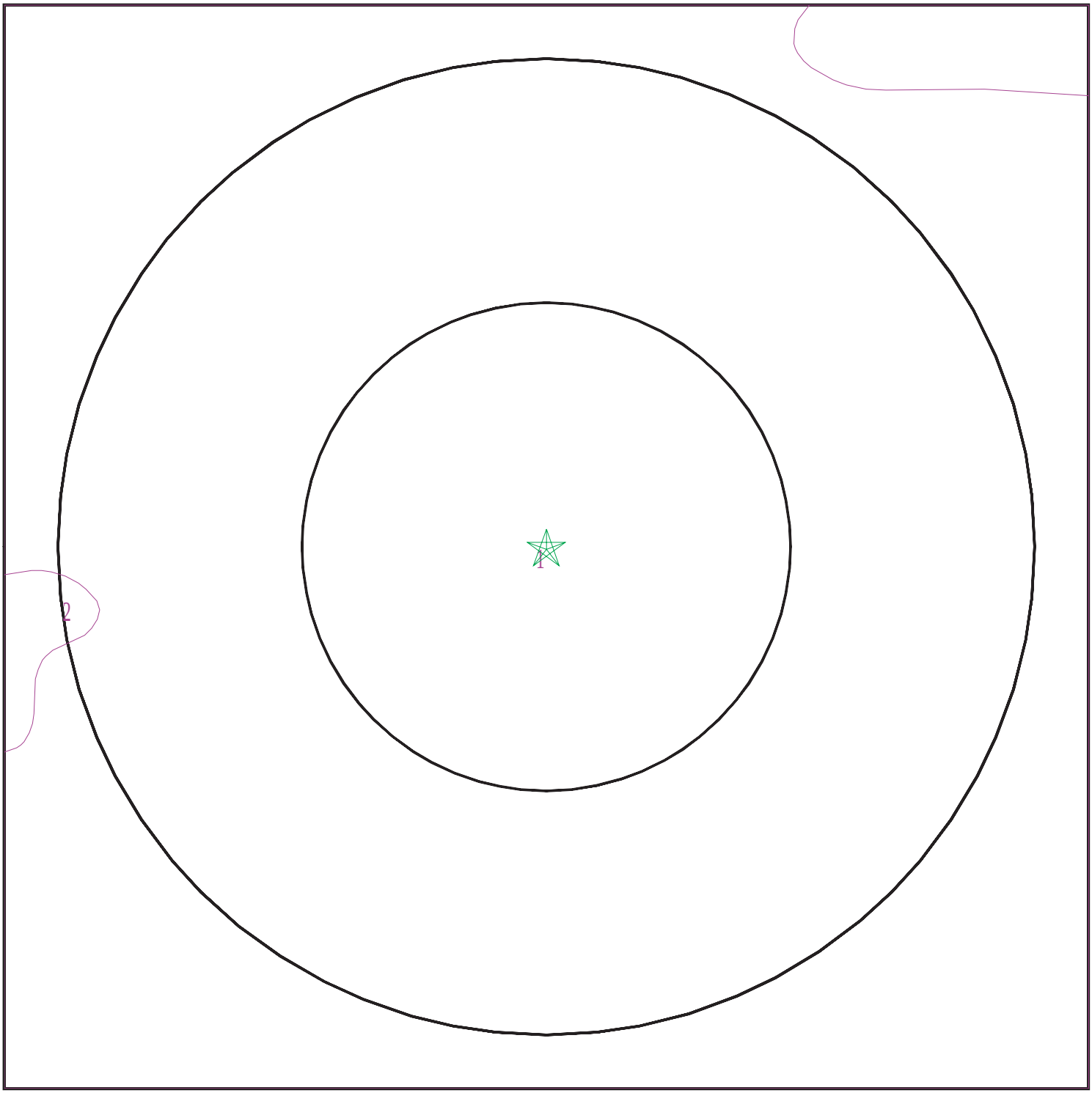
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3089735.100s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	North Lancaster Ranch	CLIENT:	Tetra Tech Inc.
ADDRESS:	22 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.8091 / 118.3151	INQUIRY #:	3089735.100s
		DATE:	June 08, 2011 1:01 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Rosamond

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.9
2	7 inches	59 inches	stratified loam to silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.9

Soil Map ID: 2

Soil Component Name: Rosamond

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.9
2	7 inches	59 inches	stratified loam to silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS3157838	0 - 1/8 Mile WNW
A2	USGS3157832	0 - 1/8 Mile West
B5	USGS3157992	1/4 - 1/2 Mile SE
C6	USGS3157967	1/4 - 1/2 Mile South

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
9	USGS3157966	1/4 - 1/2 Mile SSE
11	USGS3157859	1/4 - 1/2 Mile NE
D12	USGS3157830	1/4 - 1/2 Mile East
13	USGS3157849	1/4 - 1/2 Mile WNW
E14	USGS3157979	1/4 - 1/2 Mile SW
16	USGS3157978	1/4 - 1/2 Mile ESE
G18	USGS3157957	1/2 - 1 Mile SW
F19	USGS3159959	1/2 - 1 Mile NE
H21	USGS3157887	1/2 - 1 Mile North
23	USGS3157946	1/2 - 1 Mile SW
K26	USGS3157815	1/2 - 1 Mile WSW
J27	USGS3157881	1/2 - 1 Mile NE
I29	USGS3157852	1/2 - 1 Mile ENE
M30	USGS3157968	1/2 - 1 Mile WSW
32	USGS3157816	1/2 - 1 Mile WSW
L35	USGS3157837	1/2 - 1 Mile East
P37	USGS3157723	1/2 - 1 Mile North
Q38	USGS3157947	1/2 - 1 Mile SW
O40	USGS3157722	1/2 - 1 Mile North
N41	USGS3157961	1/2 - 1 Mile ESE
R43	USGS3157724	1/2 - 1 Mile NNW
46	USGS3157747	1/2 - 1 Mile North
47	USGS3157948	1/2 - 1 Mile WSW
S48	USGS3157841	1/2 - 1 Mile West
51	USGS3157760	1/2 - 1 Mile North
U53	USGS3157746	1/2 - 1 Mile NNE
T56	USGS3157828	1/2 - 1 Mile East
57	USGS3157824	1/2 - 1 Mile West
58	USGS3157761	1/2 - 1 Mile NNW
V59	USGS3157977	1/2 - 1 Mile ESE
W60	USGS3157862	1/2 - 1 Mile ENE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

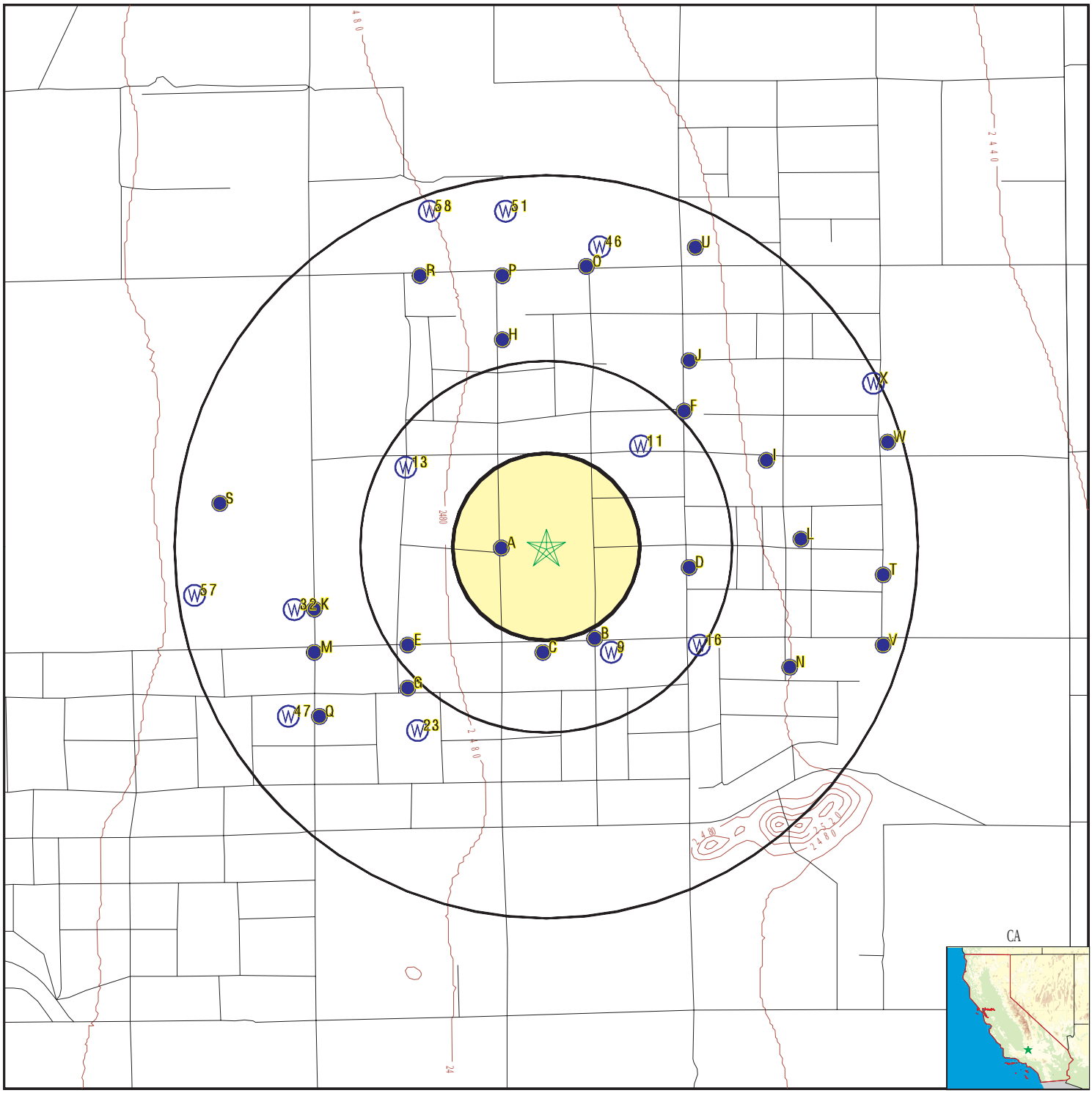
MAP ID	WELL ID	LOCATION FROM TP
A3	CADW40000015648	1/8 - 1/4 Mile West
B4	CADW40000015616	1/4 - 1/2 Mile SSE
C7	CADW40000015589	1/4 - 1/2 Mile South
B8	CADW40000015590	1/4 - 1/2 Mile SSE
D10	CADW40000015641	1/4 - 1/2 Mile East
E15	CADW40000015595	1/4 - 1/2 Mile WSW

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
F17	CADW40000015726	1/2 - 1 Mile NE
G20	CADW40000015571	1/2 - 1 Mile SW
H22	CADW40000015773	1/2 - 1 Mile NNW
I24	CADW40000015698	1/2 - 1 Mile ENE
J25	CADW40000015756	1/2 - 1 Mile NE
L28	CADW40000015665	1/2 - 1 Mile East
K31	CADW40000015623	1/2 - 1 Mile WSW
M33	CADW40000015588	1/2 - 1 Mile WSW
N34	CADW40000015580	1/2 - 1 Mile ESE
O36	CADW40000015816	1/2 - 1 Mile North
P39	CADW40000015815	1/2 - 1 Mile North
Q42	CADW40000015554	1/2 - 1 Mile SW
O44	CADW40000015837	1/2 - 1 Mile North
R45	CADW40000015814	1/2 - 1 Mile NNW
T49	CADW40000015640	1/2 - 1 Mile East
U50	CADW40000015838	1/2 - 1 Mile NNE
S52	CADW40000015682	1/2 - 1 Mile West
V54	CADW40000015596	1/2 - 1 Mile ESE
W55	CADW40000015716	1/2 - 1 Mile ENE
W61	CADW40000015709	1/2 - 1 Mile ENE
X62	CADW40000015738	1/2 - 1 Mile ENE
X63	CADW40000015739	1/2 - 1 Mile ENE

PHYSICAL SETTING SOURCE MAP - 3089735.100s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: North Lancaster Ranch	CLIENT: Tetra Tech Inc.
ADDRESS: 22	CONTACT: Garret Bean
Lancaster CA 93536	INQUIRY #: 3089735.100s
LAT/LONG: 34.8091 / 118.3151	DATE: June 08, 2011 1:01 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
WNW
0 - 1/8 Mile
Higher | **FED USGS** | **USGS3157838**

Agency cd:	USGS	Site no:	344834118185701
Site name:	008N014W01K002S		
Latitude:	344834	EDR Site id:	USGS3157838
Longitude:	1181857	Dec lat:	34.80942406
Dec lon:	-118.31674481	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2474.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19611201
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	602
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

A2
West
0 - 1/8 Mile
Higher | **FED USGS** | **USGS3157832**

Agency cd:	USGS	Site no:	344832118185801
Site name:	008N014W01K001S		
Latitude:	344832	EDR Site id:	USGS3157832
Longitude:	1181858	Dec lat:	34.80886853
Dec lon:	-118.31702259	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000

Altitude:	2474.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19480101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	355
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1953-00-00	Ground water data end date:	1956-12-05
Ground water data count:	3		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956-12-05	297				
Note: The site was being pumped.					
1955	282				
Note: The site was being pumped.					
1953	256				
Note: The site was being pumped.					

A3
West
1/8 - 1/4 Mile
Higher

CA WELLS **CADW40000015648**

Longitude:	-118.317
Latiude:	34.8089
Stwellno:	08N14W01K001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015648

B4
SSE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000015616**

Longitude:	-118.3123
Latiude:	34.8058
Stwellno:	08N14W01R001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015616

B5
SE **FED USGS** **USGS3157992**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	344821118184101
Site name:	008N014W01R001S		
Latitude:	344821	EDR Site id:	USGS3157992
Longitude:	1181841	Dec lat:	34.80581312
Dec lon:	-118.31230018	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2470.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19471004
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	504
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1955-04-10	Ground water data end date:	1955-04-10
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1955-04-10	197.00	

C6
South **FED USGS** **USGS3157967**
1/4 - 1/2 Mile
Higher

Agency cd:	USGS	Site no:	344818118185001
Site name:	008N014W12B001S		
Latitude:	344818	EDR Site id:	USGS3157967
Longitude:	1181850	Dec lat:	34.80497981
Dec lon:	-118.31480026	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2473.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	540
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-04-10	Ground water data end date:	1963-04-10
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-04-10	410.00	

Note: The site was being pumped.

C7
South
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000015589**

Longitude:	-118.3148
Latiude:	34.805
Stwellno:	08N14W12B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015589

B8
SSE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000015590**

Longitude:	-118.312
Latiude:	34.805
Stwellno:	08N14W12A001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015590

9
SSE **FED USGS** **USGS3157966**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	344818118184001
Site name:	008N014W12A001S		
Latitude:	344818	EDR Site id:	USGS3157966
Longitude:	1181840	Dec lat:	34.80497982
Dec lon:	-118.31202239	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2470.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1940-09-20	Ground water data end date:	1963-04-10
Ground water data count:	16		

Ground-water levels, Number of Measurements: 16

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-04-10					
Note: The well was destroyed (no water level is recorded).					
1952-11-20	168.55		1951-12-19	161.65	
1950-12-13	156.4		1949-12-02	142.9	
1948-12-08	138.15		1947-12-09	125.7	
1946-12-10	123.5		1945-11-14	121.15	
1945-03-12	116.75				
Note: A nearby site that taps the same aquifer was being pumped.					

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1944-05-03	116.4		1943-12-07	114.5	
1942-11-24	111.6		1941-11-24	125.3	
1940-11-29	126		1940-09-20	127	

D10
East
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000015641**

Longitude:	-118.3079
Latiude:	34.8083
Stwellno:	08N13W06N001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015641

11
NE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3157859**

Agency cd:	USGS	Site no:	344847118183501
Site name:	008N014W01H001S		
Latitude:	344847	EDR Site id:	USGS3157859
Longitude:	1181835	Dec lat:	34.81303504
Dec lon:	-118.31063353	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2465.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19571212
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	482
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
D12 **East** **1/4 - 1/2 Mile** **Lower**	**FED USGS**	**USGS3157830**

Agency cd:	USGS	Site no:	344830118182501
Site name:	008N013W06N001S		
Latitude:	344830	EDR Site id:	USGS3157830
Longitude:	1181825	Dec lat:	34.80831303
Dec lon:	-118.30785562	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2463.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19390101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	523
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1941-11-24	Ground water data end date:	1963-07-25
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-07-25	329.40		1954-10-19	250.80	
1952-09-03	204		1947-01-24	114	
1941-11-24	167				

13 **WNW** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS3157849**

Agency cd:	USGS	Site no:	344844118191501
Site name:	008N014W01L001S		
Latitude:	344844	EDR Site id:	USGS3157849
Longitude:	1181915	Dec lat:	34.81220171
Dec lon:	-118.321745	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2480.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	701
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

E14
SW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3157979**

Agency cd:	USGS	Site no:	344819118191301
Site name:	008N014W12C001S		
Latitude:	344819	EDR Site id:	USGS3157979
Longitude:	1181913	Dec lat:	34.80525756
Dec lon:	-118.32118936	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	NWNENWS12T08NR14WS
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2480.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	653	Hole depth:	Not Reported
Source of depth data:	other reported		
Project number:	8479381100		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-04-10	Ground water data end date:	1993-04-21
Ground water data count:	17		

Ground-water levels, Number of Measurements: 17

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1993-04-21					
Note: The measurement was discontinued.					
1992-04-14					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1991-03-18	278.59		1990-03-13	283.87	
1989-03-20	288.33		1988-03-29	294.17	
1987-02-24	299.54		1986-02-26	305.38	
1985-03-27	310.83		1984-03-05	317.24	
1983-04-13	324.47		1982-02-09	333.30	
1981-04-14	338.44		1980-04-09	342.16	
1979-02-13	346.69		1978-09-21	354.40	
1963-04-10					
Note: The site was being pumped.					

E15
WSW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000015595**

Longitude:	-118.3212
Latiude:	34.8053
Stwellno:	08N14W12C001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015595

16
ESE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3157978**

Agency cd:	USGS	Site no:	344819118182501
Site name:	008N013W07D002S		
Latitude:	344819	EDR Site id:	USGS3157978
Longitude:	1181825	Dec lat:	34.8052576
Dec lon:	-118.30785559	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2465.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	380
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

F17
NE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015726**

Longitude:	-118.3081
Latiude:	34.8144
Stwellno:	08N13W06E001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015726

G18
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3157957**

Agency cd:	USGS	Site no:	344813118191301
Site name:	008N014W12D001S		
Latitude:	344813	EDR Site id:	USGS3157957
Longitude:	1181913	Dec lat:	34.80359097
Dec lon:	-118.32118934	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2482.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19330101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	294	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1939-04-11	Ground water data end date:	1952-11-24
Ground water data count:	14		

Ground-water levels, Number of Measurements: 14

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1952-11-24	177.0		1951-12-19	168.6	
1950-12-13	161.9		1949-12-02	148.35	
1948-12-08	154.0				
Note: The site was being pumped.					
1947-12-09	133.4		1946-12-10	131.0	
1945-11-14	128.5		1944-05-03	124.2	
1943-12-15	122.4		1942-11-24	119.32	
1940-11-29	122.5		1940-09-01	124.0	
1939-04-11	121.5				

F19
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159959**

Agency cd:	USGS	Site no:	343852118182601
Site name:	008N013W06E001S		
Latitude:	344852	EDR Site id:	USGS3159959
Longitude:	1181826	Dec lat:	34.81442387
Dec lon:	-118.30813346	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2462.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	Not Reported		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19520101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	457
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-08-10	Ground water data end date:	1986-02-26
Ground water data count:	13		

Ground-water levels, Number of Measurements: 13

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1986-02-26	283.15				
1985-03-27					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1984-03-06	295.49		1983-04-13	305.40	
1982-02-09	310.36		1981-04-23	319.62	
1979-02-22	327.20		1977-03-10	334.40	
1976-02-10	336.27		1975-02-19	342.08	
1974-02-12	344.50		1963-03-27	258.70	
1956-08-10	293.00				

G20
SW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000015571**

Longitude:	-118.3212
Latiude:	34.8036
Stwellno:	08N14W12D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015571

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

H21
North
1/2 - 1 Mile
Higher

FED USGS **USGS3157887**

Agency cd:	USGS	Site no:	344902118185701
Site name:	008N014W01B002S		
Latitude:	344902	EDR Site id:	USGS3157887
Longitude:	1181857	Dec lat:	34.81720151
Dec lon:	-118.31674488	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2475.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19620301
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	678
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-03-29	Ground water data end date:	1963-03-29
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-03-29	300.00	

H22
NNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000015773**

Longitude:	-118.3167
Latiude:	34.8172
Stwellno:	08N14W01B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015773

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

23
SW
1/2 - 1 Mile
Higher | **FED USGS** | **USGS3157946**

Agency cd:	USGS	Site no:	344807118191301
Site name:	008N014W12C002S		
Latitude:	344807	EDR Site id:	USGS3157946
Longitude:	1181913	Dec lat:	34.80192437
Dec lon:	-118.32118933	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2483.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19580101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	375	Hole depth:	420
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

I24
ENE
1/2 - 1 Mile
Lower | **CA WELLS** | **CADW40000015698**

Longitude:	-118.3042
Latiude:	34.8125
Stwellno:	08N13W06M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015698

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
J25 **NE** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADW40000015756**

Longitude:	-118.3079
Latiude:	34.8164
Stwellno:	08N13W06D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015756

	Database	EDR ID Number
K26 **WSW** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS3157815**

Agency cd:	USGS	Site no:	344824118192901
Site name:	008N014W01N001S		
Latitude:	344824	EDR Site id:	USGS3157815
Longitude:	1181929	Dec lat:	34.80664638
Dec lon:	-118.32563396	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2486.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19480101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	551	Hole depth:	617
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1952-06-13	Ground water data end date:	1954-04-09
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1954-04-09	232				
Note: The site was being pumped.					
1952-06-13	205.5				
Note: The site was being pumped.					

J27
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3157881**

Agency cd:	USGS	Site no:	344859118182501
Site name:	008N013W06D001S		
Latitude:	344859	EDR Site id:	USGS3157881
Longitude:	1181825	Dec lat:	34.81636824
Dec lon:	-118.30785569	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2462.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19461201
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	552
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1954-06-16	Ground water data end date:	1963-03-07
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-03-07	256.00				
1962	344.5				
Note: The site was being pumped.					
1960-09-08	312.20		1956-11-07	236.9	
1954-06-16	229.40				

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
L28 **East** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADW40000015665**

Longitude:	-118.3026
Latiude:	34.8094
Stwellno:	08N13W06L001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015665

	Database	EDR ID Number
I29 **ENE** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS3157852**

Agency cd:	USGS	Site no:	344845118181201
Site name:	008N013W06M001S		
Latitude:	344845	EDR Site id:	USGS3157852
Longitude:	1181812	Dec lat:	34.81247953
Dec lon:	-118.30424443	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2456.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19630101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	607
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-02	Ground water data end date:	1963-05-02
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-02	305.30	

M30
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3157968**

Agency cd:	USGS	Site no:	344818118192901
Site name:	008N014W12D002S		
Latitude:	344818	EDR Site id:	USGS3157968
Longitude:	1181929	Dec lat:	34.80497978
Dec lon:	-118.32563395	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2486.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19550718
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	704
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-04-10	Ground water data end date:	1963-04-10
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-04-10	328.00	

Note: The site was being pumped.

K31
WSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000015623**

Longitude:	-118.3256
Latiude:	34.8067
Stwellno:	08N14W01N001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015623

32
WSW **FED USGS** **USGS3157816**
1/2 - 1 Mile
Higher

Agency cd:	USGS	Site no:	344824118193401
Site name:	008N014W02R002S		
Latitude:	344824	EDR Site id:	USGS3157816
Longitude:	1181934	Dec lat:	34.80664637
Dec lon:	-118.3270229	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2487.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Alluvial fan		
Site type:	Ground-water other than Spring	Date construction:	19550516
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	78.3	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

M33
WSW **CA WELLS** **CADW40000015588**
1/2 - 1 Mile
Higher

Longitude:	-118.3256
Latiude:	34.805
Stwellno:	08N14W12D002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015588

N34
ESE **CA WELLS** **CADW40000015580**
1/2 - 1 Mile
Lower

Longitude:	-118.3031
Latiude:	34.8044
Stwellno:	08N13W07D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015580

L35
East **FED USGS** **USGS3157837**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344834118180601
Site name:	008N013W06L001S		
Latitude:	344834	EDR Site id:	USGS3157837
Longitude:	1181806	Dec lat:	34.80942411
Dec lon:	-118.30257768	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2458.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19250101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	303
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 0000-00-00
Water quality data end date: 0000-00-00
Water quality data count: 0
Ground water data begin date: 1936-05-10
Ground water data end date: 1942-11-24
Ground water data count: 7

Ground-water levels, Number of Measurements: 7

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1942-11-24	110		1941-11-24	122	
1940-11-29	118				
1938-08-11	112				
Note: The site was being pumped.					
1938-05-18	128		1936-10-20	114	
1936-05-10	100				

O36
North
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015816**

Longitude: -118.3126
Latiude: 34.8197
Stwellno: 08N14W01A001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000015816

P37
North
1/2 - 1 Mile
Higher

FED USGS **USGS3157723**

Agency cd: USGS
Site no: 344911118185701
Site name: 008N014W01B001S
Latitude: 344911
EDR Site id: USGS3157723
Longitude: 1181857
Dec lat: 34.8197014
Dec lon: -118.3167449
Coor meth: M
Coor accr: S
Latlong datum: NAD27
Dec latlong datum: NAD83
District: 06
State: 06
County: 037
Country: US
Land net: Not Reported
Location map: LITTLE BUTTES
Map scale: 24000
Altitude: 2475.00
Altitude method: Interpolated from topographic map
Altitude accuracy: 10
Altitude datum: National Geodetic Vertical Datum of 1929
Hydrologic: AntelopeFremont Valleys. California. Area = 3310 sq.mi.
Topographic: Not Reported
Site type: Ground-water other than Spring
Date construction: 19340101
Date inventoried: Not Reported
Mean greenwich time offset: PST
Local standard time flag: Y
Type of ground water site: Single well, other than collector or Ranney type
Aquifer Type: Not Reported
Aquifer: Not Reported
Well depth: Not Reported
Hole depth: 440
Source of depth data: Not Reported
Project number: Not Reported
Real time data flag: 0
Daily flow data begin date: 0000-00-00
Daily flow data end date: 0000-00-00
Daily flow data count: 0
Peak flow data begin date: 0000-00-00
Peak flow data end date: 0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-07-00	Ground water data end date:	1958-07-31
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1958-07-31	295		1956-07	270	

Q38
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3157947**

Agency cd:	USGS	Site no:	344809118192801
Site name:	008N014W12D003S		
Latitude:	344809	EDR Site id:	USGS3157947
Longitude:	1181928	Dec lat:	34.80247989
Dec lon:	-118.32535614	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2489.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	371	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-04-10	Ground water data end date:	1968-01-09
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1968-01-09	320.20		1963-04-10	308.37	

P39
North
1/2 - 1 Mile
Higher

CA WELLS **CADW40000015815**

Longitude:	-118.3167
Latiude:	34.8197
Stwellno:	08N14W01B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015815

O40
North
1/2 - 1 Mile
Lower

FED USGS **USGS3157722**

Agency cd:	USGS	Site no:	344911118184201
Site name:	008N014W01A001S		
Latitude:	344911	EDR Site id:	USGS3157722
Longitude:	1181842	Dec lat:	34.81970141
Dec lon:	-118.3125781	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2468.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19550101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1951-08-01	Ground water data end date:	1951-08-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1951-08-01	180.00	

Note: The site was being pumped.

N41
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS3157961**

Agency cd:	USGS	Site no:	344816118180801
Site name:	008N013W07D001S		
Latitude:	344816	EDR Site id:	USGS3157961
Longitude:	1181808	Dec lat:	34.80442432
Dec lon:	-118.30313321	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2458.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19280101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	199	Hole depth:	265
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1928-00-00	Ground water data end date:	1943-12-07
Ground water data count:	3		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1943-12-07	101.5		1940-12-06	90.9	
1928	82				

Q42
SW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000015554**

Longitude:	-118.3254
Latiude:	34.8025
Stwellno:	08N14W12D003S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015554

R43
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3157724**

Agency cd:	USGS	Site no:	344911118191101
Site name:	008N014W01C001S		
Latitude:	344911	EDR Site id:	USGS3157724
Longitude:	1181911	Dec lat:	34.81970139
Dec lon:	-118.32063392	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2480.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19520701
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	584
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-04-25	Ground water data end date:	1963-03-29
Ground water data count:	3		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-03-29	314.2				
Note: The site was being pumped.					
1958-07-31	252.40		1956-04-25	272.50	

O44
North
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015837**

Longitude:	-118.3126
Latiude:	34.8208
Stwellno:	09N14W36R001S
Districtco:	3
Welluseco:	Z
Countyco:	15
Gwcode:	604400
Site id:	CADW40000015837

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

R45
NNW
1/2 - 1 Mile
Higher | **CA WELLS** | **CADW40000015814**

Longitude:	-118.3206
Latiude:	34.8197
Stwellno:	08N14W01C001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015814

46
North
1/2 - 1 Mile
Lower | **FED USGS** | **USGS3157747**

Agency cd:	USGS	Site no:	344915118184201
Site name:	009N014W36R001S		
Latitude:	344915	EDR Site id:	USGS3157747
Longitude:	1181842	Dec lat:	34.82081248
Dec lon:	-118.31257811	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	029
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2465.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-03-01	Ground water data end date:	1963-03-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-03-01	266.80	

47
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3157948**

Agency cd:	USGS	Site no:	344809118193501
Site name:	008N014W11A001S		
Latitude:	344809	EDR Site id:	USGS3157948
Longitude:	1181935	Dec lat:	34.80247988
Dec lon:	-118.32730065	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2490.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19530101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	262	Hole depth:	300
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

S48
West
1/2 - 1 Mile
Higher

FED USGS **USGS3157841**

Agency cd:	USGS	Site no:	344839118194501
Site name:	008N014W02J001S		
Latitude:	344839	EDR Site id:	USGS3157841
Longitude:	1181945	Dec lat:	34.81081285
Dec lon:	-118.33007859	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2492.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	380
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1955-07-18	Ground water data end date:	1962-07-24
Ground water data count:	4		

Ground-water levels, Number of Measurements: 4

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1962-07-24	307.80		1960-08-24	298	
1956-07-10	268.00		1955-07-18	241.00	

T49
East
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015640**

Longitude:	-118.2987
Latiude:	34.808
Stwellno:	08N13W06Q001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015640

U50
NNE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015838**

Longitude:	-118.3076
Latiude:	34.8208
Stwellno:	09N13W31N001S
Districtco:	3
Welluseco:	Z
Countyco:	15
Gwcode:	604400
Site id:	CADW40000015838

51
North
1/2 - 1 Mile
Higher

FED USGS **USGS3157760**

Agency cd:	USGS	Site no:	344920118185801
Site name:	009N014W36Q001S		
Latitude:	344920	EDR Site id:	USGS3157760
Longitude:	1181858	Dec lat:	34.82220129
Dec lon:	-118.31702271	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	029
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2470.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19530123
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	600
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

S52
West
1/2 - 1 Mile
Higher

CA WELLS **CADW40000015682**

Longitude:	-118.3301
Latiude:	34.8108
Stwellno:	08N14W02J001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015682

U53
NNE **FED USGS** **USGS3157746**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344915118182401
Site name:	009N013W31N001S		
Latitude:	344915	EDR Site id:	USGS3157746
Longitude:	1181824	Dec lat:	34.82081249
Dec lon:	-118.30757794	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	029
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2459.20		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19490101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	520
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-03-07	Ground water data end date:	1963-03-07
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-03-07	350.00	

Note: The site was being pumped.

V54
ESE **CA WELLS** **CADW40000015596**
1/2 - 1 Mile
Lower

Longitude:	-118.2987
Latiude:	34.8053
Stwellno:	08N13W07B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015596

W55
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015716**

Longitude:	-118.2987
Latiude:	34.8133
Stwellno:	08N13W06G003S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015716

T56
East
1/2 - 1 Mile
Lower

FED USGS **USGS3157828**

Agency cd:	USGS	Site no:	344829118175201
Site name:	008N013W06Q001S		
Latitude:	344829	EDR Site id:	USGS3157828
Longitude:	1181752	Dec lat:	34.80803529
Dec lon:	-118.29868865	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2453.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19540728
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	597
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-09-22	Ground water data end date:	1957-09-22
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1957-09-22	314.50	

57
West
1/2 - 1 Mile
Higher

FED USGS **USGS3157824**

Agency cd:	USGS	Site no:	344826118195101
Site name:	008N014W02Q001S		
Latitude:	344826	EDR Site id:	USGS3157824
Longitude:	1181951	Dec lat:	34.80720189
Dec lon:	-118.33174528	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2497.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19630410
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	333	Hole depth:	410
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1960-03-08	Ground water data end date:	1963-04-10
Ground water data count:	9		

Ground-water levels, Number of Measurements: 9

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-04-10	307.58				
Note: A nearby site that taps the same aquifer was being pumped.					
1963-04-09	306.8		1962-11-14	290.8	
1962-04-05	294.8		1961-10-18	304.9	
1961-04-04	287.5		1960-11-27	301.4	
1960-04-14	289.8		1960-03-08	248.5	

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

58
NNW
1/2 - 1 Mile
Higher | **FED USGS** | **USGS3157761**

Agency cd:	USGS	Site no:	344920118191101
Site name:	009N014W36P001S		
Latitude:	344920	EDR Site id:	USGS3157761
Longitude:	1181911	Dec lat:	34.82220128
Dec lon:	-118.32063394	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	029
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2480.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	1000
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

V59
ESE
1/2 - 1 Mile
Lower | **FED USGS** | **USGS3157977**

Agency cd:	USGS	Site no:	344819118175201
Site name:	008N013W07B001S		
Latitude:	344819	EDR Site id:	USGS3157977
Longitude:	1181752	Dec lat:	34.80525763
Dec lon:	-118.29868862	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000

Altitude:	2453.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	496
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1961-01-01	Ground water data end date:	2004-03-29
Ground water data count:	23		

Ground-water levels, Number of Measurements: 23

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-03-29	254.06		2003-03-24	248.54	
2002-03-26	246.39		2001-03-15	236.00	
2000-03-21	237.76		1999-03-16	240.24	
1998-03-17	238.08		1997-03-11	244.70	
1996-04-17	249.58		1995-04-19	244.30	
1994-04-12	251.11		1993-04-20	250.01	
1992-04-14	250.26		1991-03-19	254.22	
1990-03-12	259.14		1989-03-20	263.97	
1988-03-29	267.55		1987-02-24	269.49	
1986-02-26	271.13		1985-03-26	279.12	
1984-03-06	282.64		1983-05-18	290.83	
1961-01-01	270.00				

W60
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3157862**

Agency cd:	USGS	Site no:	344848118175201
Site name:	008N013W06G003S		
Latitude:	344848	EDR Site id:	USGS3157862
Longitude:	1181752	Dec lat:	34.81331284
Dec lon:	-118.2986887	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000

Altitude:	2449.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19080101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	76.0
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1908-01-01	Ground water data end date:	1908-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1908-01-01	60.50	

W61
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015709**

Longitude:	-118.2976
Latiude:	34.813
Stwellno:	08N13W06G004S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015709

X62
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015738**

Longitude:	-118.2987
Latiude:	34.8155
Stwellno:	08N13W06G001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015738

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database	EDR ID Number
CA WELLS	**CADW40000015739**

X63
ENE
1/2 - 1 Mile
Lower

Longitude:	-118.2987
Latiude:	34.8155
Stwellno:	08N13W06G002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015739

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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North Lancaster Ranch
22
Lancaster, CA 93536

Inquiry Number: 3089735.101
June 08, 2011

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EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
North Lancaster Ranch
22
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089735.101

Contact: Garret Bean

EDR® Environmental Data Resources Inc

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Certified Sanborn Results:

Site Name: North Lancaster Ranch
Address: 22
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 6
Certification # 4B13-45AD-A4B4

Sanborn® Library search results
Certification # 4B13-45AD-A4B4

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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APN 3262001005, North Lancaster Ranch Expansion
110th Street W/W Avenue B
Lancaster, CA 93536

Inquiry Number: 3408684.3
September 12, 2012

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9/12/12

Site Name:
APN 3262001005, North
110th Street W/W Avenue B
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3408684.3

Contact: Nancy Hsu

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Certified Sanborn Results:

Site Name: APN 3262001005, North Lancaster Ranch
Address: 110th Street W/W Avenue B
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: North Lancaster Ranch
Certification # 2B82-4AAE-BABB

Sanborn® Library search results
Certification # 2B82-4AAE-BABB

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APN 3262001005, North Lancaster Ranch Expansion
110th Street W/W Avenue B
Lancaster, CA 93536

Inquiry Number: 3408684.4
September 12, 2012

EDR Historical Topographic Map Report

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www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

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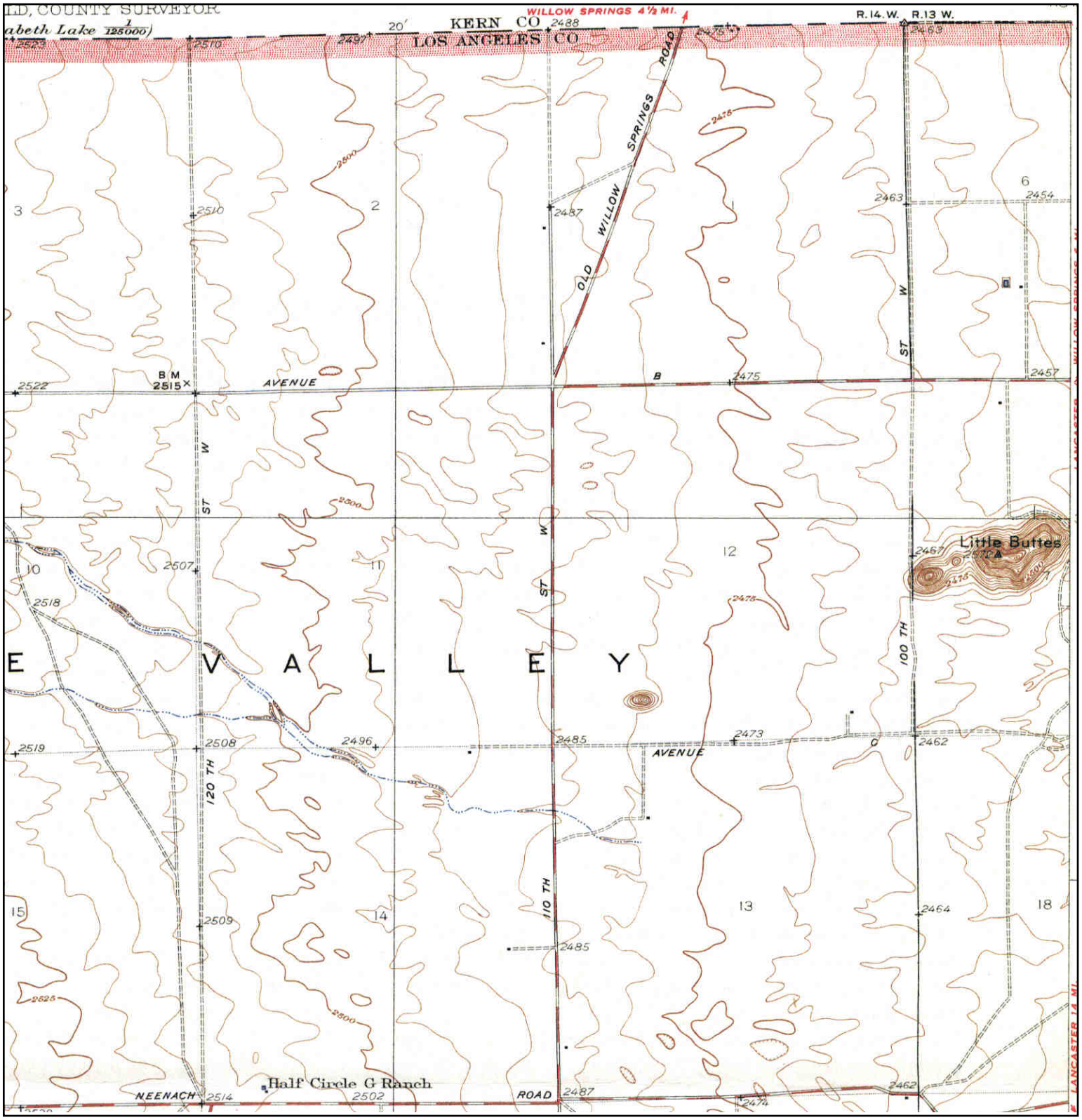
Historical Topographic Map

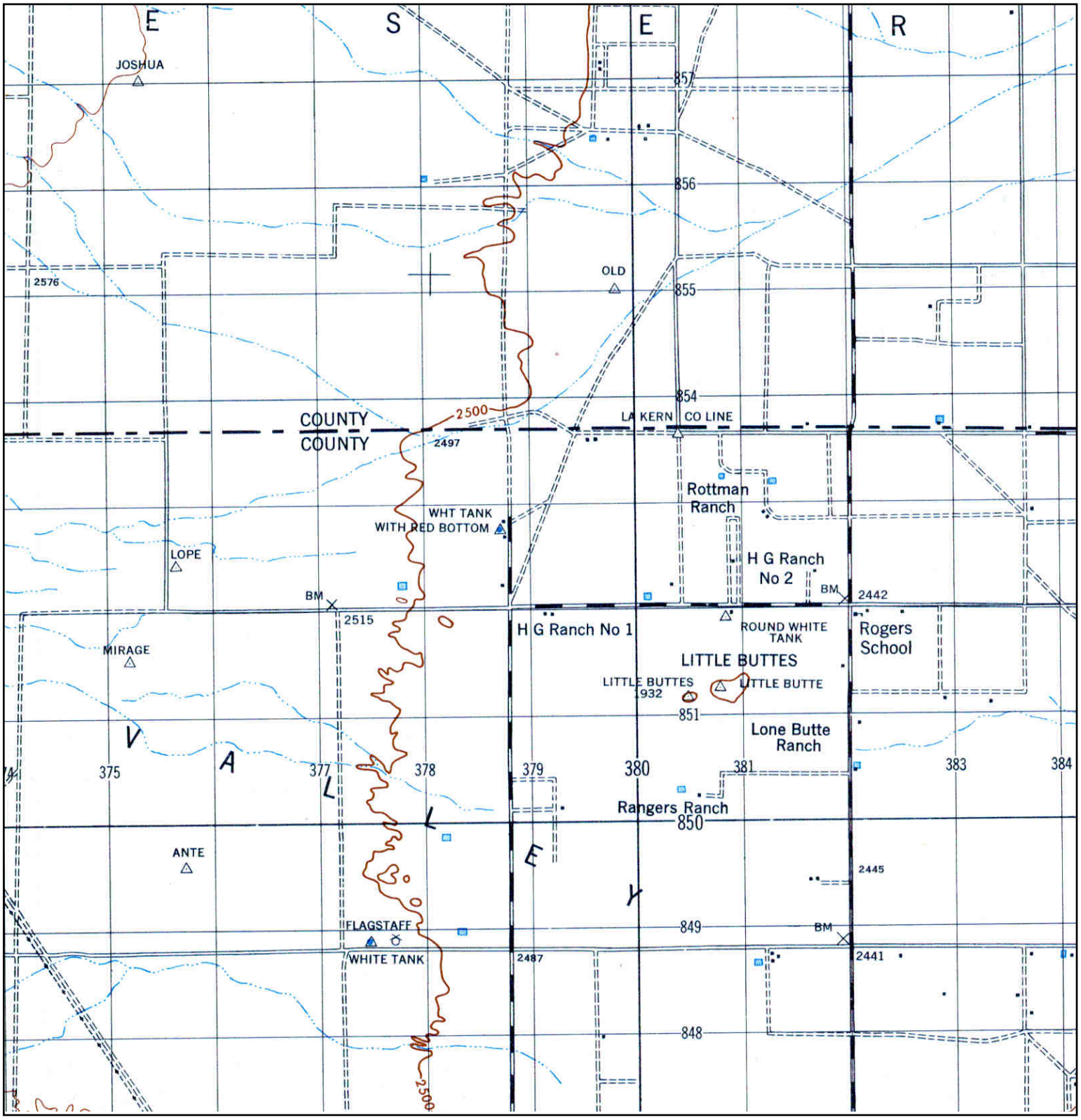
N	TARGET QUAD		SITE NAME:	APN 3262001005, North Lancaster Ranch Expansion	CLIENT:	Tetra Tech Inc.
	NAME:	ELIZABETH LAKE	ADDRESS:	110th Street W/W Avenue B Lancaster, CA 93536	CONTACT:	Nancy Hsu
	MAP YEAR:	1917	LAT/LONG:	34.8088 / -118.3216	INQUIRY#:	3408684.4
	SERIES:	30			RESEARCH DATE:	09/12/2012
	SCALE:	1:125000				

Historical Topographic Map



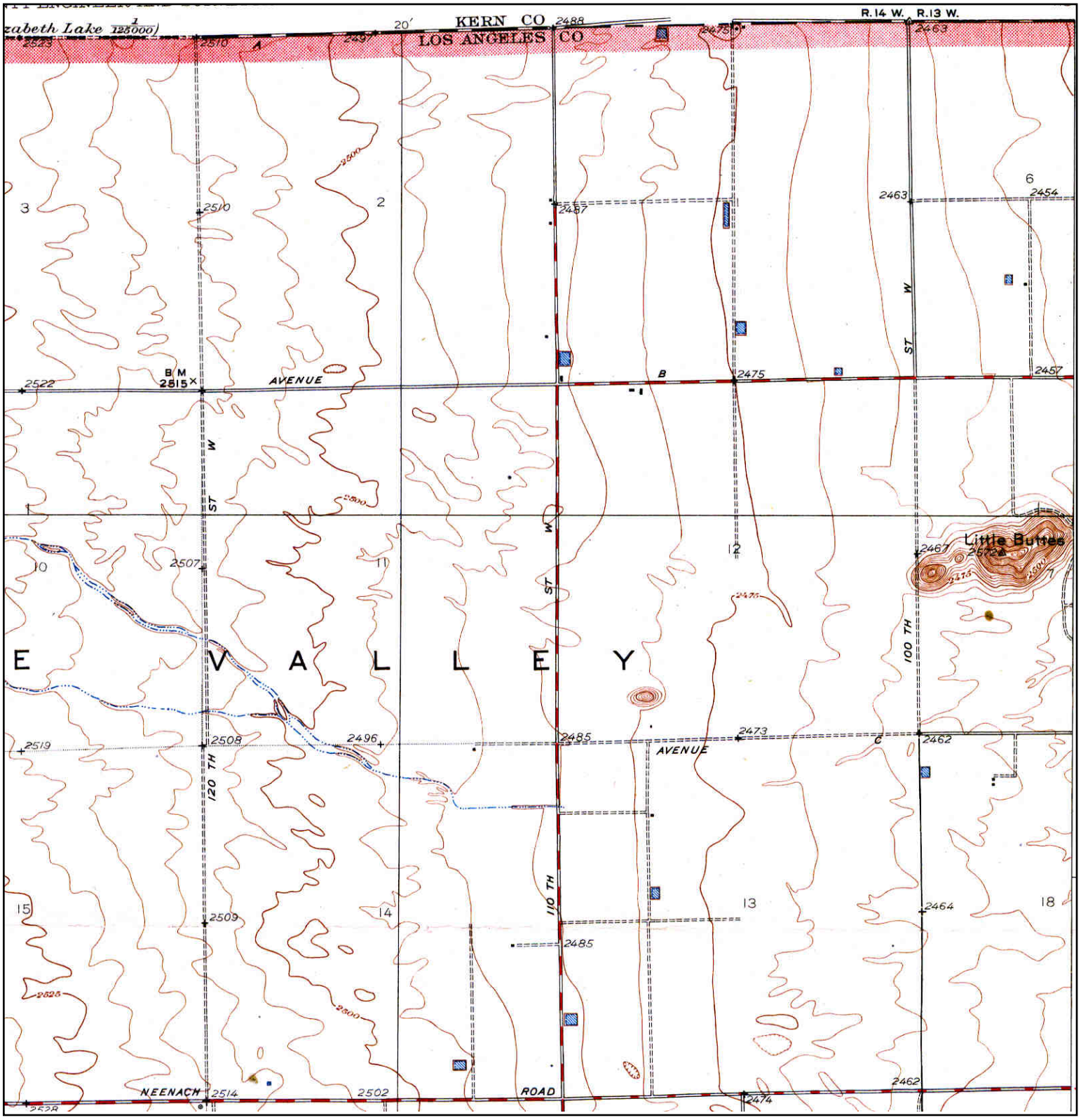
N	TARGET QUAD NAME: LITTLE BUTTES MAP YEAR: 1934 SERIES: 6 SCALE: 1:24000	SITE NAME: APN 3262001005, North Lancaster Ranch Expansion ADDRESS: 110th Street W/W Avenue B Lancaster, CA 93536 LAT/LONG: 34.8088 / -118.3216	CLIENT: Tetra Tech Inc. CONTACT: Nancy Hsu INQUIRY#: 3408684.4 RESEARCH DATE: 09/12/2012

Historical Topographic Map



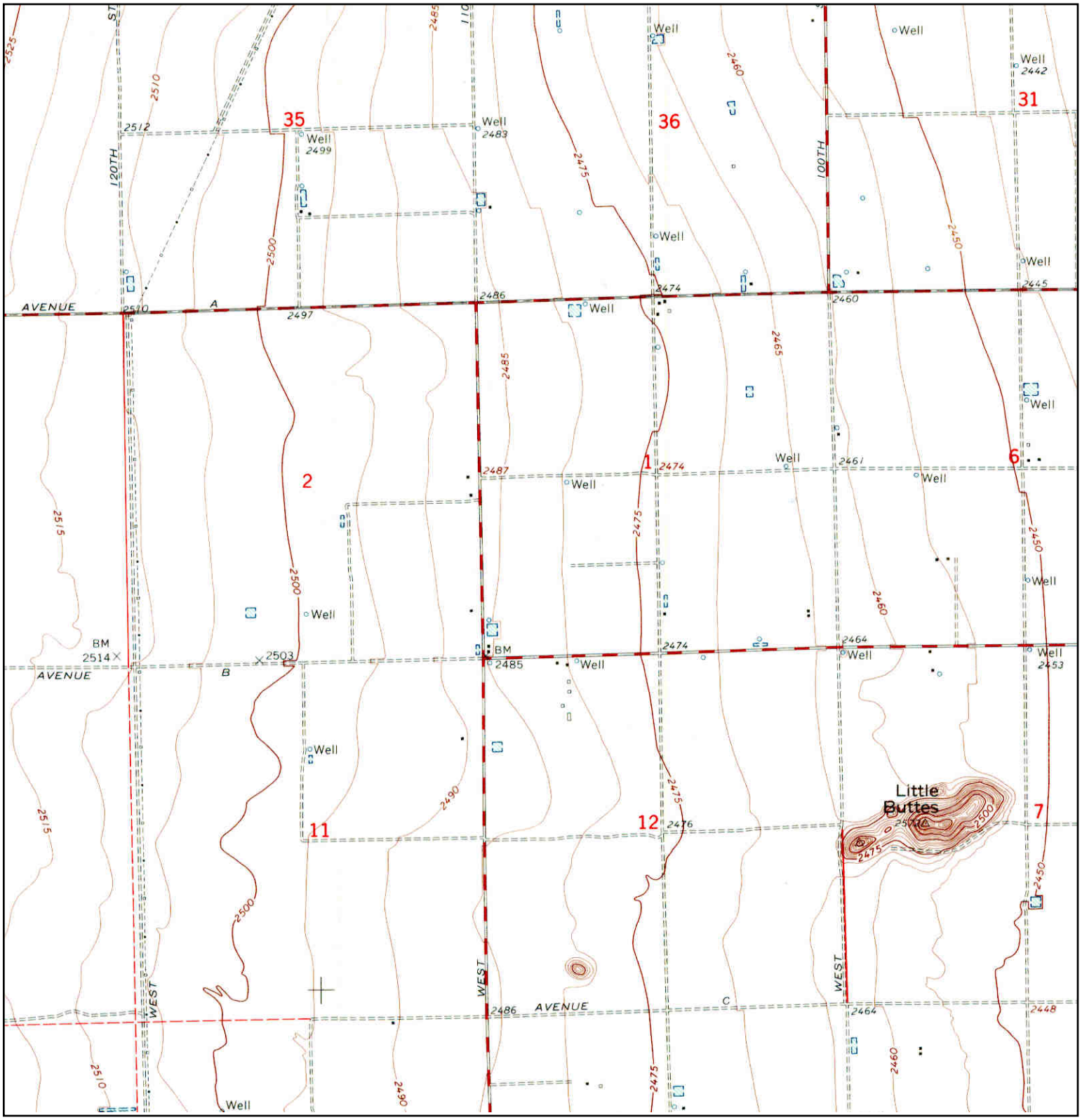
N	TARGET QUAD NAME: WILLOW SPRINGS MAP YEAR: 1947 SERIES: 15 SCALE: 1:50000	SITE NAME: APN 3262001005, North Lancaster Ranch Expansion ADDRESS: 110th Street W/W Avenue B Lancaster, CA 93536 LAT/LONG: 34.8088 / -118.3216	CLIENT: Tetra Tech Inc. CONTACT: Nancy Hsu INQUIRY#: 3408684.4 RESEARCH DATE: 09/12/2012

Historical Topographic Map



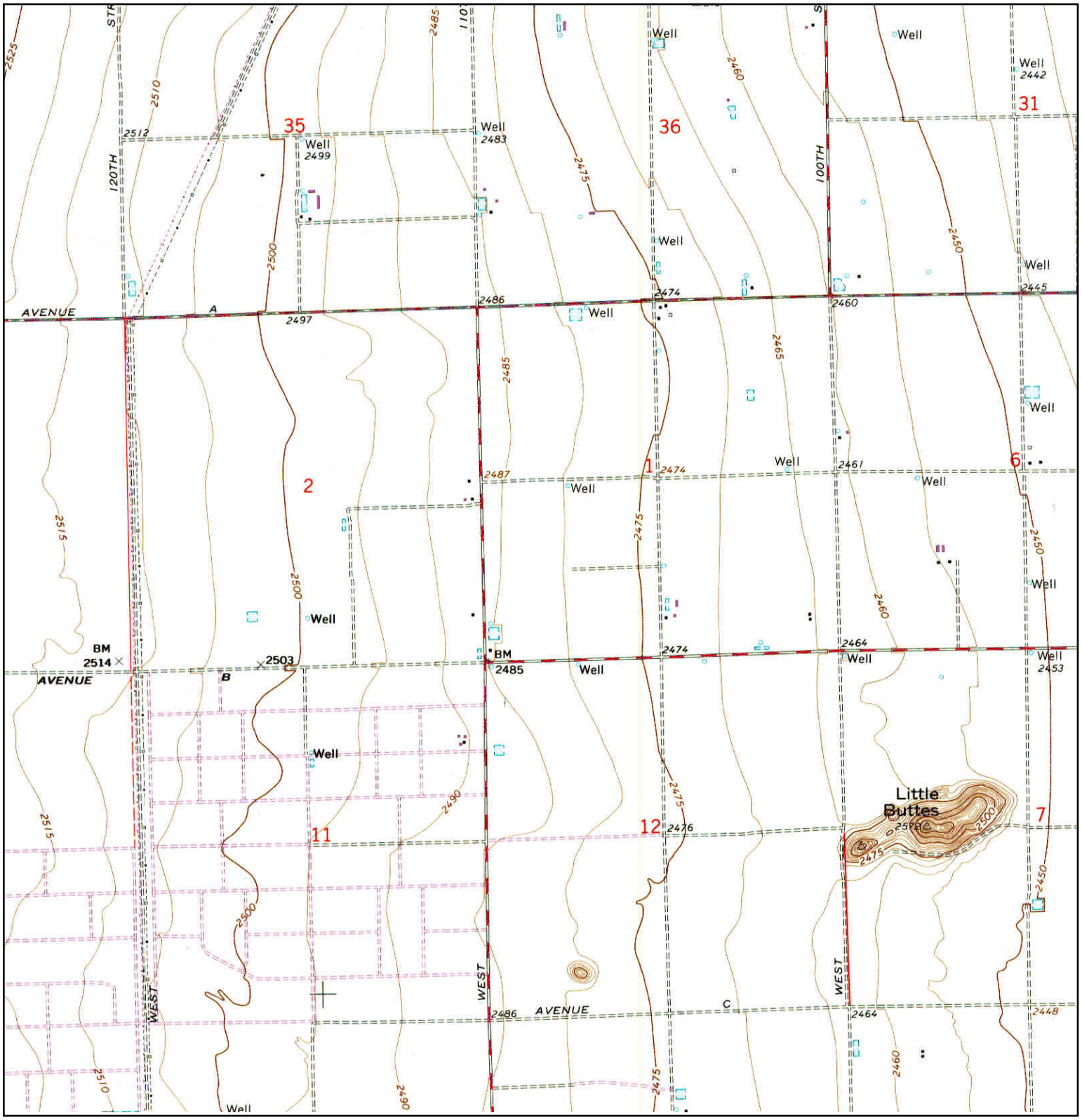
N	TARGET QUAD				
	NAME:	LITTLE BUTTES	SITE NAME:	APN 3262001005, North Lancaster Ranch Expansion	CLIENT: Tetra Tech Inc.
	MAP YEAR:	1951	ADDRESS:	110th Street W/W Avenue B Lancaster, CA 93536	CONTACT: Nancy Hsu
	REVISED FROM :	1934			INQUIRY#: 3408684.4
	SERIES:	6	LAT/LONG:	34.8088 / -118.3216	RESEARCH DATE: 09/12/2012
	SCALE:	1:24000			

Historical Topographic Map



N	TARGET QUAD NAME: LITTLE BUTTES MAP YEAR: 1965 SERIES: 7.5 SCALE: 1:24000	SITE NAME: APN 3262001005, North Lancaster Ranch Expansion ADDRESS: 110th Street W/W Avenue B Lancaster, CA 93536 LAT/LONG: 34.8088 / -118.3216	CLIENT: Tetra Tech Inc. CONTACT: Nancy Hsu INQUIRY#: 3408684.4 RESEARCH DATE: 09/12/2012

Historical Topographic Map



N	TARGET QUAD NAME: LITTLE BUTTES MAP YEAR: 1974 PHOTOREVISED FROM :1965 SERIES: 7.5 SCALE: 1:24000	SITE NAME: APN 3262001005, North Lancaster Ranch Expansion ADDRESS: 110th Street W/W Avenue B Lancaster, CA 93536 LAT/LONG: 34.8088 / -118.3216	CLIENT: Tetra Tech Inc. CONTACT: Nancy Hsu INQUIRY#: 3408684.4 RESEARCH DATE: 09/12/2012

APN 3262001005, North Lancaster Ranch Expansion
110th Street W/W Avenue B
Lancaster, CA 93536

Inquiry Number: 3408684.5
September 14, 2012

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

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Milford, CT 06461
800.352.0050
www.edrnet.com

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Date EDR Searched Historical Sources:

Aerial Photography September 14, 2012

Target Property:

110th Street W/W Avenue B

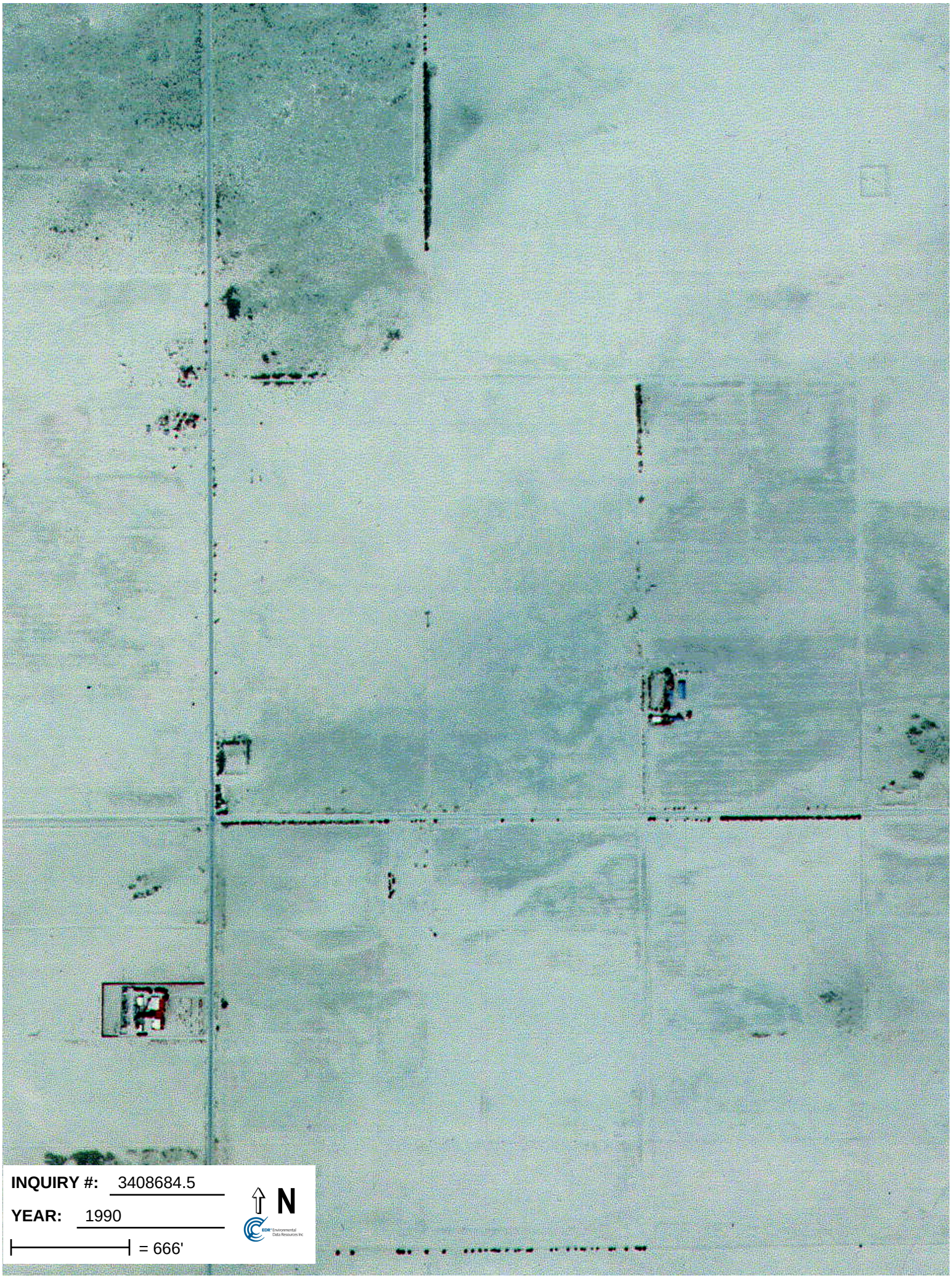
Lancaster, CA 93536

Year	***Scale***	***Details***	***Source***
1954	Aerial Photograph. Scale: 1"=555'	Flight Year: 1954	Pacific Air
1968	Aerial Photograph. Scale: 1"=666'	Flight Year: 1968	Teledyne
1974	Aerial Photograph. Scale: 1"=500'	Flight Year: 1974	USGS
1990	Aerial Photograph. Scale: 1"=666'	Flight Year: 1990	USGS
1995	Aerial Photograph. Scale: 1"=500'	/Composite DOQQ - acquisition dates: 1995	EDR
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	EDR
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	EDR

INQUIRY #: 3408684.5
YEAR: 1954
= 555'
N
EDR Environmental Data Resources Inc

INQUIRY #: 3408684.5
YEAR: 1968
= 666'
N

INQUIRY #: 3408684.5
YEAR: 1974
= 500'
N


INQUIRY #: 3408684.5
YEAR: 1990
= 666'
N

INQUIRY #: 3408684.5

YEAR: 1995

= 500'

N

EDR Environmental Data Resources Inc

INQUIRY #: 3408684.5
YEAR: 2005
= 500'
N
EDR Environmental Data Resources Inc

INQUIRY #: 3408684.5
YEAR: 2006
= 500'
N

APN 3262001005, North Lancaster Ranch Expansion
110th Street W/W Avenue B
Lancaster, CA 93536

Inquiry Number: 3408684.2s
September 12, 2012

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

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Milford, CT 06461
Toll Free: 800.352.0050
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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

110TH STREET W/W AVENUE B
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.8088000 - 34° 48' 31.68''
Longitude (West):	118.3216000 - 118° 19' 17.76''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	379115.4
UTM Y (Meters):	3852439.0
Elevation:	2482 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-G3 LITTLE BUTTES, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	2009, 2010
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System
WDS ---------- Waste Discharge System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report

SLIC ---------- Statewide SLIC Cases
INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

AST ---------- Aboveground Petroleum Storage Tank Facilities
INDIAN UST ---------- Underground Storage Tanks on Indian Land
FEMA UST ---------- Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP ---------- Voluntary Cleanup Program Properties
INDIAN VCP ---------- Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI ---------- Open Dump Inventory
DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT ---------- Waste Management Unit Database
SWRCY ---------- Recycler Database
HAULERS ---------- Registered Waste Tire Haulers Listing
INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ---------- Clandestine Drug Labs
HIST Cal-Sites ---------- Historical Calsites Database
SCH ---------- School Property Evaluation Program
Toxic Pits ---------- Toxic Pits Cleanup Act Sites
AOCONCERN ---------- San Gabriel Valley Areas of Concern
CDL ---------- Clandestine Drug Labs
US HIST CDL ---------- National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST ---------- Facility Inventory Database

Local Land Records

LIENS 2 ---------- CERCLA Lien Information
LUCIS ---------- Land Use Control Information System
LIENS ---------- Environmental Liens Listing
DEED ---------- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---------- Hazardous Materials Information Reporting System
CHMIRS ---------- California Hazardous Material Incident Report System

LDS Land Disposal Sites Listing
MCS Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen RCRA - Non Generators
DOT OPS Incident and Accident Data
DOD Department of Defense Sites
FUDS Formerly Used Defense Sites
CONSENT Superfund (CERCLA) Consent Decrees
ROD Records Of Decision
UMTRA Uranium Mill Tailings Sites
MINES Mines Master Index File
TRIS Toxic Chemical Release Inventory System
TSCA Toxic Substances Control Act
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
SSTS Section 7 Tracking Systems
ICIS Integrated Compliance Information System
PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database
FINDS Facility Index System/Facility Registry System
RAATS RCRA Administrative Action Tracking System
CA BOND EXP. PLAN Bond Expenditure Plan
UIC UIC Listing
NPDES NPDES Permits Listing
Cortese "Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE Hazardous Waste & Substance Site List
Notify 65 Proposition 65 Records
LA Co. Site Mitigation Site Mitigation List
DRYCLEANERS Cleaner Facilities
LOS ANGELES CO. HMS HMS: Street Number List
WIP Well Investigation Program Case List
ENF Enforcement Action Listing
HAZNET Facility and Manifest Data
EMI Emissions Inventory Data
INDIAN RESERV Indian Reservations
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
PROC Certified Processors Database
MWMP Medical Waste Management Program Listing
COAL ASH DOE Steam-Electric Plant Operation Data
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
HWT Registered Hazardous Waste Transporter Database
HWP EnviroStor Permitted Facilities Listing
FINANCIAL ASSURANCE Financial Assurance Information Listing
2020 COR ACTION 2020 Corrective Action Program List
PRP Potentially Responsible Parties
EPA WATCH LIST EPA WATCH LIST
US FIN ASSUR Financial Assurance Information
PCB TRANSFORMER PCB Transformer Registration Database

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Historical Auto Stations - EDR Proprietary Historic Gas Stations
EDR Historical Cleaners ----- EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, and dated 07/19/2012 has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HARTSHORN RANCH	10455 W AVENUE B	ESE 0 - 1/8 (0.121 mi.)	A3	9

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1 HIST UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HARTSHORN RANCH	10455 W AVENUE B	ESE 0 - 1/8 (0.121 mi.)	A1	8

EXECUTIVE SUMMARY

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.25 miles of the target property.

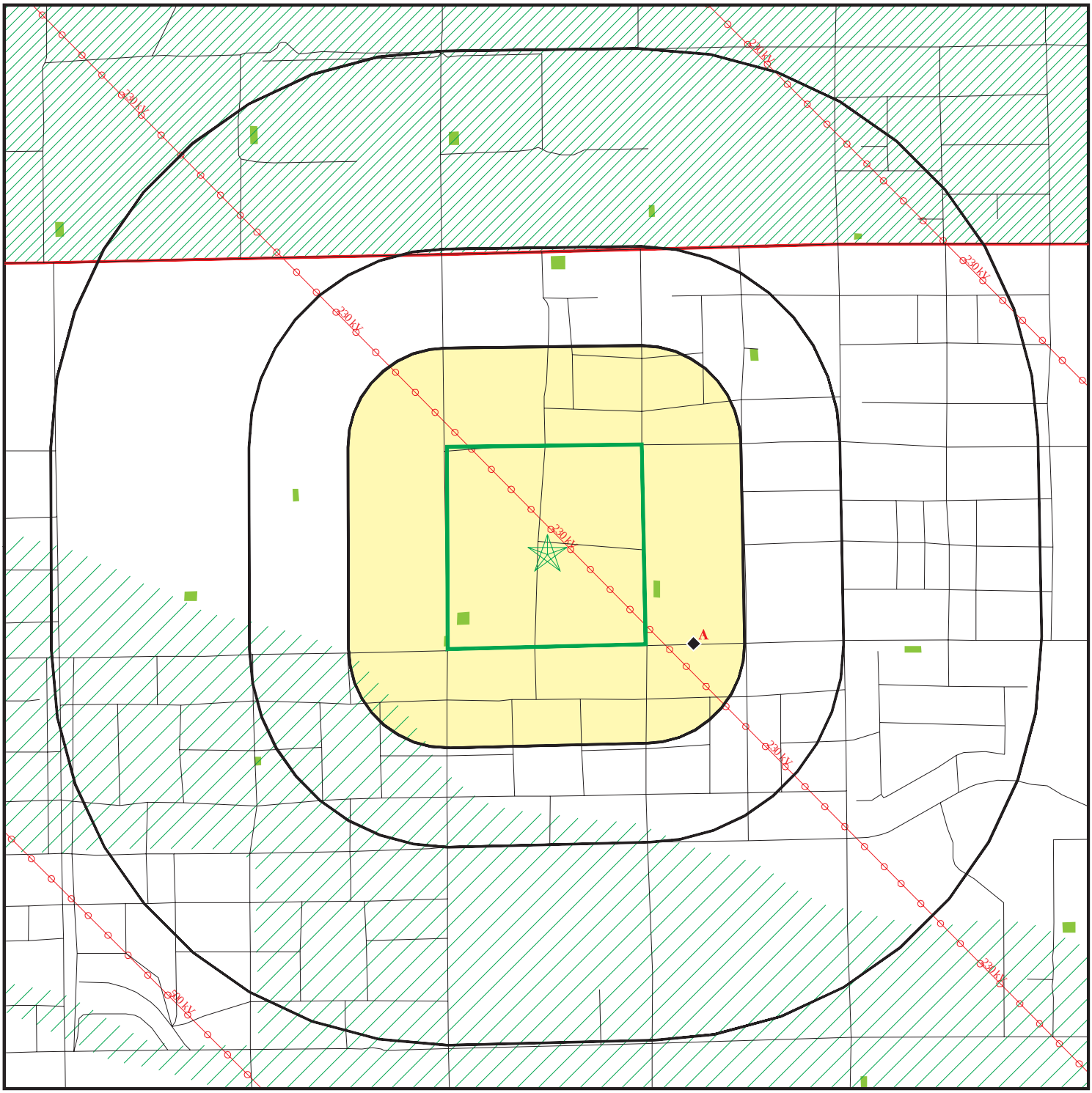
Lower Elevation	Address	Direction / Distance	Map ID	Page
HARTSHORN RANCH	10455 W AVE B	ESE 0 - 1/8 (0.121 mi.)	A2	8

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 20 records.

Site Name	Database(s)
AVENUE A UNAUTHORIZED DIS	HIST CORTESE
CAL MAT	SWEEPS UST
AVENUE A	CERCLIS-NFRAP
	AST
TAPIA BROS INC	AST
	ERNS
	ERNS
	ERNS
	ERNS
	ERNS
	ERNS
	ERNS
	ERNS
	ERNS
	ERNS
LANCASTER SD, WRP	FINDS
CALANDRI/SONRISE FARMS, LP - KIM R	FINDS
CALANDRI/SONRISE FARMS, LP - LANE	FINDS
CALANDRI/SONRISE FARMS, LP - BERRY	FINDS
SKYOTEE RANCH	FINDS

OVERVIEW MAP - 3408684.2s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- Power transmission lines
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	APN 3262001005, North Lancaster Ranch Expansion	CLIENT:	Tetra Tech Inc.
ADDRESS:	110th Street W/W Avenue B Lancaster CA 93536	CONTACT:	Nancy Hsu
LAT/LONG:	34.8088 / 118.3216	INQUIRY #:	3408684.2s
		DATE:	September 12, 2012 1:27 pm

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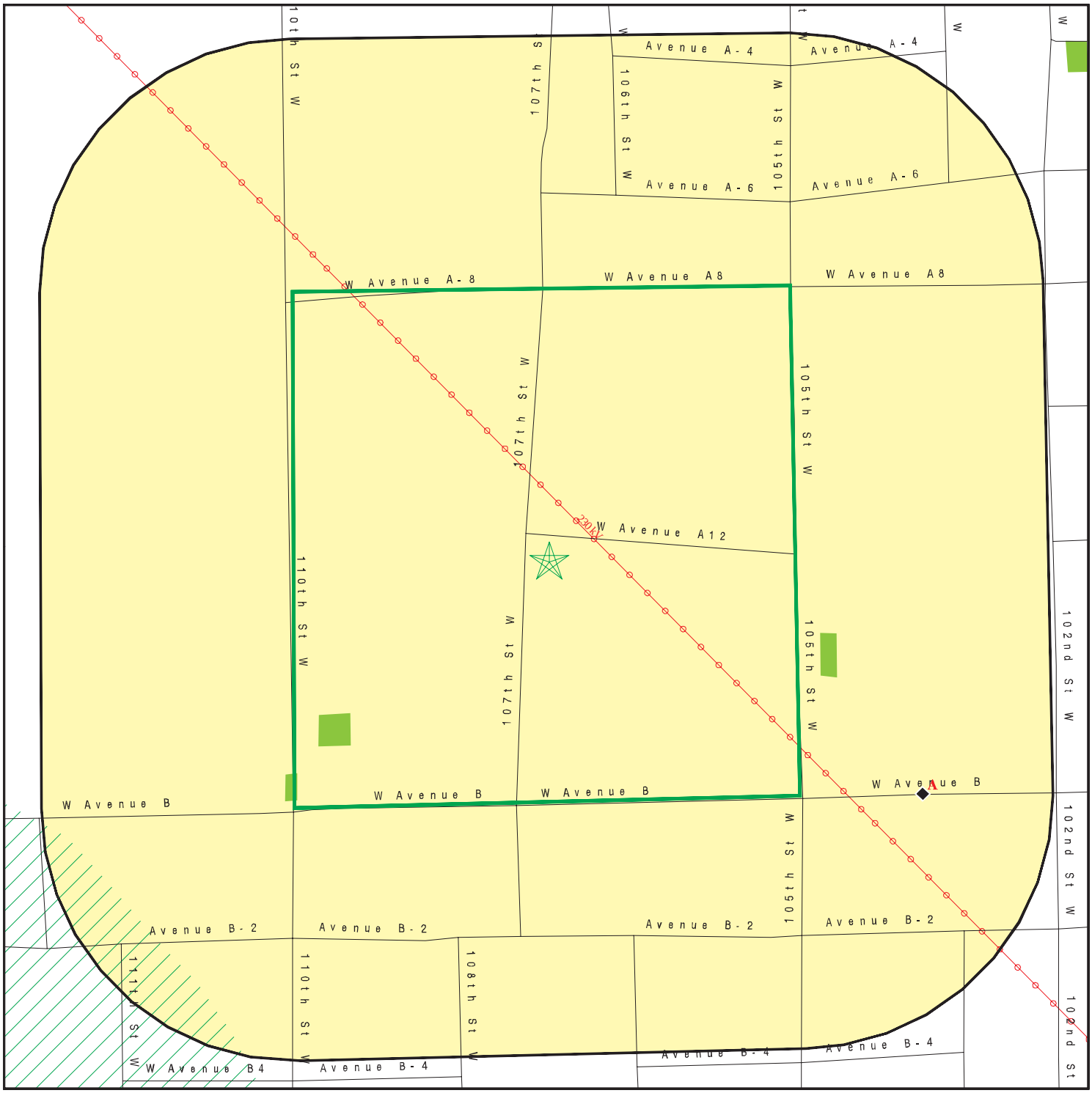
DETAIL MAP - 3408684.2s



0 1/8 1/4 1/2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

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ADDRESS:	110th Street W/W Avenue B Lancaster CA 93536	CONTACT:	Nancy Hsu
LAT/LONG:	34.8088 / 118.3216	INQUIRY #:	3408684.2s
		DATE:	September 12, 2012 1:30 pm

Copyright © 2012 EDR, Inc. © 2010 Tele Atlas Rel. 07/2009.

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	1.000		0	0	0	0	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SLIC	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		1	0	NR	NR	NR	1
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
AOCONCERN	1.000		0	0	0	0	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		1	0	NR	NR	NR	1
SWEEPS UST	0.250		1	0	NR	NR	NR	1
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
LIENS	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen	0.250		0	0	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
Cortese	0.500		0	0	0	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
LA Co. Site Mitigation	TP		NR	NR	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
LOS ANGELES CO. HMS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
HWT	0.250		0	0	NR	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
FINANCIAL ASSURANCE	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants	1.000		0	0	0	0	NR	0
EDR Historical Auto Stations	0.250		0	0	NR	NR	NR	0
EDR Historical Cleaners	0.250		0	0	NR	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1
ESE
< 1/8
0.121 mi.
641 ft.

HARTSHORN RANCH
10455 W AVENUE B
LANCASTER, CA 93534

HIST UST **U001586705**
N/A

Site 1 of 3 in cluster A

Relative:
Lower

Actual:
2474 ft.

HIST UST:

Region:	STATE
Facility ID:	00000034147
Facility Type:	Not reported
Other Type:	RANCH
Total Tanks:	0001
Contact Name:	Not reported
Telephone:	8059420664
Owner Name:	W W HARTSHORN
Owner Address:	5550 N ARCHIBALD
Owner City,St,Zip:	ALTA LOMA, CA 91701
Tank Num:	001
Container Num:	1
Year Installed:	Not reported
Tank Capacity:	00000500
Tank Used for:	PRODUCT
Type of Fuel:	REGULAR
Tank Construction:	Not reported
Leak Detection:	None

A2
ESE
< 1/8
0.121 mi.
641 ft.

HARTSHORN RANCH
10455 W AVE B
LANCASTER, CA

SWEEPS UST **S106927135**
N/A

Site 2 of 3 in cluster A

Relative:
Lower

Actual:
2474 ft.

SWEEPS UST:

Status:	A
Comp Number:	11291
Number:	9
Board Of Equalization:	44-009222
Ref Date:	06-30-89
Act Date:	Not reported
Created Date:	06-30-89
Tank Status:	A
Owner Tank Id:	Not reported
Swrcb Tank Id:	19-000-011291-000001
Actv Date:	06-30-89
Capacity:	Not reported
Tank Use:	UNKNOWN
Stg:	W
Content:	Not reported
Number Of Tanks:	1

A3
ESE
< 1/8
0.121 mi.
641 ft.

HARTSHORN RANCH
10455 W AVENUE B
LANCASTER, CA 93536

Site 3 of 3 in cluster A

UST **U004049018**
N/A

Relative:
Lower

Actual:
2474 ft.

UST:
Facility ID: 11291
Latitude: 34.80544
Longitude: -118.31526

Count: 20 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ROSAMOND	1003879424	AVENUE A	1/2 MI W OF W 10TH ST ALONG AV	93560	CERCLIS-NFRAP
LANCASTER	1005584611	LANCASTER SD, WRP	11043 CLARIBELL RD	93536	FINDS
ROSAMOND	1012067167	CALANDRI/SONRISE FARMS, LP - BERRY	GASKELL ROAD AND 71ST STREET W	93560	FINDS
ROSAMOND	1012076268	CALANDRI/SONRISE FARMS, LP - LANE	WEST AVENUE A & 175TH STREET W	93560	FINDS
ROSAMOND	1012079767	CALANDRI/SONRISE FARMS, LP - KIM R	90TH STREET WEST AND GASKELL R	93560	FINDS
ROSAMOND	1014674097	SKYOTEE RANCH	UNKNOWN	93560	FINDS
LANCASTER	2006819780		AVE H8 NORTH OF DIVISON ST		ERNS
	2008896364		14091 NORTH BALBOA BLVD		ERNS
LANCASTER	2011964736		44916 NORTH 10TH ST WEST		ERNS
CHILAO FLAT	2011974081		98 STAR ROAD		ERNS
LANCASTER	2011978881		44812 SIERRA HWY	93534	ERNS
LOS ANGELES	2011979169		800 NORTH ALAMEDA ST.		ERNS
WILMINGTON	2011980573		161 NORTH ISLAND AVE		ERNS
WILMINGTON	2011981313		161 NORTH ISLAND AVENUE	90744	ERNS
LANCASTER	87463949		NR: LANCASTER, CA		ERNS
LANCASTER	93468078		205 ST WEST NEAREST CROSS ST W	93536	ERNS
ROSAMOND	A100337006	TAPIA BROS INC	8425 AVE A	93560	AST
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
ROMOLAND	S105025908	AVENUE A UNAUTHORIZED DIS	AVE A 11/2 MI E. HWY 14	93560	HIST CORTESE
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 05/08/2012
Date Data Arrived at EDR: 05/10/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 5

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/30/2012
Date Data Arrived at EDR: 04/05/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 03/30/2012
Date Data Arrived at EDR: 04/05/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 12/27/2011
Date Data Arrived at EDR: 02/27/2012
Date Made Active in Reports: 03/12/2012
Number of Days to Update: 14

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/28/2011
Date Data Arrived at EDR: 02/27/2012
Date Made Active in Reports: 03/12/2012
Number of Days to Update: 14

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 08/19/2011
Date Data Arrived at EDR: 08/31/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 132

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 12/30/2011
Date Data Arrived at EDR: 12/30/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 12/30/2011
Date Data Arrived at EDR: 12/30/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 04/02/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 72

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 08/06/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 08/06/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/21/2012
Date Data Arrived at EDR: 05/22/2012
Date Made Active in Reports: 06/21/2012
Number of Days to Update: 30

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/20/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 05/25/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 05/07/2012
Date Data Arrived at EDR: 05/08/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 05/09/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 62

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 12/14/2011
Date Data Arrived at EDR: 12/15/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 26

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 09/12/2011
Date Data Arrived at EDR: 09/13/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 59

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 25

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 02/07/2012
Date Data Arrived at EDR: 02/17/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 88
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

State and tribal registered storage tank lists

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/06/2012
Number of Days to Update: 18
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21
Source: State Water Resources Control Board
Telephone: 916-327-5092
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 05/07/2012
Date Data Arrived at EDR: 05/08/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 69
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 11/28/2011
Date Data Arrived at EDR: 11/29/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 42
Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 25
Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 02/07/2012
Date Data Arrived at EDR: 02/17/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 88

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/10/2011
Date Data Arrived at EDR: 05/11/2011
Date Made Active in Reports: 06/14/2011
Number of Days to Update: 34

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 02/28/2012
Date Data Arrived at EDR: 02/29/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 76

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 12/14/2011
Date Data Arrived at EDR: 12/15/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 26

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 05/02/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/12/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27
Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 08/06/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 30
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 02/17/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 42
Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/27/2011
Date Data Arrived at EDR: 06/27/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 78
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/25/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30
Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 06/11/2012
Date Data Arrived at EDR: 06/14/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 22
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/14/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 07/09/2012
Date Data Arrived at EDR: 07/12/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 56
Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/16/2012
Date Data Arrived at EDR: 06/12/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 34

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 08/06/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/14/2012
Date Made Active in Reports: 02/21/2012
Number of Days to Update: 7

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 08/06/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/29/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/16/2012
Date Data Arrived at EDR: 03/26/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/21/2012
Next Scheduled EDR Contact: 09/03/2012
Data Release Frequency: Varies

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 03/12/2012
Date Data Arrived at EDR: 03/13/2012
Date Made Active in Reports: 04/02/2012
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 06/11/2012
Date Data Arrived at EDR: 06/12/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 24

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/11/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 04/01/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 72

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 03/28/2012
Date Data Arrived at EDR: 05/01/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 24

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 49

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/29/2011
Date Data Arrived at EDR: 08/09/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 94

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 09/10/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 01/25/2012
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 36

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/27/2012
Date Data Arrived at EDR: 03/14/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 92

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/12/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 09/08/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 21

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/04/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 09/01/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 131

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/31/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/29/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Every 4 Years

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/22/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/22/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/20/2011
Date Data Arrived at EDR: 11/10/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/21/2011
Date Data Arrived at EDR: 07/15/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 60

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/10/2012
Date Data Arrived at EDR: 01/12/2012
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 49

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/11/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 10/23/2011
Date Data Arrived at EDR: 12/13/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 79

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/11/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/31/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UIC: UIC Listing

A listing of underground control injection wells.

Date of Government Version: 12/09/2011
Date Data Arrived at EDR: 02/29/2012
Date Made Active in Reports: 04/04/2012
Number of Days to Update: 35

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 07/24/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 05/21/2012
Date Data Arrived at EDR: 05/22/2012
Date Made Active in Reports: 06/21/2012
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/20/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 04/02/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 06/11/2012
Number of Days to Update: 69

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 01/19/2012
Date Data Arrived at EDR: 01/19/2012
Date Made Active in Reports: 02/21/2012
Number of Days to Update: 33

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 08/15/2011
Date Data Arrived at EDR: 08/23/2011
Date Made Active in Reports: 10/03/2011
Number of Days to Update: 41

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/22/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 14

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Annually

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19
Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/29/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34
Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing
The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information
All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 05/24/2012
Date Data Arrived at EDR: 06/05/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 9
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 08/14/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST
EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 03/31/2012
Date Data Arrived at EDR: 05/17/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 28
Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 02/27/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: N/A

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 11/11/2011
Date Data Arrived at EDR: 05/18/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 05/23/2012
Date Data Arrived at EDR: 05/24/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 43

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/14/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Varies

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 05/31/2012
Date Data Arrived at EDR: 06/01/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 60

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 07/16/2012
Date Data Arrived at EDR: 07/17/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 51

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/17/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Quarterly

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/12/2012
Next Scheduled EDR Contact: 09/24/2012
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Varies

MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 06/01/2012
Date Data Arrived at EDR: 06/12/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 24

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 09/10/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 06/11/2012
Date Data Arrived at EDR: 06/14/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 22

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/14/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/03/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/08/2012
Number of Days to Update: 34

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Semi-Annually

Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 04/03/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/08/2012
Number of Days to Update: 34

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 06/13/2012
Date Data Arrived at EDR: 06/14/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 22

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 08/06/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Semi-Annually

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/09/2012
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 03/29/2012
Date Data Arrived at EDR: 05/29/2012
Date Made Active in Reports: 06/21/2012
Number of Days to Update: 23

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/26/2012
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/23/2012
Date Data Arrived at EDR: 07/26/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 42

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29
Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 08/29/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 12/29/2011
Date Data Arrived at EDR: 02/02/2012
Date Made Active in Reports: 02/21/2012
Number of Days to Update: 19
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/17/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 04/26/2012
Date Data Arrived at EDR: 05/01/2012
Date Made Active in Reports: 05/24/2012
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/17/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 07/12/2012
Date Data Arrived at EDR: 07/23/2012
Date Made Active in Reports: 08/02/2012
Number of Days to Update: 10
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/12/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Semi-Annually

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 05/22/2012
Date Data Arrived at EDR: 05/29/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 38
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 07/23/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Semi-Annually

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 12/05/2011
Date Data Arrived at EDR: 12/06/2011
Date Made Active in Reports: 02/07/2012
Number of Days to Update: 63
Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/29/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23
Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 12/05/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 08/02/2012
Date Data Arrived at EDR: 08/13/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 24
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 08/02/2012
Date Data Arrived at EDR: 08/13/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 24
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 05/17/2012
Date Made Active in Reports: 05/24/2012
Number of Days to Update: 7
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 06/12/2012
Date Data Arrived at EDR: 06/13/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 23
Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites

Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 07/18/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 49

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/25/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Quarterly

Underground Storage Tank Tank List

Underground storage tank sites located in Riverside county.

Date of Government Version: 07/18/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/06/2012
Number of Days to Update: 18

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/25/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2012
Date Data Arrived at EDR: 04/16/2012
Date Made Active in Reports: 05/08/2012
Number of Days to Update: 22

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/02/2012
Date Data Arrived at EDR: 04/17/2012
Date Made Active in Reports: 05/08/2012
Number of Days to Update: 21

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 05/30/2012
Date Data Arrived at EDR: 05/31/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 36

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 08/13/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2011
Date Data Arrived at EDR: 11/04/2011
Date Made Active in Reports: 12/13/2011
Number of Days to Update: 39

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/25/2012
Date Data Arrived at EDR: 06/27/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 34

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Semi-Annually

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 07/09/2012
Date Data Arrived at EDR: 07/16/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 52
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/17/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 06/19/2012
Date Data Arrived at EDR: 06/20/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 16
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/18/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Semi-Annually

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 06/04/2012
Date Data Arrived at EDR: 06/08/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 28
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 09/04/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 05/15/2012
Date Data Arrived at EDR: 05/15/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 10
Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Annually

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/18/2012
Date Data Arrived at EDR: 06/21/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 15
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/15/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 06/18/2012
Date Data Arrived at EDR: 06/22/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 14

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/15/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 03/31/2012
Date Data Arrived at EDR: 06/29/2012
Date Made Active in Reports: 08/09/2012
Number of Days to Update: 41

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 06/11/2012
Date Data Arrived at EDR: 06/12/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 24

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 03/30/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 42

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/24/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/14/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 06/28/2012
Date Data Arrived at EDR: 08/02/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 35

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/30/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 06/29/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 32

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 06/29/2012
Date Data Arrived at EDR: 07/09/2012
Date Made Active in Reports: 08/02/2012
Number of Days to Update: 24

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/21/2012
Date Data Arrived at EDR: 05/22/2012
Date Made Active in Reports: 05/31/2012
Number of Days to Update: 9

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/20/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/28/2012
Number of Days to Update: 40

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 05/09/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 36
Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/09/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 04/27/2012
Date Made Active in Reports: 06/05/2012
Number of Days to Update: 39
Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/22/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 39
Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/15/2011
Number of Days to Update: 27
Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

APN 3262001005, NORTH LANCASTER RANCH EXPANSION
110TH STREET W/W AVENUE B
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.8088 - 34° 48' 31.68''
Longitude (West):	118.3216 - 118° 19' 17.76''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	379115.4
UTM Y (Meters):	3852439.0
Elevation:	2482 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-G3 LITTLE BUTTES, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

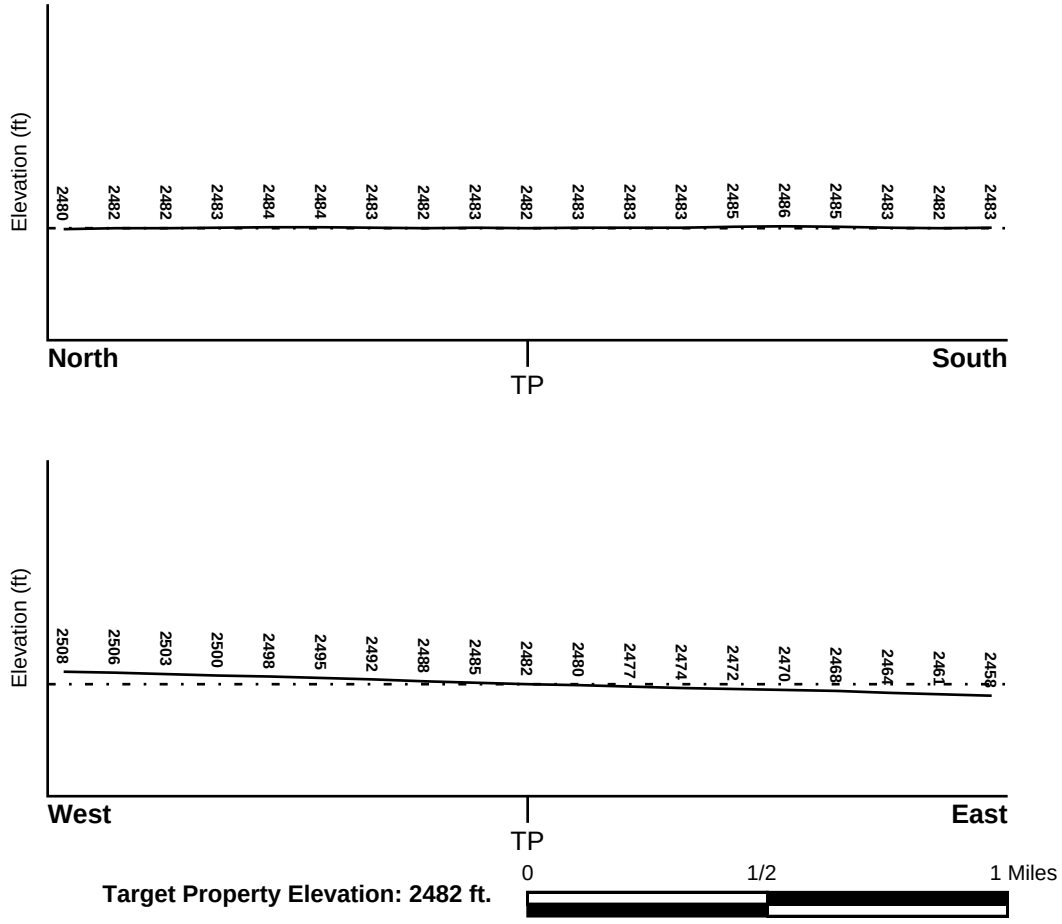
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General East

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 2482 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property:	06037C - FEMA DFIRM Flood data
Additional Panels in search area:	06029C - FEMA DFIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
LITTLE BUTTES	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

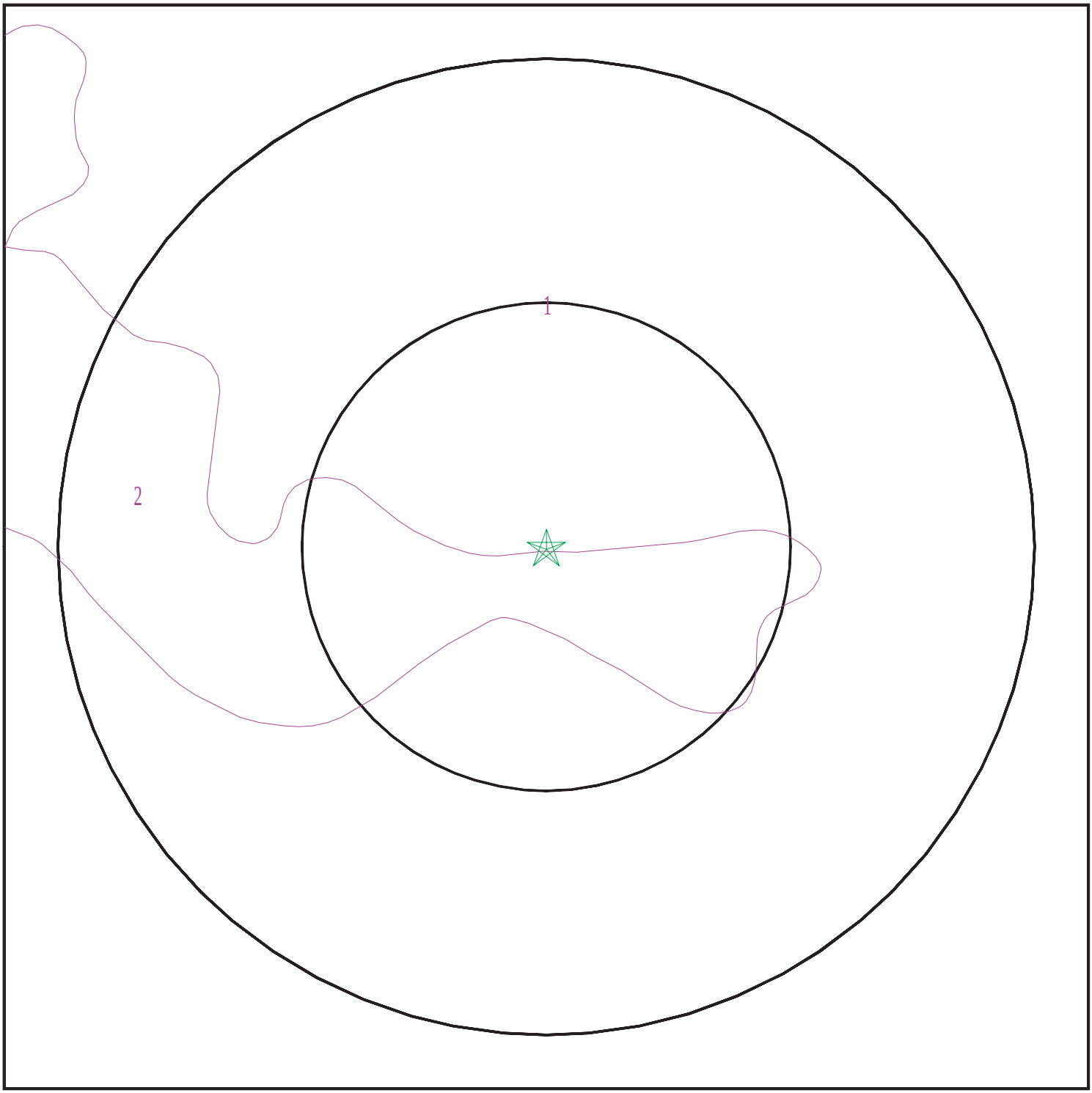
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3408684.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	APN 3262001005, North Lancaster Ranch Expansion	CLIENT:	Tetra Tech Inc.
ADDRESS:	110th Street W/W Avenue B Lancaster CA 93536	CONTACT:	Nancy Hsu
LAT/LONG:	34.8088 / 118.3216	INQUIRY #:	3408684.2s
		DATE:	September 12, 2012 1:30 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Rosamond

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.9
2	7 inches	59 inches	stratified loam to silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.9

Soil Map ID: 2

Soil Component Name: Rosamond

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.9
2	7 inches	59 inches	stratified loam to silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 8.4 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
2	USGS3157849	1/8 - 1/4 Mile North
B4	USGS3157979	1/8 - 1/4 Mile South
A5	USGS3157832	1/4 - 1/2 Mile East
C6	USGS3157815	1/4 - 1/2 Mile WSW

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A7	USGS3157838	1/4 - 1/2 Mile East
9	USGS3157816	1/4 - 1/2 Mile WSW
D10	USGS3157968	1/4 - 1/2 Mile SW
E11	USGS3157957	1/4 - 1/2 Mile South
F15	USGS3157967	1/4 - 1/2 Mile SE
16	USGS3157946	1/4 - 1/2 Mile South
G17	USGS3157947	1/4 - 1/2 Mile SSW
H18	USGS3157841	1/2 - 1 Mile WNW
21	USGS3157948	1/2 - 1 Mile SW
I24	USGS3157992	1/2 - 1 Mile ESE
J25	USGS3157824	1/2 - 1 Mile West
26	USGS3157966	1/2 - 1 Mile ESE
K29	USGS3157887	1/2 - 1 Mile NNE
30	USGS3157859	1/2 - 1 Mile ENE
M32	USGS3157822	1/2 - 1 Mile West
N34	USGS3157724	1/2 - 1 Mile North
M35	USGS3157821	1/2 - 1 Mile West
L36	USGS3157830	1/2 - 1 Mile East
O39	USGS3157723	1/2 - 1 Mile NNE
42	USGS3157978	1/2 - 1 Mile ESE
43	USGS3157921	1/2 - 1 Mile SSW
P44	USGS3159959	1/2 - 1 Mile ENE
47	USGS3157941	1/2 - 1 Mile SW
Q48	USGS3157722	1/2 - 1 Mile NE
49	USGS3157817	1/2 - 1 Mile West
50	USGS3157761	1/2 - 1 Mile North
R51	USGS3157881	1/2 - 1 Mile ENE
53	USGS3157760	1/2 - 1 Mile NNE
55	USGS3157747	1/2 - 1 Mile NNE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

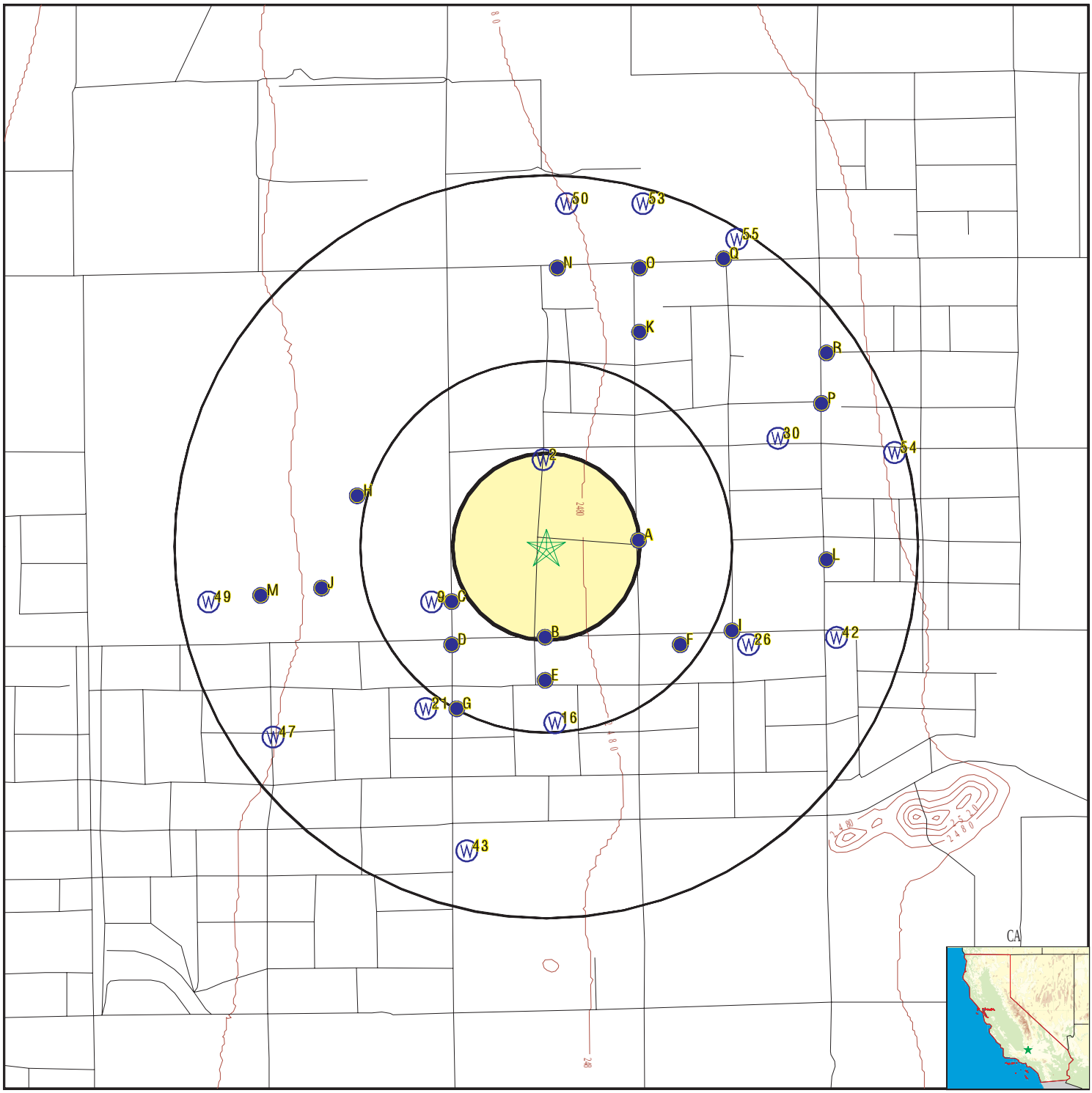
MAP ID	WELL ID	LOCATION FROM TP
A1	CADW40000015648	1/8 - 1/4 Mile East
B3	CADW40000015595	1/8 - 1/4 Mile South
C8	CADW40000015623	1/4 - 1/2 Mile WSW
E12	CADW40000015571	1/4 - 1/2 Mile South
D13	CADW40000015588	1/4 - 1/2 Mile SW
F14	CADW40000015589	1/4 - 1/2 Mile SE
G19	CADW40000015554	1/2 - 1 Mile SSW
I20	CADW40000015616	1/2 - 1 Mile ESE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
H22	CADW40000015682	1/2 - 1 Mile WNW
I23	CADW40000015590	1/2 - 1 Mile ESE
K27	CADW40000015773	1/2 - 1 Mile NNE
J28	CADW40000015631	1/2 - 1 Mile West
L31	CADW40000015641	1/2 - 1 Mile East
N33	CADW40000015814	1/2 - 1 Mile North
O37	CADW40000015815	1/2 - 1 Mile NNE
M38	CADW40000015626	1/2 - 1 Mile West
P40	CADW40000015726	1/2 - 1 Mile ENE
M41	CADW40000015625	1/2 - 1 Mile West
Q45	CADW40000015816	1/2 - 1 Mile NNE
R46	CADW40000015756	1/2 - 1 Mile NE
Q52	CADW40000015837	1/2 - 1 Mile NNE
54	CADW40000015698	1/2 - 1 Mile ENE

PHYSICAL SETTING SOURCE MAP - 3408684.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	APN 3262001005, North Lancaster Ranch Expansion	CLIENT:	Tetra Tech Inc.
ADDRESS:	110th Street W/W Avenue B Lancaster CA 93536	CONTACT:	Nancy Hsu
LAT/LONG:	34.8088 / 118.3216	INQUIRY #:	3408684.2s
		DATE:	September 12, 2012 1:30 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
A1 **East** **1/8 - 1/4 Mile** **Lower**	**CA WELLS**	**CADW40000015648**

Longitude:	-118.317
Latiude:	34.8089
Stwellno:	08N14W01K001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015648

	Database	EDR ID Number
2 **North** **1/8 - 1/4 Mile** **Higher**	**FED USGS**	**USGS3157849**

Agency cd:	USGS	Site no:	344844118191501
Site name:	008N014W01L001S		
Latitude:	344844	EDR Site id:	USGS3157849
Longitude:	1181915	Dec lat:	34.81220171
Dec lon:	-118.321745	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2480.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	701
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

B3
South
1/8 - 1/4 Mile
Higher

CA WELLS **CADW40000015595**

Longitude:	-118.3212
Latiude:	34.8053
Stwellno:	08N14W12C001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015595

B4
South
1/8 - 1/4 Mile
Higher

FED USGS **USGS3157979**

Agency cd:	USGS	Site no:	344819118191301
Site name:	008N014W12C001S		
Latitude:	344819	EDR Site id:	USGS3157979
Longitude:	1181913	Dec lat:	34.80525756
Dec lon:	-118.32118936	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	NWNENWS12T08NR14WS
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2480.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	653	Hole depth:	Not Reported
Source of depth data:	other reported		
Project number:	8479381100		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-04-10	Ground water data end date:	1993-04-21
Ground water data count:	17		

Ground-water levels, Number of Measurements: 17

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1993-04-21					
Note: The measurement was discontinued.					
1992-04-14					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1991-03-18	278.59		1990-03-13	283.87	
1989-03-20	288.33		1988-03-29	294.17	
1987-02-24	299.54		1986-02-26	305.38	
1985-03-27	310.83		1984-03-05	317.24	
1983-04-13	324.47		1982-02-09	333.30	
1981-04-14	338.44		1980-04-09	342.16	
1979-02-13	346.69		1978-09-21	354.40	
1963-04-10					
Note: The site was being pumped.					

A5
East
1/4 - 1/2 Mile
Lower

FED USGS **USGS3157832**

Agency cd:	USGS	Site no:	344832118185801
Site name:	008N014W01K001S		
Latitude:	344832	EDR Site id:	USGS3157832
Longitude:	1181858	Dec lat:	34.80886853
Dec lon:	-118.31702259	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2474.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19480101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	355
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1953-00-00	Ground water data end date:	1956-12-05
Ground water data count:	3		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956-12-05	297				
Note: The site was being pumped.					
1955	282				
Note: The site was being pumped.					
1953	256				
Note: The site was being pumped.					

C6
WSW **FED USGS** **USGS3157815**
1/4 - 1/2 Mile
Higher

Agency cd:	USGS	Site no:	344824118192901
Site name:	008N014W01N001S		
Latitude:	344824	EDR Site id:	USGS3157815
Longitude:	1181929	Dec lat:	34.80664638
Dec lon:	-118.32563396	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2486.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19480101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	551	Hole depth:	617
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1952-06-13	Ground water data end date:	1954-04-09
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1954-04-09	232				
Note: The site was being pumped.					
1952-06-13	205.5				
Note: The site was being pumped.					

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A7
East
1/4 - 1/2 Mile
Lower | **FED USGS** | **USGS3157838**

Agency cd:	USGS	Site no:	344834118185701
Site name:	008N014W01K002S		
Latitude:	344834	EDR Site id:	USGS3157838
Longitude:	1181857	Dec lat:	34.80942406
Dec lon:	-118.31674481	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2474.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19611201
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	602
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

C8
WSW
1/4 - 1/2 Mile
Higher | **CA WELLS** | **CADW40000015623**

Longitude:	-118.3256
Latiude:	34.8067
Stwellno:	08N14W01N001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015623

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

9
WSW
1/4 - 1/2 Mile
Higher | **FED USGS** | **USGS3157816**

Agency cd:	USGS	Site no:	344824118193401
Site name:	008N014W02R002S		
Latitude:	344824	EDR Site id:	USGS3157816
Longitude:	1181934	Dec lat:	34.80664637
Dec lon:	-118.3270229	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2487.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Alluvial fan		
Site type:	Ground-water other than Spring	Date construction:	19550516
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	78.3	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

D10
SW
1/4 - 1/2 Mile
Higher | **FED USGS** | **USGS3157968**

Agency cd:	USGS	Site no:	344818118192901
Site name:	008N014W12D002S		
Latitude:	344818	EDR Site id:	USGS3157968
Longitude:	1181929	Dec lat:	34.80497978
Dec lon:	-118.32563395	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000

Altitude:	2486.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19550718
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	704
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-04-10	Ground water data end date:	1963-04-10
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-04-10	328.00	

Note: The site was being pumped.

E11
South
1/4 - 1/2 Mile
Higher

FED USGS **USGS3157957**

Agency cd:	USGS	Site no:	344813118191301
Site name:	008N014W12D001S		
Latitude:	344813	EDR Site id:	USGS3157957
Longitude:	1181913	Dec lat:	34.80359097
Dec lon:	-118.32118934	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2482.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19330101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	294	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data end date: 0000-00-00
Ground water data begin date: 1939-04-11
Ground water data count: 14
Water quality data begin date: 0000-00-00
Water quality data count: 0
Ground water data end date: 1952-11-24

Ground-water levels, Number of Measurements: 14

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1952-11-24	177.0		1951-12-19	168.6	
1950-12-13	161.9		1949-12-02	148.35	
1948-12-08	154.0				
Note: The site was being pumped.					
1947-12-09	133.4		1946-12-10	131.0	
1945-11-14	128.5		1944-05-03	124.2	
1943-12-15	122.4		1942-11-24	119.32	
1940-11-29	122.5		1940-09-01	124.0	
1939-04-11	121.5				

E12
South
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000015571**

Longitude: -118.3212
Latiude: 34.8036
Stwellno: 08N14W12D001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000015571

D13
SW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000015588**

Longitude: -118.3256
Latiude: 34.805
Stwellno: 08N14W12D002S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000015588

F14
SE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000015589**

Longitude:	-118.3148
Latiude:	34.805
Stwellno:	08N14W12B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015589

F15
SE **FED USGS** **USGS3157967**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	344818118185001
Site name:	008N014W12B001S		
Latitude:	344818	EDR Site id:	USGS3157967
Longitude:	1181850	Dec lat:	34.80497981
Dec lon:	-118.31480026	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2473.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	540
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-04-10	Ground water data end date:	1963-04-10
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-04-10	410.00	

Note: The site was being pumped.

16
South **FED USGS** **USGS3157946**
1/4 - 1/2 Mile
Higher

Agency cd:	USGS	Site no:	344807118191301
Site name:	008N014W12C002S		
Latitude:	344807	EDR Site id:	USGS3157946
Longitude:	1181913	Dec lat:	34.80192437
Dec lon:	-118.32118933	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2483.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19580101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	375	Hole depth:	420
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

G17
SSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3157947**

Agency cd:	USGS	Site no:	344809118192801
Site name:	008N014W12D003S		
Latitude:	344809	EDR Site id:	USGS3157947
Longitude:	1181928	Dec lat:	34.80247989
Dec lon:	-118.32535614	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2489.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	371	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-04-10	Ground water data end date:	1968-01-09
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1968-01-09	320.20		1963-04-10	308.37	

H18
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS3157841**

Agency cd:	USGS	Site no:	344839118194501
Site name:	008N014W02J001S		
Latitude:	344839	EDR Site id:	USGS3157841
Longitude:	1181945	Dec lat:	34.81081285
Dec lon:	-118.33007859	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2492.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	380
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1955-07-18	Ground water data end date:	1962-07-24
Ground water data count:	4		

Ground-water levels, Number of Measurements: 4

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1962-07-24	307.80		1960-08-24	298	
1956-07-10	268.00		1955-07-18	241.00	

G19
SSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000015554**

Longitude:	-118.3254
Latiude:	34.8025
Stwellno:	08N14W12D003S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015554

I20
ESE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015616**

Longitude:	-118.3123
Latiude:	34.8058
Stwellno:	08N14W01R001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015616

21
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3157948**

Agency cd:	USGS	Site no:	344809118193501
Site name:	008N014W11A001S		
Latitude:	344809	EDR Site id:	USGS3157948
Longitude:	1181935	Dec lat:	34.80247988
Dec lon:	-118.32730065	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2490.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19530101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	262	Hole depth:	300
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

H22
WNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000015682**

Longitude:	-118.3301
Latiude:	34.8108
Stwellno:	08N14W02J001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015682

I23
ESE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015590**

Longitude:	-118.312
Latiude:	34.805
Stwellno:	08N14W12A001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015590

I24
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS3157992**

Agency cd:	USGS	Site no:	344821118184101
Site name:	008N014W01R001S		
Latitude:	344821	EDR Site id:	USGS3157992
Longitude:	1181841	Dec lat:	34.80581312
Dec lon:	-118.31230018	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2470.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19471004
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	504
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1955-04-10	Ground water data end date:	1955-04-10
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1955-04-10	197.00	

J25
West
1/2 - 1 Mile
Higher

FED USGS **USGS3157824**

Agency cd:	USGS	Site no:	344826118195101
Site name:	008N014W02Q001S		
Latitude:	344826	EDR Site id:	USGS3157824
Longitude:	1181951	Dec lat:	34.80720189
Dec lon:	-118.33174528	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2497.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19630410
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	333	Hole depth:	410
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1960-03-08	Ground water data end date:	1963-04-10
Ground water data count:	9		

Ground-water levels, Number of Measurements: 9

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-04-10	307.58				
Note: A nearby site that taps the same aquifer was being pumped.					
1963-04-09	306.8		1962-11-14	290.8	
1962-04-05	294.8		1961-10-18	304.9	
1961-04-04	287.5		1960-11-27	301.4	
1960-04-14	289.8		1960-03-08	248.5	

26
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS3157966**

Agency cd:	USGS	Site no:	344818118184001
Site name:	008N014W12A001S		
Latitude:	344818	EDR Site id:	USGS3157966
Longitude:	1181840	Dec lat:	34.80497982
Dec lon:	-118.31202239	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2470.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 0000-00-00
Water quality data end date: 0000-00-00
Water quality data count: 0
Ground water data begin date: 1940-09-20
Ground water data end date: 1963-04-10
Ground water data count: 16

Ground-water levels, Number of Measurements: 16

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-04-10					
Note: The well was destroyed (no water level is recorded).					
1952-11-20	168.55		1951-12-19	161.65	
1950-12-13	156.4		1949-12-02	142.9	
1948-12-08	138.15		1947-12-09	125.7	
1946-12-10	123.5		1945-11-14	121.15	
1945-03-12	116.75				
Note: A nearby site that taps the same aquifer was being pumped.					
1944-05-03	116.4		1943-12-07	114.5	
1942-11-24	111.6		1941-11-24	125.3	
1940-11-29	126		1940-09-20	127	

K27
NNE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015773**

Longitude: -118.3167
Latiude: 34.8172
Stwellno: 08N14W01B002S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000015773

J28
West
1/2 - 1 Mile
Higher

CA WELLS **CADW40000015631**

Longitude: -118.3318
Latiude: 34.8072
Stwellno: 08N14W02Q001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000015631

K29
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3157887**

Agency cd:	USGS	Site no:	344902118185701
Site name:	008N014W01B002S		
Latitude:	344902	EDR Site id:	USGS3157887
Longitude:	1181857	Dec lat:	34.81720151
Dec lon:	-118.31674488	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2475.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19620301
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	678
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-03-29	Ground water data end date:	1963-03-29
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-03-29	300.00	

30
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3157859**

Agency cd:	USGS	Site no:	344847118183501
Site name:	008N014W01H001S		
Latitude:	344847	EDR Site id:	USGS3157859
Longitude:	1181835	Dec lat:	34.81303504
Dec lon:	-118.31063353	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2465.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19571212
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	482
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

L31
East
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015641**

Longitude:	-118.3079
Latiude:	34.8083
Stwellno:	08N13W06N001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015641

M32
West
1/2 - 1 Mile
Higher

FED USGS **USGS3157822**

Agency cd:	USGS	Site no:	344825118200202
Site name:	008N014W02R001S		
Latitude:	344825	EDR Site id:	USGS3157822
Longitude:	1182001	Dec lat:	34.80692412
Dec lon:	-118.33452314	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2494.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 0000-00-00
Water quality data end date: 0000-00-00
Water quality data count: 0
Ground water data begin date: 1942-11-24
Ground water data end date: 1960-03-08
Ground water data count: 23

Ground-water levels, Number of Measurements: 23

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1960-03-08					
Note: The well was destroyed (no water level is recorded).					
1958-11-27	221.5		1958-03-12	216.7	
1957-11-13	237.5		1957-03-06	217.0	
1956-11-20	234.3		1956-03-08	214.2	
1955-11-03	211.2		1955-03-16	203.1	
1954-11-11	201.54		1954-03-24	185.2	
1953-11-23	192.6		1952-11-24	188.3	
1951-12-19	179.7		1950-12-13	173.2	
1949-12-02	146.2		1948-12-09	145.3	
1947-12-09	132.0		1946-12-10	130.65	
1945-11-14	127.5		1945-03-12	125.9	
1943-12-07	127.45				
Note: A nearby site that taps the same aquifer was being pumped.					
1942-11-24	124.32				

N33
North
1/2 - 1 Mile
Higher

CA WELLS **CADW40000015814**

Longitude: -118.3206
Latiude: 34.8197
Stwellno: 08N14W01C001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000015814

N34
North
1/2 - 1 Mile
Higher

FED USGS **USGS3157724**

Agency cd: USGS
Site no: 344911118191101
Site name: 008N014W01C001S
Latitude: 344911
EDR Site id: USGS3157724
Longitude: 1181911
Dec lat: 34.81970139
Dec lon: -118.32063392
Coor meth: M
Coor accr: S
Latlong datum: NAD27
Dec latlong datum: NAD83
District: 06
State: 06
County: 037
Country: US
Land net: Not Reported
Location map: LITTLE BUTTES
Map scale: 24000

Altitude:	2480.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19520701
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	584
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-04-25	Ground water data end date:	1963-03-29
Ground water data count:	3		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-03-29	314.2				
Note: The site was being pumped.					
1958-07-31	252.40		1956-04-25	272.50	

M35
West
1/2 - 1 Mile
Higher

FED USGS **USGS3157821**

Agency cd:	USGS	Site no:	344825118200201
Site name:	008N014W02Q002S		
Latitude:	344825	EDR Site id:	USGS3157821
Longitude:	1182002	Dec lat:	34.80692411
Dec lon:	-118.33480093	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2500.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19550101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	702	Hole depth:	702
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1955-05-09	Ground water data end date:	1977-03-11
Ground water data count:	9		

Ground-water levels, Number of Measurements: 9

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1977-03-11	0.00				
1976-02-11					
Note: The site was dry (no water level recorded).					
1975-02-19					
Note: The site was dry (no water level recorded).					
1974-02-12	357.95		1968-01-09	327.31	
1962-07-24	320.30		1956-07-18	266.10	
1955-07-15	245.30		1955-05-09	183.00	

L36
East
1/2 - 1 Mile
Lower

FED USGS **USGS3157830**

Agency cd:	USGS	Site no:	344830118182501
Site name:	008N013W06N001S		
Latitude:	344830	EDR Site id:	USGS3157830
Longitude:	1181825	Dec lat:	34.80831303
Dec lon:	-118.30785562	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2463.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19390101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	523
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1941-11-24	Ground water data end date:	1963-07-25
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-07-25	329.40		1954-10-19	250.80	
1952-09-03	204		1947-01-24	114	
1941-11-24	167				

O37
NNE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015815**

Longitude:	-118.3167
Latiude:	34.8197
Stwellno:	08N14W01B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015815

M38
West
1/2 - 1 Mile
Higher

CA WELLS **CADW40000015626**

Longitude:	-118.3345
Latiude:	34.8069
Stwellno:	08N14W02R001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015626

O39
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3157723**

Agency cd:	USGS	Site no:	344911118185701
Site name:	008N014W01B001S		
Latitude:	344911	EDR Site id:	USGS3157723
Longitude:	1181857	Dec lat:	34.8197014
Dec lon:	-118.3167449	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2475.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19340101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	440
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-07-00	Ground water data end date:	1958-07-31
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1958-07-31	295		1956-07	270	

P40
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015726**

Longitude:	-118.3081
Latiude:	34.8144
Stwellno:	08N13W06E001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015726

M41
West
1/2 - 1 Mile
Higher

CA WELLS **CADW40000015625**

Longitude:	-118.3348
Latiude:	34.8069
Stwellno:	08N14W02Q002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015625

42
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS3157978**

Agency cd:	USGS	Site no:	344819118182501
Site name:	008N013W07D002S		
Latitude:	344819	EDR Site id:	USGS3157978
Longitude:	1181825	Dec lat:	34.8052576
Dec lon:	-118.30785559	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2465.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	380
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

43
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS3157921**

Agency cd:	USGS	Site no:	344749118192801
Site name:	008N014W12M001S		
Latitude:	344749	EDR Site id:	USGS3157921
Longitude:	1181928	Dec lat:	34.79692457
Dec lon:	-118.32535609	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2484.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	90.0
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

P44
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3159959**

Agency cd:	USGS	Site no:	343852118182601
Site name:	008N013W06E001S		
Latitude:	344852	EDR Site id:	USGS3159959
Longitude:	1181826	Dec lat:	34.81442387
Dec lon:	-118.30813346	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2462.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	Not Reported		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19520101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	457
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-08-10	Ground water data end date:	1986-02-26
Ground water data count:	13		

Ground-water levels, Number of Measurements: 13

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1986-02-26	283.15				
1985-03-27					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1984-03-06	295.49		1983-04-13	305.40	
1982-02-09	310.36		1981-04-23	319.62	
1979-02-22	327.20		1977-03-10	334.40	
1976-02-10	336.27		1975-02-19	342.08	
1974-02-12	344.50		1963-03-27	258.70	
1956-08-10	293.00				

Q45
NNE **CA WELLS** **CADW40000015816**
1/2 - 1 Mile
Lower

Longitude:	-118.3126
Latiude:	34.8197
Stwellno:	08N14W01A001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015816

R46
NE **CA WELLS** **CADW40000015756**
1/2 - 1 Mile
Lower

Longitude:	-118.3079
Latiude:	34.8164
Stwellno:	08N13W06D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015756

47
SW **FED USGS** **USGS3157941**
1/2 - 1 Mile
Higher

Agency cd:	USGS	Site no:	344805118200101
Site name:	008N014W11G001S		
Latitude:	344805	EDR Site id:	USGS3157941
Longitude:	1182001	Dec lat:	34.8013688
Dec lon:	-118.33452309	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000

Altitude:	2500.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	195310
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	512	Hole depth:	512
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

Q48
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3157722**

Agency cd:	USGS	Site no:	344911118184201
Site name:	008N014W01A001S		
Latitude:	344911	EDR Site id:	USGS3157722
Longitude:	1181842	Dec lat:	34.81970141
Dec lon:	-118.3125781	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2468.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19550101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1951-08-01	Ground water data end date:	1951-08-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1951-08-01	180.00	

Note: The site was being pumped.

49
West
1/2 - 1 Mile
Higher

FED USGS **USGS3157817**

Agency cd:	USGS	Site no:	344824118201201
Site name:	008N014W02P001S		
Latitude:	344824	EDR Site id:	USGS3157817
Longitude:	1182012	Dec lat:	34.80664634
Dec lon:	-118.3375788	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2500.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	93.0
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

50
North
1/2 - 1 Mile
Lower

FED USGS **USGS3157761**

Agency cd:	USGS	Site no:	344920118191101
Site name:	009N014W36P001S		
Latitude:	344920	EDR Site id:	USGS3157761
Longitude:	1181911	Dec lat:	34.82220128
Dec lon:	-118.32063394	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	029
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2480.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	1000
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

R51
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3157881**

Agency cd:	USGS	Site no:	344859118182501
Site name:	008N013W06D001S		
Latitude:	344859	EDR Site id:	USGS3157881
Longitude:	1181825	Dec lat:	34.81636824
Dec lon:	-118.30785569	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000
Altitude:	2462.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19461201
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	552
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1954-06-16	Ground water data end date:	1963-03-07
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-03-07	256.00				
1962	344.5				
Note: The site was being pumped.					
1960-09-08	312.20		1956-11-07	236.9	
1954-06-16	229.40				

Q52
NNE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015837**

Longitude:	-118.3126
Latiude:	34.8208
Stwellno:	09N14W36R001S
Districtco:	3
Welluseco:	Z
Countyco:	15
Gwcode:	604400
Site id:	CADW40000015837

53
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3157760**

Agency cd:	USGS	Site no:	344920118185801
Site name:	009N014W36Q001S		
Latitude:	344920	EDR Site id:	USGS3157760
Longitude:	1181858	Dec lat:	34.82220129
Dec lon:	-118.31702271	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	029
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000

Altitude:	2470.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19530123
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	600
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

54
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015698**

Longitude:	-118.3042
Latiude:	34.8125
Stwellno:	08N13W06M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015698

55
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3157747**

Agency cd:	USGS	Site no:	344915118184201
Site name:	009N014W36R001S		
Latitude:	344915	EDR Site id:	USGS3157747
Longitude:	1181842	Dec lat:	34.82081248
Dec lon:	-118.31257811	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	029
Country:	US	Land net:	Not Reported
Location map:	LITTLE BUTTES	Map scale:	24000

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Altitude:	2465.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-03-01	Ground water data end date:	1963-03-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-03-01	266.80	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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APN 3262001005, North Lancaster Ranch Expansion
110th Street W W Avenue B
Lancaster, CA 93536

Inquiry Number: 3408684.6
September 17, 2012

The EDR-City Directory Image Report

Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	*Target Street*	*Cross Street*	*Source*
2010	☑	☐	Haines Criss-Cross Directory
2005	☑	☐	Haines Criss-Cross Directory
1999	☑	☑	Haines Criss-Cross Directory
1995	☑	☑	Haines Criss-Cross Directory
1991	☑	☑	Haines Criss-Cross Directory
1985	☑	☑	Haines Criss-Cross Directory
1980	☑	☑	Haines Criss-Cross Directory
1975	☑	☑	Haines Criss-Cross Directory
1971	☐	☐	Haines Criss-Cross Directory

RECORD SOURCES

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FINDINGS

TARGET PROPERTY STREET

110th Street W W Avenue B
Lancaster, CA 93536

Year	*CD Image*	*Source*	
110th Street W			
2010	pg A1	Haines Criss-Cross Directory	
2005	pg A2	Haines Criss-Cross Directory	
1999	pg A3	Haines Criss-Cross Directory	
1995	pg A4	Haines Criss-Cross Directory	
1991	pg A5	Haines Criss-Cross Directory	
1991	pg A6	Haines Criss-Cross Directory	
1985	pg A7	Haines Criss-Cross Directory	
1980	pg A8	Haines Criss-Cross Directory	
1975	pg A10	Haines Criss-Cross Directory	
1975	pg A9	Haines Criss-Cross Directory	
1971	-	Haines Criss-Cross Directory	Street not listed in Source

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
W Avenue B			
2010	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
2005	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1999	pg. A11	Haines Criss-Cross Directory	
1995	pg. A12	Haines Criss-Cross Directory	
1991	pg. A13	Haines Criss-Cross Directory	
1985	pg. A14	Haines Criss-Cross Directory	
1985	pg. A15	Haines Criss-Cross Directory	
1980	pg. A17	Haines Criss-Cross Directory	
1980	pg. A16	Haines Criss-Cross Directory	
1975	pg. A18	Haines Criss-Cross Directory	
1971	-	Haines Criss-Cross Directory	Street not listed in Source

City Directory Images

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

110th Street W 2010

48052	●	COBB Curtis	OO	
X		W AVE E		
48761	●	MOFFET Vicki	OO	4
48763		XXXX	OO	
49515		PINO Gregg	661-942-4159	7
49846	●	ETHELL Pauline	OO	4
		REDMAYNE Krista	661-951-0776	6
50663		XXXX	OO	
50665	●	RICHARDS William	OO	
51203	★	COUNTRY HOME PET CARE	661-728-1596	4
		MILER Robin	661-729-4335	4
	●	STEDMAN Karen	OO	4
★	1	BUS	15 RES	0 NEW

111TH ST E 93543
LITTLEROCK

WEALTH CODE 2.0

33403		MESSINA G	661-944-8960	+0
	●	PARK Chun	OO	7
33855	♣ ●	UM Kyung	OO	4
37340	●	BALLESTEROS Lazaro	OO	2
37540	●	OCAMPO Fabian	OO	7
37547	●	GARCIA Miguel	OO	3

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

110th Street W 2005

45153	●ROSS David	661-723-0500	
47190	●PASILLAS Denise	OO	1
48052	●COBB Curtis	OO	+5
48054	XXXX	OO	
48761	●MOFFET Vicki	OO	4

X W AVE E

49846	●ETHELL Donald	OO	+5
50665	●RICHARDS William	OO	0
51203	★ **COUNTRY HOME PET CARE**	**661-729-1596**	**4**
	MILER Robin	661-729-4335	4
	●STEDMAN Karen	OO	4

★ 1 BUS 9 RES 2 NEW

112TH ST E 93543 LITTLEROCK

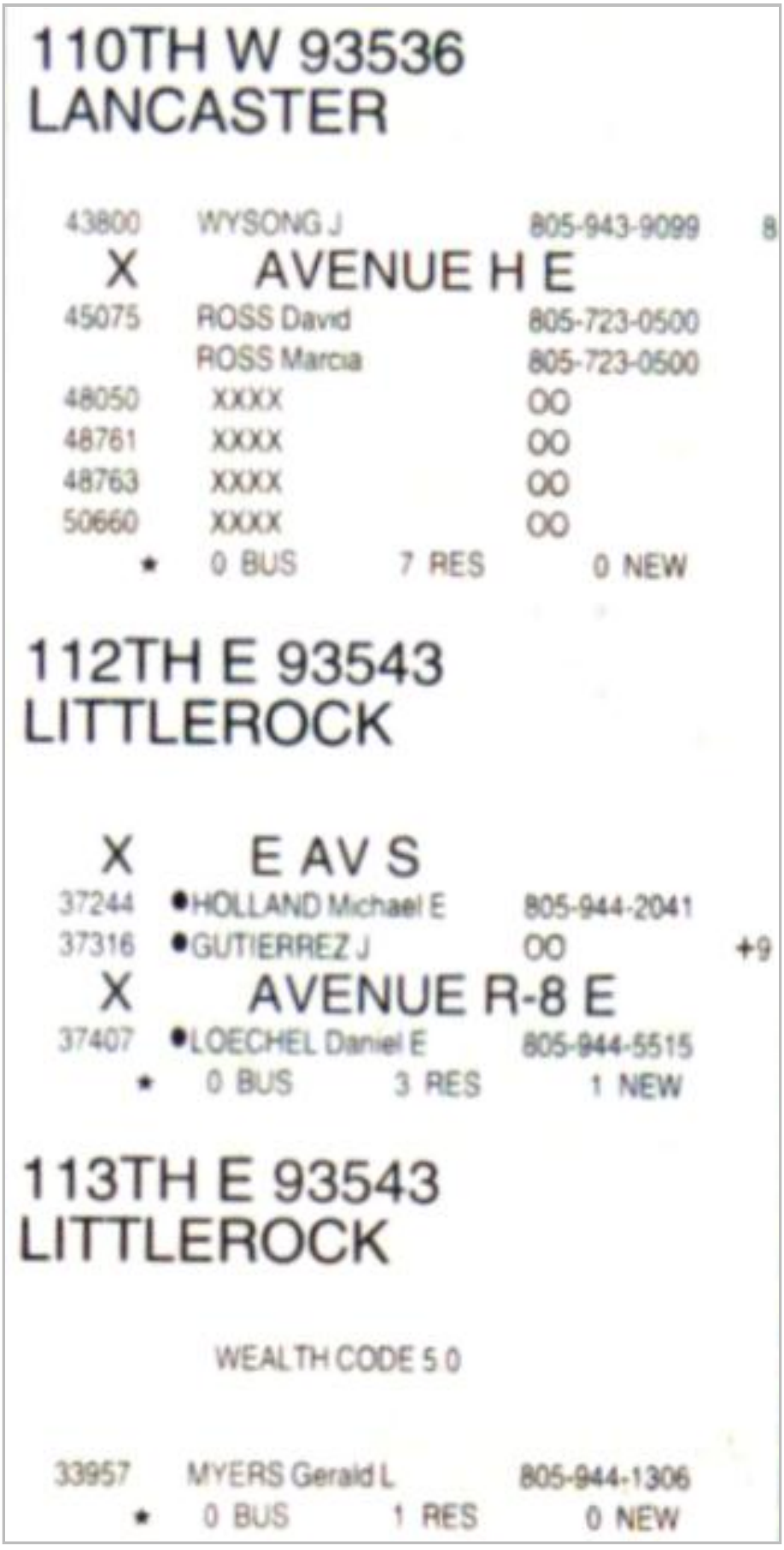
WEALTH CODE 4

X E AVE S

37241	●RIVERA Maudilio	661-944-4882	3
37244	●QUILES Ana Laura	661-944-6964	4
37305	●STARK Donald	OO	0
	WATTS Stephen	661-944-2174	2
37316	●GUTIERREZ J	OO	9
37407	AVILA Suzanne	661-944-4105	+5
	●HUBER Scott	OO	4
37446	●BANKS Fredrick	OO	0

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

110th Street W 1999



110TH W 93536
LANCASTER

43800 WYSONG J 805-943-9099 8

X AVENUE H E

45075 ROSS David 805-723-0500
ROSS Marcia 805-723-0500
48050 XXXX OO
48761 XXXX OO
48763 XXXX OO
50660 XXXX OO

* 0 BUS 7 RES 0 NEW

112TH E 93543
LITTLEROCK

X E AV S

37244 •HOLLAND Michael E 805-944-2041
37316 •GUTIERREZ J OO +9

X AVENUE R-8 E

37407 •LOECHEL Daniel E 805-944-5515

* 0 BUS 3 RES 1 NEW

113TH E 93543
LITTLEROCK

WEALTH CODE 5 0

33957 MYERS Gerald L 805-944-1306

* 0 BUS 1 RES 0 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

110th Street W 1995

48050	KOENIG Gerald	945-1692	+5
48761	XXXX	00	
48763	XXXX	00	
50660	XXXX	00	
50663	XXXX	00	
50665	RICHARDS J S	942-2796	4
	• RICHARDS William	00	+5
51199	XXXX	00	
51203	HOKE Louise	949-6615	
	HOKE Robt	949-6615	
	* 0 BUS 10 RES	2 NEW	

111TH E 93543 LITTLEROCK

WEALTH CODE 5.0

37547	HAMSON David E	944-3019	0
	* 0 BUS 1 RES	0 NEW	

112TH E 93543 LITTLEROCK

WEALTH CODE 5.0

37244	• HOLLAND Michael E	944-2041	7
37305	• STARK Donald	00	+5

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

110th Street W 1991

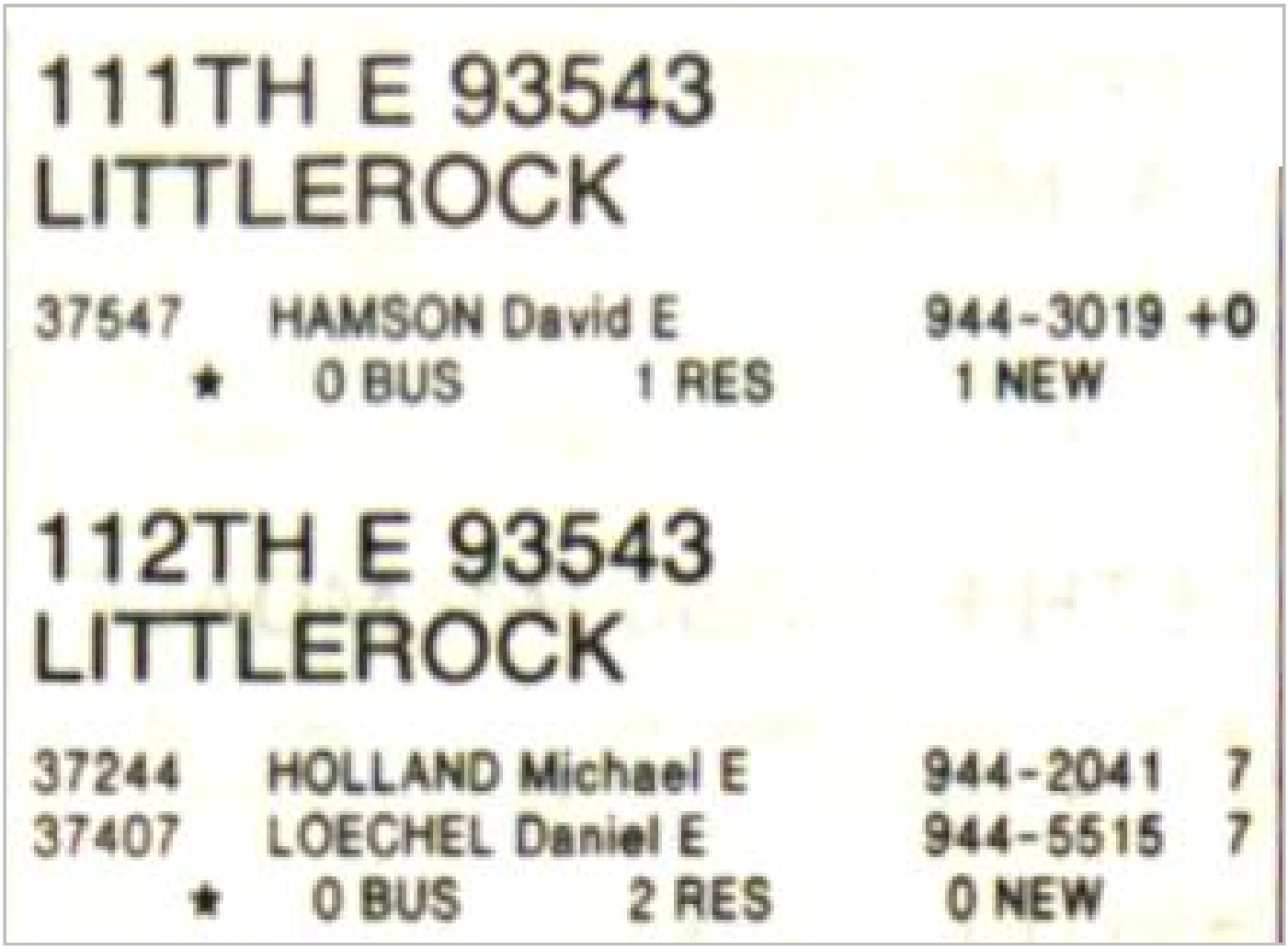
37844	GENTRY Artie Lee	944-2785	
37961	EASTER Troy	944-3566	6
	* 0 BUS 13 RES	2 NEW	

110TH W 93536
LANCASTER

48763	ASUNCION Delfin	949-8526	+0
	SANTIAGO Gregorio	945-3342	+0
	SANTIAGO Lenora	945-3342	+0
50660	RICHARDS J S	942-2796	
50663	XXXX	00	
51199	XXXX	00	
51203	HOKE Louise	949-6615	
	HOKE Robt	949-6615	8
	* 0 BUS 8 RES	3 NEW	

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

110th Street W 1991



111TH E 93543
LITTLEROCK

37547 HAMSON David E 944-3019 +0
★ 0 BUS 1 RES 1 NEW

112TH E 93543
LITTLEROCK

37244 HOLLAND Michael E 944-2041 7
37407 LOECHEL Daniel E 944-5515 7
★ 0 BUS 2 RES 0 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

110th Street W 1985

110TH W 93534
LANCASTER

48050	B C H S CORP	942-9994	+5
50660	RICHARDS J S	942-2796	
50663	XXXX	00	
51199	XXXX	00	
51201	CARRILLO HIPOLITO	942-2452	+5
51201½	GONZALEZ HORTENCIA	942-0331	0
51203	MEYRI LYNDE	948-7037	2
*	1 BUS 6 RES	2 NEW	

113TH E 93543
LITTLEROCK

29962	WALKER F JACK	944-1053	
30119	LOMBARDI JAS G	944-2377	
*	0 BUS 2 RES	0 NEW	

113TH E 93553
PEARBLOSSOM

33957	MYERS GERALD L	944-1306	
*	0 BUS 1 RES	0 NEW	

115TH E 93543
LITTLEROCK

35754	DAVIS WM E SR	944-4046	0
37562	BROWN PAUL JR	944-4536	1

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

110th Street W 1980

110TH W 93534
LANCASTER

48050	ROLOF CHET	948-5888	+0
50660	RICHARDS J S	942-2796	
50663	RICHARDS W J	942-7053	
51199	XXXX	00	
51201	CARRILLO HIPOLITO	942-2452	9
51201½	GONZALEZ HORTENCIA	942-0331	+0
51203	LONG ESTELLA M	948-6590	
	LONG REX D	948-6590	

* 0 BUS 8 RES 2 NEW

113TH E 93543
LITTLEROCK

29962	WALKER F JACK	944-1053	3
30119	LOMBARDI J G	944-2377	

* 0 BUS 2 RES 0 NEW

113TH E 93553
PEARBLOSSOM

33957	MYERS GERALD L	944-1306

* 0 BUS 1 RES 0 NEW

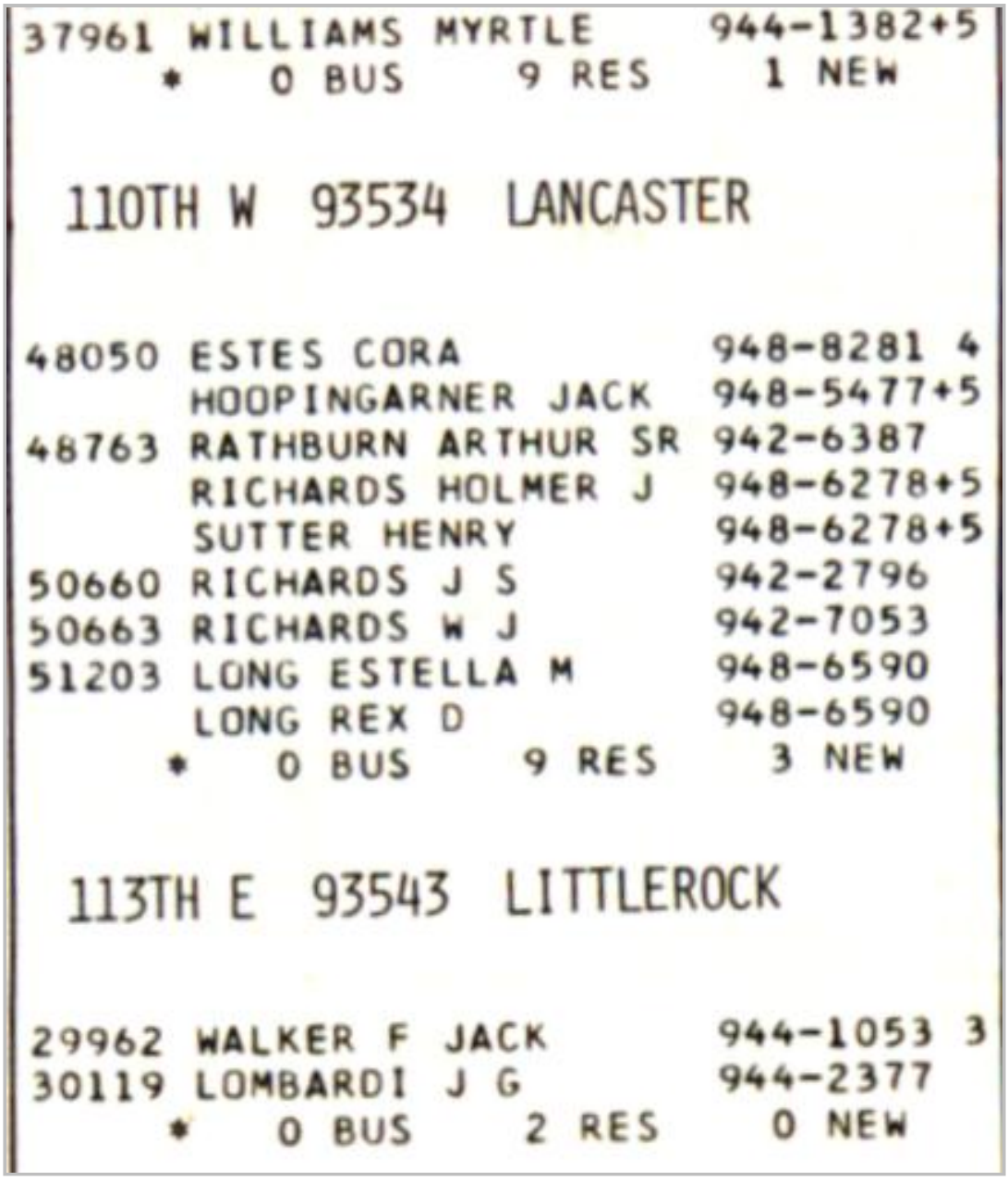
115TH E 93543
LITTLEROCK

35754	DAVIS WM E SR	944-4046	+0

* 0 BUS 1 RES 1 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

110th Street W 1975



37961 WILLIAMS MYRTLE 944-1382+5
* 0 BUS 9 RES 1 NEW

110TH W 93534 LANCASTER

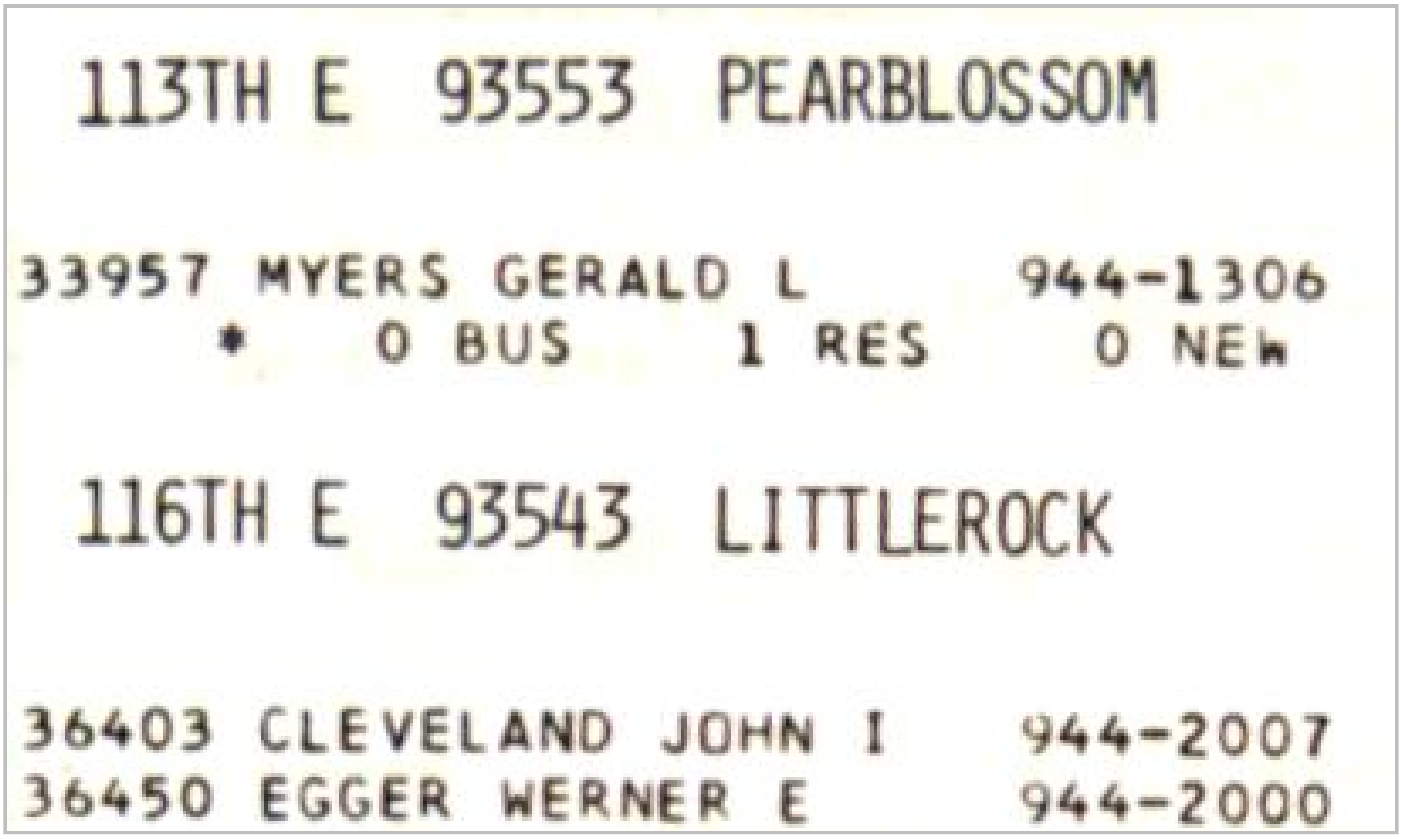
48050 ESTES CORA 948-8281 4
HOOPINGARNER JACK 948-5477+5
48763 RATHBURN ARTHUR SR 942-6387
RICHARDS HOLMER J 948-6278+5
SUTTER HENRY 948-6278+5
50660 RICHARDS J S 942-2796
50663 RICHARDS W J 942-7053
51203 LONG ESTELLA M 948-6590
LONG REX D 948-6590
* 0 BUS 9 RES 3 NEW

113TH E 93543 LITTLEROCK

29962 WALKER F JACK 944-1053 3
30119 LOMBARDI J G 944-2377
* 0 BUS 2 RES 0 NEW

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

110th Street W 1975



113TH E 93553 PEARBLOSSOM

33957 MYERS GERALD L 944-1306
* 0 BUS 1 RES 0 NEW

116TH E 93543 LITTLEROCK

36403 CLEVELAND JOHN I 944-2007
36450 EGGER WERNER E 944-2000

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

W Avenue B 1999

3653	GREGORY Jas H	805-942-5892	4
4360	***SAINT RAPHAEL PRESS**	**805-942-7432**	**7**
	***SAN RAFAEL PRESS**	**805-945-0657**	**5**
4725	NERVEZA Alfredo	805-723-0949	6
5345	JAMES M A	805-948-2863	
7740	•BRIGGS Joel	805-940-1050	5
9627	•HAFSTROM Carl H	805-942-1878	
10455	•HARTSHORN W W	805-942-0664	
14526	BALDERAMA Emilio	805-724-1193	8
	RITTER Pete	805-724-1069	
25737	•JARVIS Geo	805-724-0006	1
25740	SHERRY Ty	805-724-2431	
25914	XXXX	OO	

* 2 BUS 12 RES 0 NEW

AVENUE B 2 WEST 93536 LANCASTER

NO LISTINGS

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

W Avenue B 1995

3653	GREGORY Jas H	942-5892	4
4360	• ELLIS Richard	00	+5
	*SAN RAFAEL PRESS	945-0657	+5
	*ST RAPHAEL PRESS	942-7432	4
4725	NERVEZA Pepito	723-0362	+5
5345	JAMES M A	948-2863	
7740	• BRIGGS Joel	940-1050	+5
9627	• HAFSTROM Carl H	942-1878	6
10455	HARTSHORN W W	942-0664	
14526	RITTER Pete	724-1069	
25204	• HERNANDEZ Maria	00	+5
25316	• MAJICH Anthony	00	+5
25340	• FUJIWARA Jerry	00	+5
25737	• JARVIS Geo	724-0006	1
25740	• SHERRY Ty	724-2431	9

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

W Avenue B 1991

2658	GROVER Connie	723-6814	
	GROVER Willard	723-6814	9
2858	YOUNG J M	942-7900	
3653	GREGORY Jas H	942-5892	
4360	***SAINT RAPHAEL PRESS**	**942-7432**	2
5345	JAMES M A	948-2863	

ZIP CODE 93536

9627	HAFSTROM Carl H	942-1878	6
10455	HARTSHORN W W	942-0664	
14526	GUTIERREZ Remigio	724-2078	8
	RITTER Pete	724-1069	1
25340	***HALEY BOB AUTO RPR**	**724-1875**	7
25649	XXXX	00	
25740	SHERRY Ty	724-2431	9

* 2 BUS 11 RES 0 NEW

AVENUE B 2 WEST 93536 LANCASTER

25459	DEHARROLD Robt	724-3054	+0

* 0 BUS 1 RES 1 NEW

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

W Avenue B 1985

AVENUE B WEST 93534
LANCASTER

2858	YOUNG J M	942-7900	
3653	GREGORY JAS H	942-5892	
4360	**SAINT RAPHAEL PRESS**	**942-7432**	2
5251	SARGEANT DANL	945-0634	+5
5345	JAMES M A	948-2863	
10455	HARTSHORN W W	942-0664	
14526	GUTIERREZ LETICIA	724-1508	
	GUTIERREZ REMIGIO	724-1508	
	RITTER PETE	724-1069	1

* 1 BUS 8 RES 1 NEW

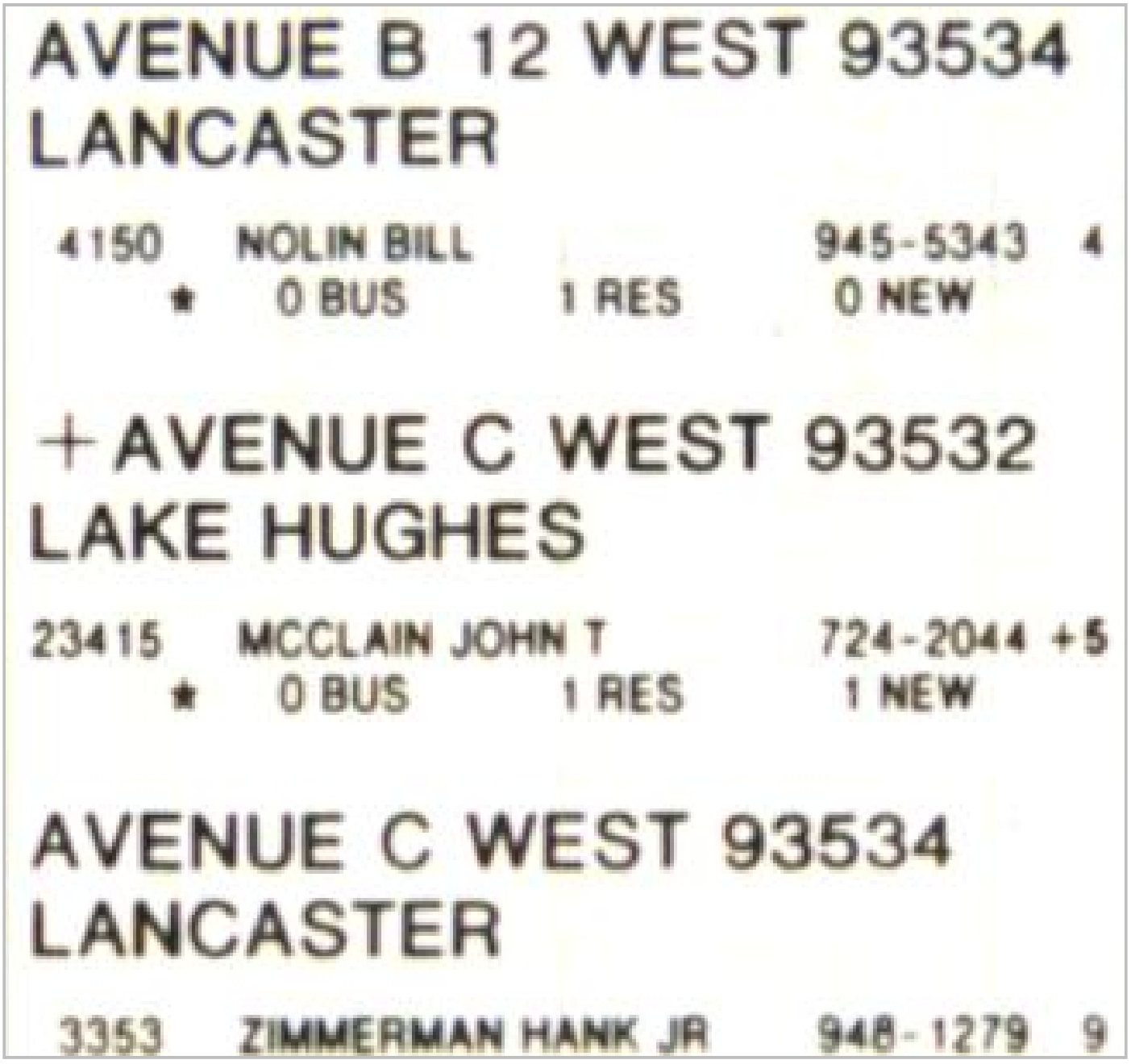
AVENUE B 8 WEST 93534
LANCASTER

18333	GOLDBERG STEVEN	724-2180	+5

* 0 BUS 1 RES 1 NEW

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

W Avenue B 1985



AVENUE B 12 WEST 93534
LANCASTER

4150 NOLIN BILL 945-5343 4
* 0 BUS 1 RES 0 NEW

+AVENUE C WEST 93532
LAKE HUGHES

23415 MCCLAIN JOHN T 724-2044 +5
* 0 BUS 1 RES 1 NEW

AVENUE C WEST 93534
LANCASTER

3353 ZIMMERMAN HANK JR 948-1279 9

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

W Avenue B 1980

2858	JOHNSON W M	942-8144	9
	YOUNG J M	942-7900	
3653	GREGORY JAS H	942-5892	
4360	BURNS MICHAEL	942-0388	+0
	ELLIS PAULA	942-7432	3

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

W Avenue B 1980

..AVENUE B WEST 93534 CONT..

	SAINT RAPHAEL PRESS	942-7432	7
5251	WILSON ORVAL	948-0317	8
5345	JAMES M A	948-2863	3
9627	HAFSTROM CARL H	942-1878	8
10455	HARTSHORN W W	942-0664	

★ 1 BUS 9 RES 1 NEW

AVENUE B 8 WEST 93534 LANCASTER

18333	WEBER DENNIS	724-4360	9

★ 0 BUS 1 RES 0 NEW

AVENUE C WEST 93534 LANCASTER

3353	ZIMMERMAN HANK JR	948-1279	9
10350	ANSOLABEHERE SAM	942-3604	

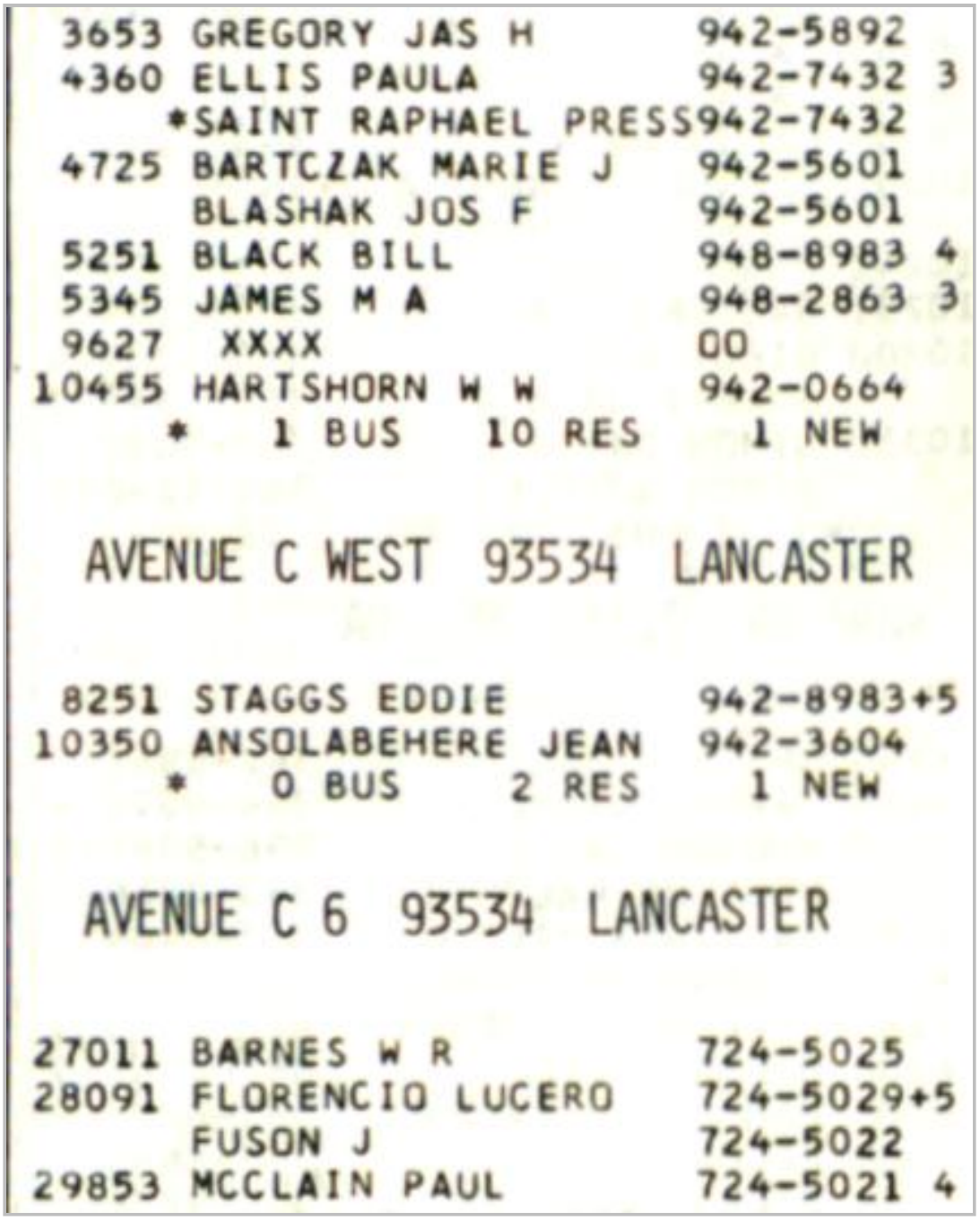
★ 0 BUS 2 RES 0 NEW

AVENUE C 6 93534 LANCASTER

27011	BARNES W R	724-5025	
28091	FUSON J	724-5022	
	MORGA VENACIO	724-4601	9

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

W Avenue B 1975



```
 3653 GREGORY JAS H          942-5892
 4360 ELLIS PAULA            942-7432 3
     *SAINT RAPHAEL PRESS    942-7432
 4725 BARTCZAK MARIE J       942-5601
      BLASHAK JOS F          942-5601
 5251 BLACK BILL             948-8983 4
 5345 JAMES M A              948-2863 3
 9627  XXXX                  OO
10455 HARTSHORN W W          942-0664
     *   1 BUS   10 RES    1 NEW

  AVENUE C WEST  93534  LANCASTER

 8251 STAGGS EDDIE           942-8983+5
10350 ANSOLABEHERE JEAN      942-3604
     *   0 BUS    2 RES    1 NEW

  AVENUE C 6  93534  LANCASTER

27011 BARNES W R             724-5025
28091 FLORENCIO LUCERO       724-5029+5
      FUSON J                724-5022
29853 MCCLAIN PAUL           724-5021 4
```

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APPENDIX B-6.2

PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH ENVIRONMENTAL DATA RESOURCES

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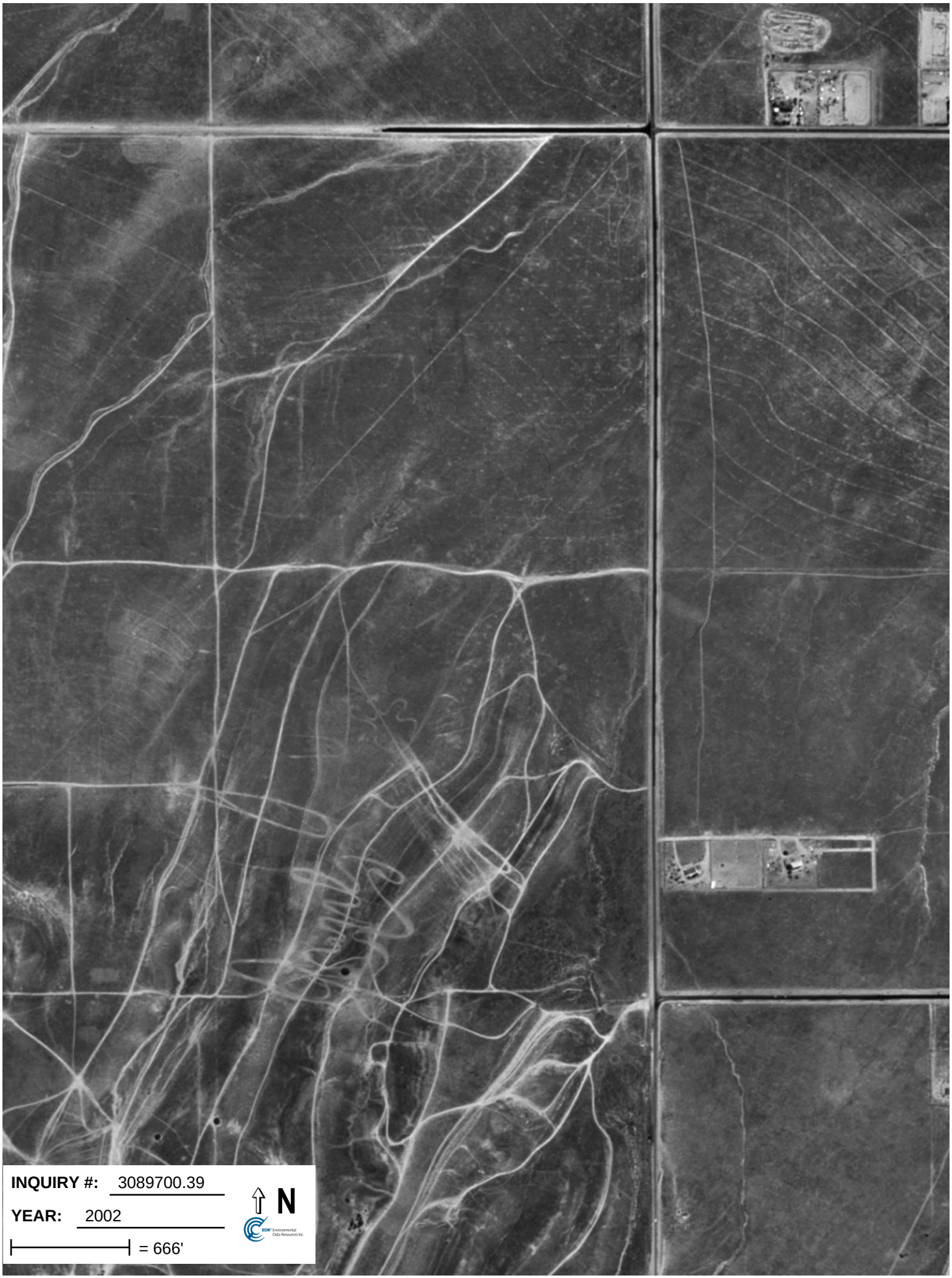
YEAR: 1989
= 666'
N

INQUIRY #: 3089700.39
YEAR: 1994
= 666'
N
EDR Environmental Data Resources Inc


INQUIRY #: 3089700.39
YEAR: 2002
= 666'
N
EDR Environmental Data Resources Inc

INQUIRY #: 3089700.39
YEAR: 2005
= 604'
N

Western Antelope Blue Sky Ranch
29
Lancaster, CA 93536

Inquiry Number: 3089700.39
June 08, 2011

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

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with any questions or comments.

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Date EDR Searched Historical Sources:

Aerial Photography June 08, 2011

Target Property:

29

Lancaster, CA 93536

Year	*Scale*	*Details*	*Source*
1948	Aerial Photograph. Scale: 1"=655'	Flight Year: 1948 Best Copy Available from original source	USGS
1954	Aerial Photograph. Scale: 1"=555'	Flight Year: 1954	Pacific Air
1968	Aerial Photograph. Scale: 1"=666'	Flight Year: 1968	Teledyne
1974	Aerial Photograph. Scale: 1"=500'	Flight Year: 1974	Nasa
1989	Aerial Photograph. Scale: 1"=666'	Flight Year: 1989	USGS
1994	Aerial Photograph. Scale: 1"=666'	Flight Year: 1994	USGS
2002	Aerial Photograph. Scale: 1"=666'	Flight Year: 2002	USGS
2005	Aerial Photograph. Scale: 1"=604'	Flight Year: 2005	EDR

INQUIRY #: 3089700.39
YEAR: 1948
= 655'
N

INQUIRY #: 3089700.39

YEAR: 1954

= 555'

N

EDR Environmental Data Resources Inc

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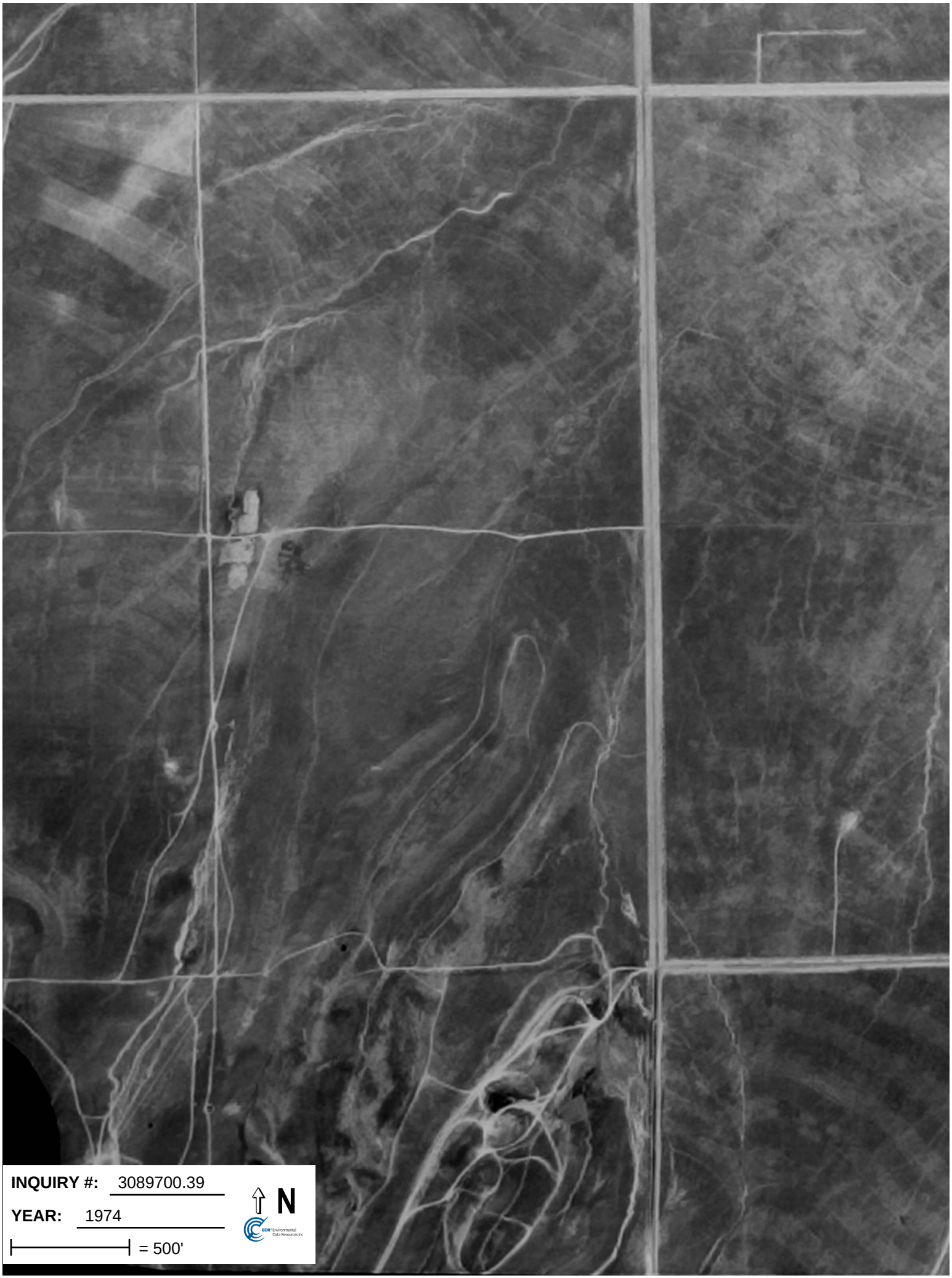
YEAR: 1968
= 666'
N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EDR Environmental Data Resources Inc

Western Antelope Blue Sky Ranch
29
Lancaster, CA 93536

Inquiry Number: 3089700.37s
June 08, 2011

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

29
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.678300 - 34° 40' 41.9''
Longitude (West):	118.328700 - 118° 19' 43.3''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	378274.7
UTM Y (Meters):	3837975.2
Elevation:	2638 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
SLIC ---------- Statewide SLIC Cases

INDIAN LUST ---- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ---- Active UST Facilities
AST ---- Aboveground Petroleum Storage Tank Facilities
INDIAN UST ---- Underground Storage Tanks on Indian Land
FEMA UST ---- Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP ---- Voluntary Cleanup Program Properties
INDIAN VCP ---- Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI ---- Open Dump Inventory
DEBRIS REGION 9 ---- Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT ---- Waste Management Unit Database
SWRCY ---- Recycler Database
HAULERS ---- Registered Waste Tire Haulers Listing
INDIAN ODI ---- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ---- Clandestine Drug Labs
HIST Cal-Sites ---- Historical Calsites Database
SCH ---- School Property Evaluation Program
Toxic Pits ---- Toxic Pits Cleanup Act Sites
AOCONCERN ---- San Gabriel Valley Areas of Concern
CDL ---- Clandestine Drug Labs
US HIST CDL ---- National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST ---- Facility Inventory Database
HIST UST ---- Hazardous Substance Storage Container Database
SWEEPS UST ---- SWEEPS UST Listing

Local Land Records

LIENS 2 ---- CERCLA Lien Information
LUCIS ---- Land Use Control Information System
LIENS ---- Environmental Liens Listing
DEED ---- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System

CHMIRS California Hazardous Material Incident Report System
LDS Land Disposal Sites Listing
MCS Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen RCRA - Non Generators
DOT OPS Incident and Accident Data
DOD Department of Defense Sites
FUDS Formerly Used Defense Sites
CONSENT Superfund (CERCLA) Consent Decrees
ROD Records Of Decision
UMTRA Uranium Mill Tailings Sites
MINES Mines Master Index File
TRIS Toxic Chemical Release Inventory System
TSCA Toxic Substances Control Act
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
SSTS Section 7 Tracking Systems
ICIS Integrated Compliance Information System
PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database
FINDS Facility Index System/Facility Registry System
RAATS RCRA Administrative Action Tracking System
CA BOND EXP. PLAN Bond Expenditure Plan
NPDES NPDES Permits Listing
WDS Waste Discharge System
Cortese "Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE Hazardous Waste & Substance Site List
Notify 65 Proposition 65 Records
LA Co. Site Mitigation Site Mitigation List
DRYCLEANERS Cleaner Facilities
WIP Well Investigation Program Case List
LOS ANGELES CO. HMS HMS: Street Number List
HAZNET Facility and Manifest Data
EMI Emissions Inventory Data
INDIAN RESERV Indian Reservations
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
FINANCIAL ASSURANCE Financial Assurance Information Listing
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
PROC Certified Processors Database
MWMP Medical Waste Management Program Listing
COAL ASH DOE Sleam-Electric Plan Operation Data

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Historical Auto Stations EDR Proprietary Historic Gas Stations
EDR Historical Cleaners EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

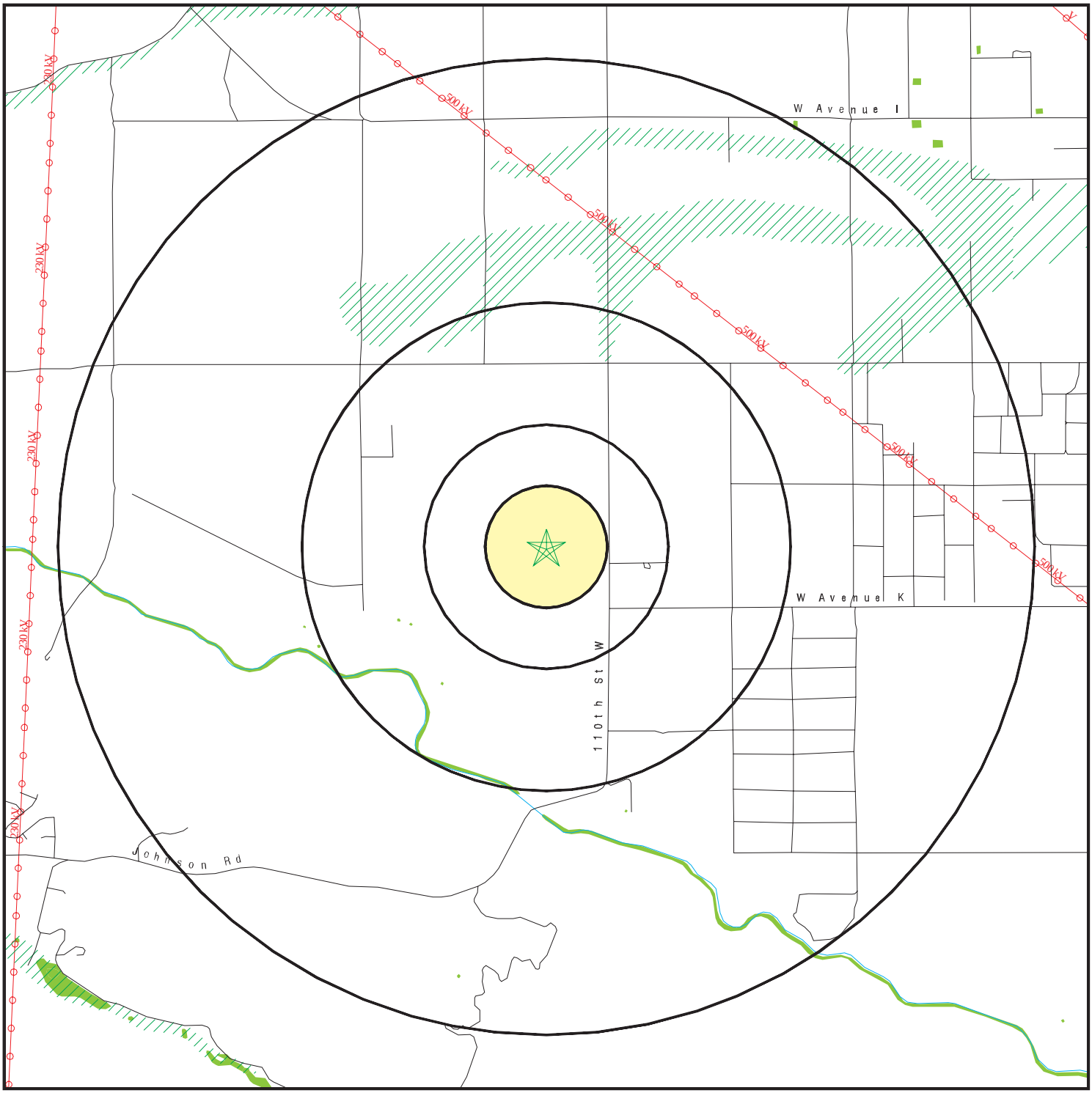
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 20 records.

Site Name	Database(s)
AVE E ETAL	NPDES
TEHACHAPI RENEWABLE TRANSMISSION P	HAZNET,NPDES
ACTON FEEDER RELOCATION PROJECT	NPDES
CAL MAT	SWEEPS UST
RETLAW WEST RANCH	FID,SWEEPS UST
28.15 MI.MARKER ON ANGELES CRE	CDL
5 MI NW OF HWY 138 & 300TH ST	AST
OSO PUMPING PLANT	HAZNET
ILLEGAL DRUG LAB/OPERATOR UNKNOWN	HAZNET
LOS ANGELES COUNTY DEPT OF PUBLIC	HAZNET
CNTY LOS ANGELES/RD 551	HAZNET
PACIFIC BELL	RCRA-SQG,FINDS
MANHOLE #11 BLUE FLAX ST	ERNS
SOARING VISTA RANCH COMPOSTING	WDS
PROPOSED HIGH SCHOOL NO. 9	SCH,ENVIROSTOR
ANTELOPE VALLEY AGGREGATE, INC.	MINES
3995 AVENUE H W	CDL
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
CASTA DWR- CHECK SITE 59	EMI

OVERVIEW MAP - 3089700.37s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Western Antelope Blue Sky Ranch ADDRESS: 29 Lancaster CA 93536 LAT/LONG: 34.6783 / 118.3287	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089700.37s DATE: June 08, 2011 12:46 pm

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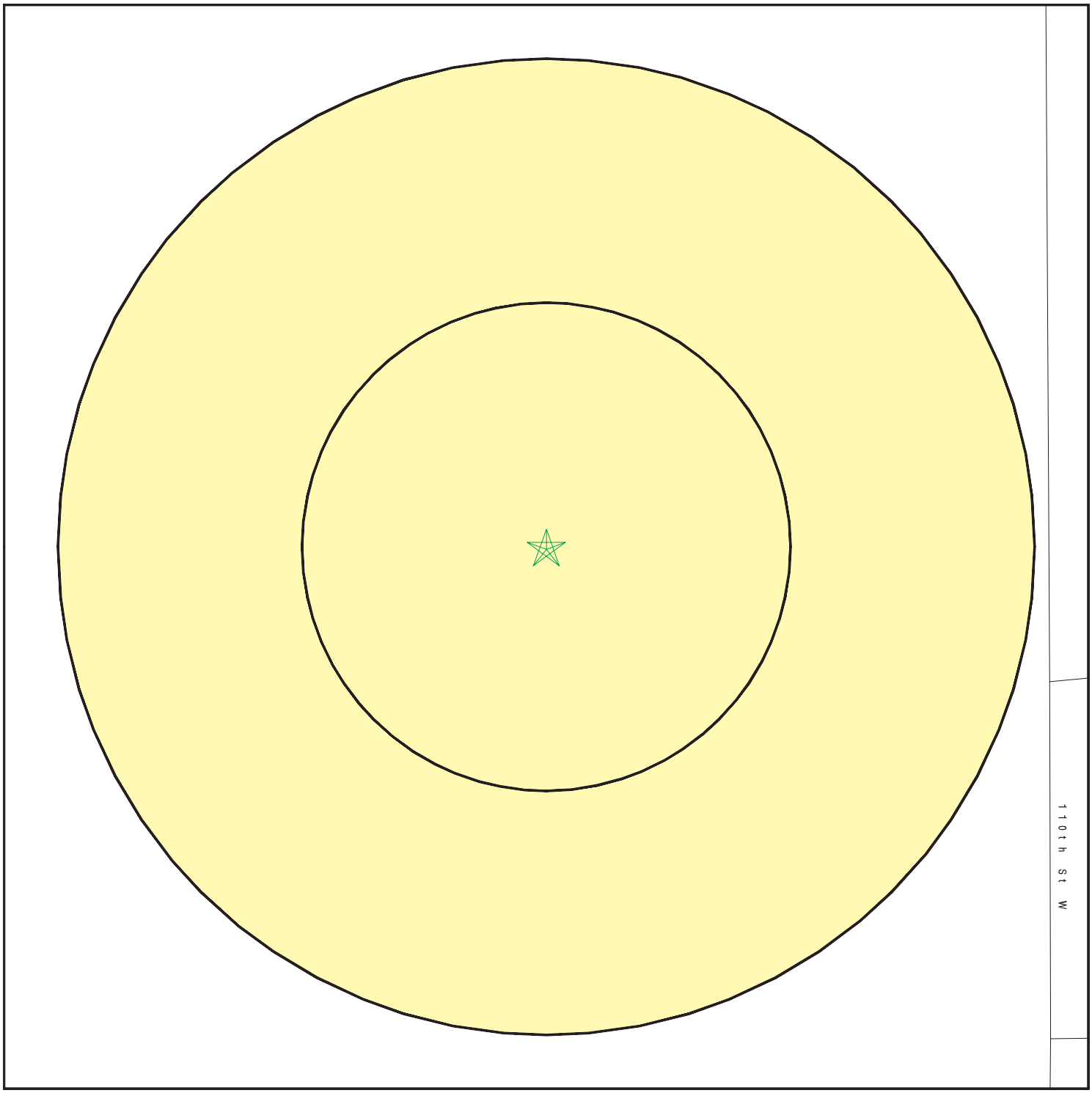
DETAIL MAP - 3089700.37s



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Western Antelope Blue Sky Ranch	CLIENT: Tetra Tech Inc.
ADDRESS: 29 Lancaster CA 93536	CONTACT: Garret Bean
LAT/LONG: 34.6783 / 118.3287	INQUIRY #: 3089700.37s DATE: June 08, 2011 12:47 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.250	0	0	0	0	0	0
Proposed NPL		1.250	0	0	0	0	0	0
NPL LIENS		0.250	0	0	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.250	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		0.750	0	0	0	0	NR	0
FEDERAL FACILITY		1.250	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.750	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.250	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.750	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.500	0	0	0	NR	NR	0
RCRA-SQG		0.500	0	0	0	NR	NR	0
RCRA-CESQG		0.500	0	0	0	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.750	0	0	0	0	NR	0
US INST CONTROL		0.750	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.250	0	0	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.250	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.250	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.750	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		0.750	0	0	0	0	NR	0
SLIC		0.750	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST		0.750	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.500	0	0	0	NR	NR	0
AST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.500	0	0	0	NR	NR	0
FEMA UST		0.500	0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.750	0	0	0	0	NR	0
INDIAN VCP		0.750	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.750	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		0.750	0	0	0	0	NR	0
DEBRIS REGION 9		0.750	0	0	0	0	NR	0
WMUDS/SWAT		0.750	0	0	0	0	NR	0
SWRCY		0.750	0	0	0	0	NR	0
HAULERS		0.250	0	0	NR	NR	NR	0
INDIAN ODI		0.750	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.250	0	0	NR	NR	NR	0
HIST Cal-Sites		1.250	0	0	0	0	0	0
SCH		0.500	0	0	0	NR	NR	0
Toxic Pits		1.250	0	0	0	0	0	0
AOCONCERN		1.250	0	0	0	0	0	0
CDL		0.250	0	0	NR	NR	NR	0
US HIST CDL		0.250	0	0	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.500	0	0	0	NR	NR	0
HIST UST		0.500	0	0	0	NR	NR	0
SWEEPS UST		0.500	0	0	0	NR	NR	0
Local Land Records								
LIENS 2		0.250	0	0	NR	NR	NR	0
LUCIS		0.750	0	0	0	0	NR	0
LIENS		0.250	0	0	NR	NR	NR	0
DEED		0.750	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.250	0	0	NR	NR	NR	0
CHMIRS		0.250	0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS		0.250	0	0	NR	NR	NR	0
MCS		0.250	0	0	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.500	0	0	0	NR	NR	0
DOT OPS		0.250	0	0	NR	NR	NR	0
DOD		1.250	0	0	0	0	0	0
FUDS		1.250	0	0	0	0	0	0
CONSENT		1.250	0	0	0	0	0	0
ROD		1.250	0	0	0	0	0	0
UMTRA		0.750	0	0	0	0	NR	0
MINES		0.500	0	0	0	NR	NR	0
TRIS		0.250	0	0	NR	NR	NR	0
TSCA		0.250	0	0	NR	NR	NR	0
FTTS		0.250	0	0	NR	NR	NR	0
HIST FTTS		0.250	0	0	NR	NR	NR	0
SSTS		0.250	0	0	NR	NR	NR	0
ICIS		0.250	0	0	NR	NR	NR	0
PADS		0.250	0	0	NR	NR	NR	0
MLTS		0.250	0	0	NR	NR	NR	0
RADINFO		0.250	0	0	NR	NR	NR	0
FINDS		0.250	0	0	NR	NR	NR	0
RAATS		0.250	0	0	NR	NR	NR	0
CA BOND EXP. PLAN		1.250	0	0	0	0	0	0
NPDES		0.250	0	0	NR	NR	NR	0
WDS		0.250	0	0	NR	NR	NR	0
Cortese		0.750	0	0	0	0	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.250	0	0	0	0	0	0
LA Co. Site Mitigation		0.250	0	0	NR	NR	NR	0
DRYCLEANERS		0.500	0	0	0	NR	NR	0
WIP		0.500	0	0	0	NR	NR	0
LOS ANGELES CO. HMS		0.250	0	0	NR	NR	NR	0
HAZNET		0.250	0	0	NR	NR	NR	0
EMI		0.250	0	0	NR	NR	NR	0
INDIAN RESERV		1.250	0	0	0	0	0	0
SCRD DRYCLEANERS		0.750	0	0	0	0	NR	0
FINANCIAL ASSURANCE		0.250	0	0	NR	NR	NR	0
HWP		1.250	0	0	0	0	0	0
HWT		0.500	0	0	0	NR	NR	0
COAL ASH EPA		0.750	0	0	0	0	NR	0
PCB TRANSFORMER		0.250	0	0	NR	NR	NR	0
PROC		0.750	0	0	0	0	NR	0
MWMP		0.500	0	0	0	NR	NR	0
COAL ASH DOE		0.250	0	0	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.250	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.500	0	0	0	NR	NR	0
EDR Historical Cleaners		0.500	0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID Direction Distance Elevation	Site	MAP FINDINGS Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 20 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
SANDBERG	1000250314	PACIFIC BELL	HWY 138 QUAIL LAKE 3 MILES NOR	93532	RCRA-SQG,FINDS
LANCASTER	1012055833	3995 AVENUE H W	3995 AVENUE H W		CDL
QUARTZ HILL	90188846	MANHOLE #11 BLUE FLAX ST	MANHOLE #11 BLUE FLAX ST	93536	ERNS
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
	M300003094	ANTELOPE VALLEY AGGREGATE, INC.	LITTLE ROCK PIT		MINES
LANCASTER	S101620943	RETLAW WEST RANCH	44040 E N 110TH ST		FID,SWEEPS UST
PALMDALE	S103678194	ILLEGAL DRUG LAB/OPERATOR UNKNOWN	AVENUE T, 175TH ST EAST	93536	HAZNET
QUARTZ HILL	S103957875	CNTY LOS ANGELES/RD 551	4859 W AVE L-12	93534	HAZNET
QUARTZ HILL	S103975334	LOS ANGELES COUNTY DEPT OF PUBLIC	4859 W AVE L-12	93534	HAZNET
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 & 300TH ST	93536	HAZNET
LOS ANGELES	S104568573	TEHACHAPI RENEWABLE TRANSMISSION P	9634 W AVE J	93536	HAZNET,NPDES
LANCASTER	S104586626	SOARING VISTA RANCH COMPOSTING	AVE A 140 ST W.	0	WDS
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
	S107532211		28.15 MI.MARKER ON ANGELES CRE		CDL
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HW	93536	EMI
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HW	93536	EMI
PALMDALE	S107737080	PROPOSED HIGH SCHOOL NO. 9	PEARBLOSSOM HWY AND AVE 47TH	93551	SCH,ENVIROSTOR
LOS ANGELES	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES
LOS ANGELES	S110731627	ACTON FEEDER RELOCATION PROJECT	NEAR SIERRA HWY PEARBLOSSOM HW	93551	NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPAa??s Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/15/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 05/25/2010
Date Data Arrived at EDR: 06/02/2010
Date Made Active in Reports: 10/04/2010
Number of Days to Update: 124

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/07/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 11/04/2009
Date Data Arrived at EDR: 05/04/2010
Date Made Active in Reports: 07/07/2010
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 12/02/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 57

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/03/2011
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/01/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 12/29/2010
Date Data Arrived at EDR: 12/30/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 02/24/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 46

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/07/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 03/04/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 05/02/2011
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/18/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 51

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/21/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 30

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2011
Date Data Arrived at EDR: 02/11/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/15/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 10/29/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 5

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/21/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 99

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/02/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/08/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/17/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 94

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/07/2011
Date Data Arrived at EDR: 01/21/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/11/2011
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/04/2011
Number of Days to Update: 29

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/15/2010
Date Data Arrived at EDR: 09/16/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 13

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/07/2010
Date Made Active in Reports: 08/12/2010
Number of Days to Update: 36

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/01/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 02/28/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/04/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/09/2010
Date Data Arrived at EDR: 08/11/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 9
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 04/26/2011
Number of Days to Update: 41

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 33

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 03/29/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COLUSA COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 12/01/2010
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/06/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/31/2011
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/25/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2011
Date Data Arrived at EDR: 02/09/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 23
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/18/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/12/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 30
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/26/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 22
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 04/25/2011
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/20/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/07/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/15/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 16

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/17/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 31

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 20

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 11/16/2010
Date Made Active in Reports: 01/25/2011
Number of Days to Update: 70

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/21/2010
Next Scheduled EDR Contact: 03/28/2011
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/16/2011
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/30/2011
Date Data Arrived at EDR: 03/31/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 22
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/22/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 29
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 36
Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/14/2011
Date Data Arrived at EDR: 03/15/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 9
Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/25/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 25
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/07/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 35
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/07/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/08/2011
Number of Days to Update: 28

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 30

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 01/25/2011
Date Data Arrived at EDR: 02/03/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 29

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/26/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/22/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 05/12/2011
Date Made Active in Reports: 05/24/2011
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/12/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/06/2011
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/19/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 38

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/06/2010
Date Made Active in Reports: 07/26/2010
Number of Days to Update: 20

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

WESTERN ANTELOPE BLUE SKY RANCH
29
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.67830 - 34° 40' 41.9''
Longitude (West):	118.3287 - 118° 19' 43.3''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	378274.7
UTM Y (Meters):	3837975.2
Elevation:	2638 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

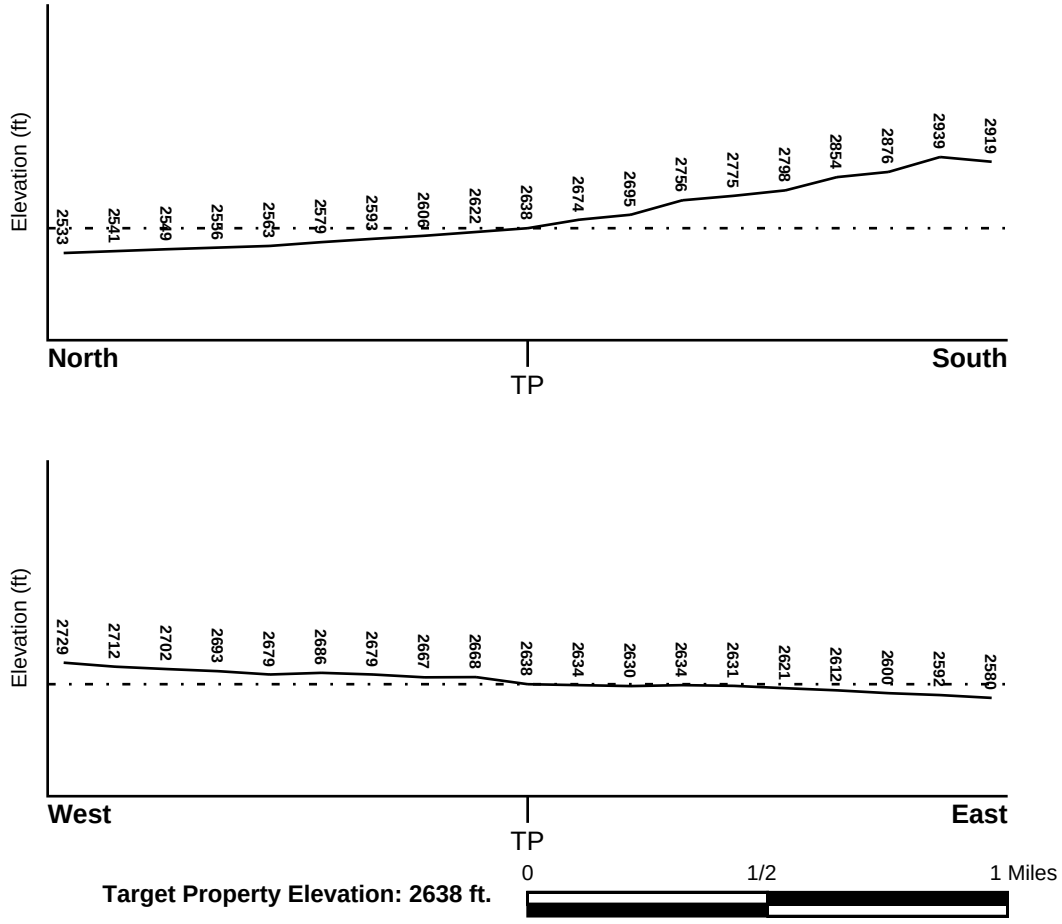
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NNE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
DEL SUR	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

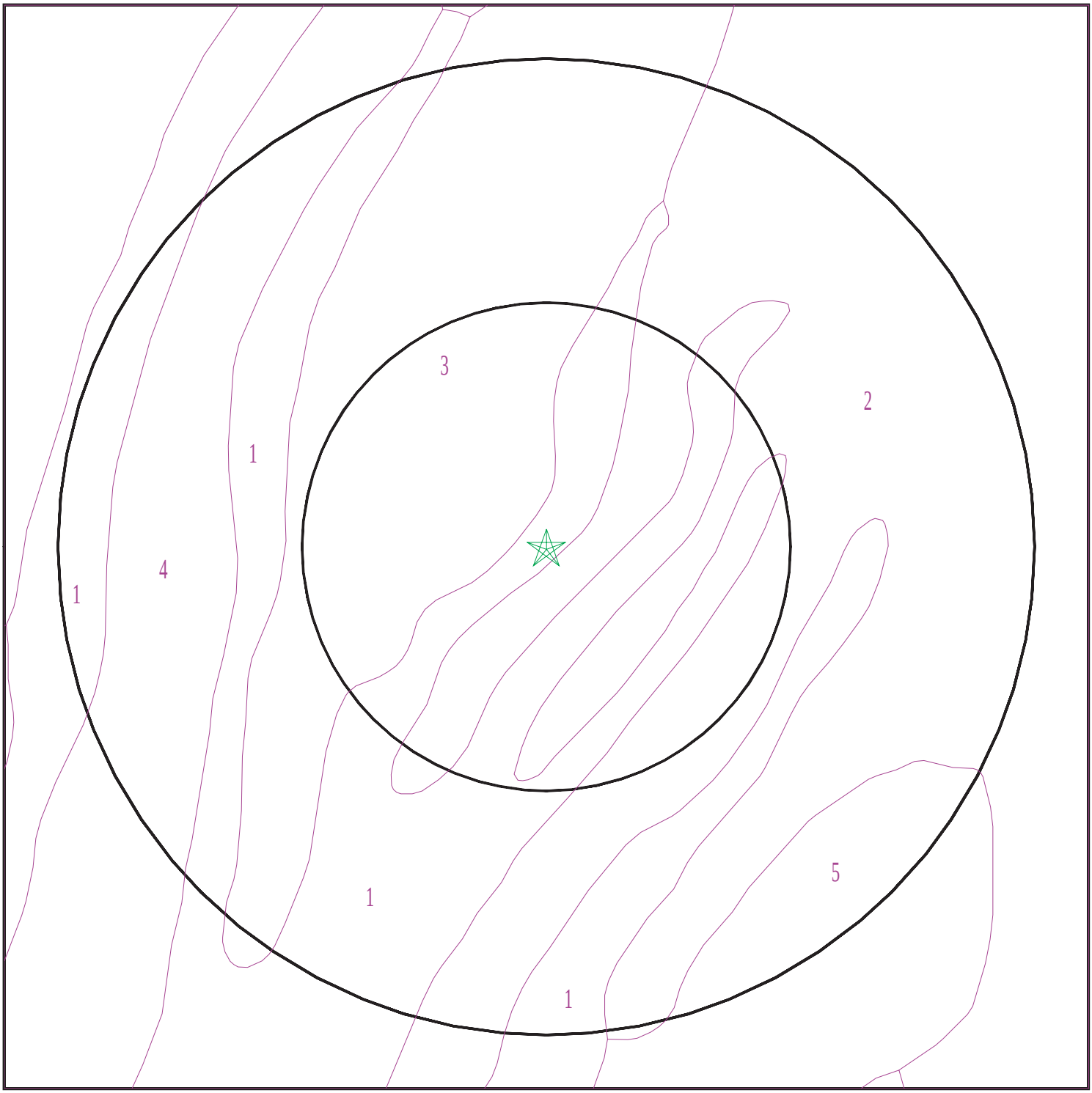
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3089700.37s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Western Antelope Blue Sky Ranch	CLIENT:	Tetra Tech Inc.
ADDRESS:	29 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.6783 / 118.3287	INQUIRY #:	3089700.37s
		DATE:	June 08, 2011 12:47 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Terrace escarpments

Soil Surface Texture: variable

Hydrologic Group: Not reported

Soil Drainage Class:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	59 inches	variable	Not reported	Not reported	Max: 0 Min: 0	Max: Min:

Soil Map ID: 2

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 3

Soil Component Name: Ramona

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
2	20 inches	31 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	31 inches	90 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1

Soil Map ID: 4

Soil Component Name: Hanford

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6
2	7 inches	38 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6
3	38 inches	70 inches	gravelly coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.6

Soil Map ID: 5

Soil Component Name: Ramona

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
2	20 inches	31 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	31 inches	90 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS3159654	1/4 - 1/2 Mile West
A2	USGS3159797	1/2 - 1 Mile WSW

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

No PWS System Found

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

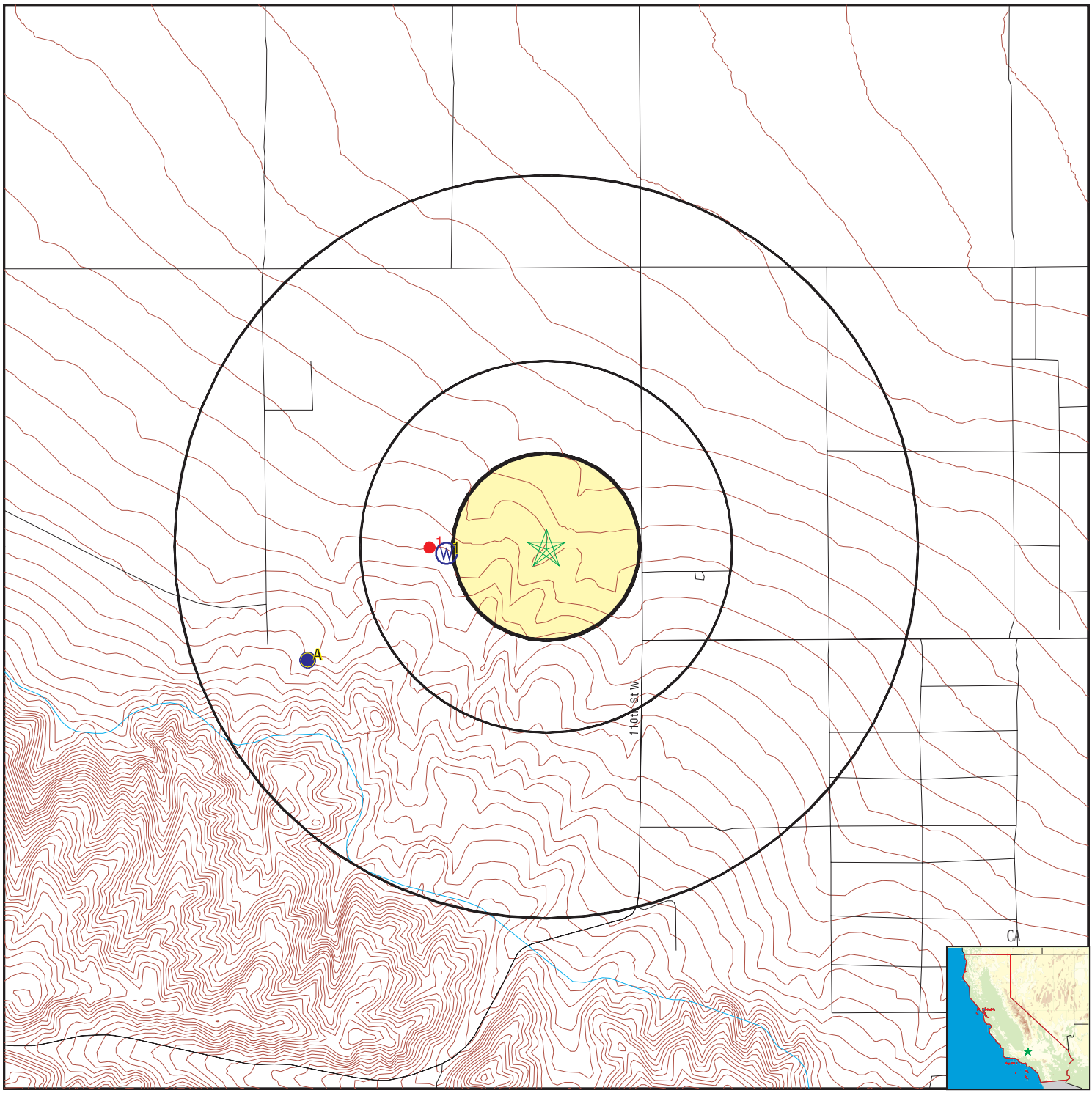
MAP ID	WELL ID	LOCATION FROM TP
A3	CADW40000013552	1/2 - 1 Mile WSW

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CAOG60000048128	1/4 - 1/2 Mile West

PHYSICAL SETTING SOURCE MAP - 3089700.37s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Western Antelope Blue Sky Ranch	CLIENT:	Tetra Tech Inc.
ADDRESS:	29 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.6783 / 118.3287	INQUIRY #:	3089700.37s
		DATE:	June 08, 2011 12:47 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
West
1/4 - 1/2 Mile
Higher | **FED USGS** | **USGS3159654**

Agency cd:	USGS	Site no:	344041118195701
Site name:	007N014W23P001S		
Latitude:	344041	EDR Site id:	USGS3159654
Longitude:	1181957	Dec lat:	34.6780407
Dec lon:	-118.33341188	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2690.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19510412
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	3153	Hole depth:	3153
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

A2
WSW
1/2 - 1 Mile
Higher | **FED USGS** | **USGS3159797**

Agency cd:	USGS	Site no:	344026118201901
Site name:	007N014W26D001S		
Latitude:	344026	EDR Site id:	USGS3159797
Longitude:	1182019	Dec lat:	34.6738742
Dec lon:	-118.3395232	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2760.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	2.9	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1962-05-01	Ground water data end date:	1962-05-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1962-05-01	1.65	

A3
WSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000013552**

Longitude:	-118.3395
Latiude:	34.6739
Stwellno:	07N14W26D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013552

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

1
West
1/4 - 1/2 Mile

OIL_GAS **CAOG60000048128**

Apinumber:	03705294	Operator:	C. W. Colgrove
Lease:	Schwandt	Well no:	57-23
Field:	LOS ANGELES COUNTY	Caog m2 area:	Not Reported
Map:	W1-1	Status cod:	006
Source:	hud		
Latitude27:	34.678283		
Longitude2:	-118.333303		
Latitude83:	34.678268		
Longitude8:	-118.334215		
Td:	3132		
Sec:	23		
Twn:	7N	Rge:	14W
Bm:	SB		
X coord:	0		
Y coord:	0		
Zone:	Not Reported	Spuddate:	12/12/1968
Abanddate:	12/30/1899	Comments 1:	Not Reported
District:	1	Site id:	CAOG60000048128

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Western Antelope Blue Sky Ranch
29
Lancaster, CA 93536

Inquiry Number: 3089700.38
June 08, 2011

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
Western Antelope Blue Sky
29
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089700.38

Contact: Garret Bean

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Tetra Tech Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Western Antelope Blue Sky Ranch
Address: 29
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 7
Certification # C3BC-425C-978B

Sanborn® Library search results
Certification # C3BC-425C-978B

UNMAPPED PROPERTY

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The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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APPENDIX B-6.3

PROJECT 3 AMERICAN SOLAR GREENWORKS ENVIRONMENTAL DATA RESOURCES

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American Solar Greenworks
6
Lancaster, CA 93536

Inquiry Number: 3089735.116
June 08, 2011

EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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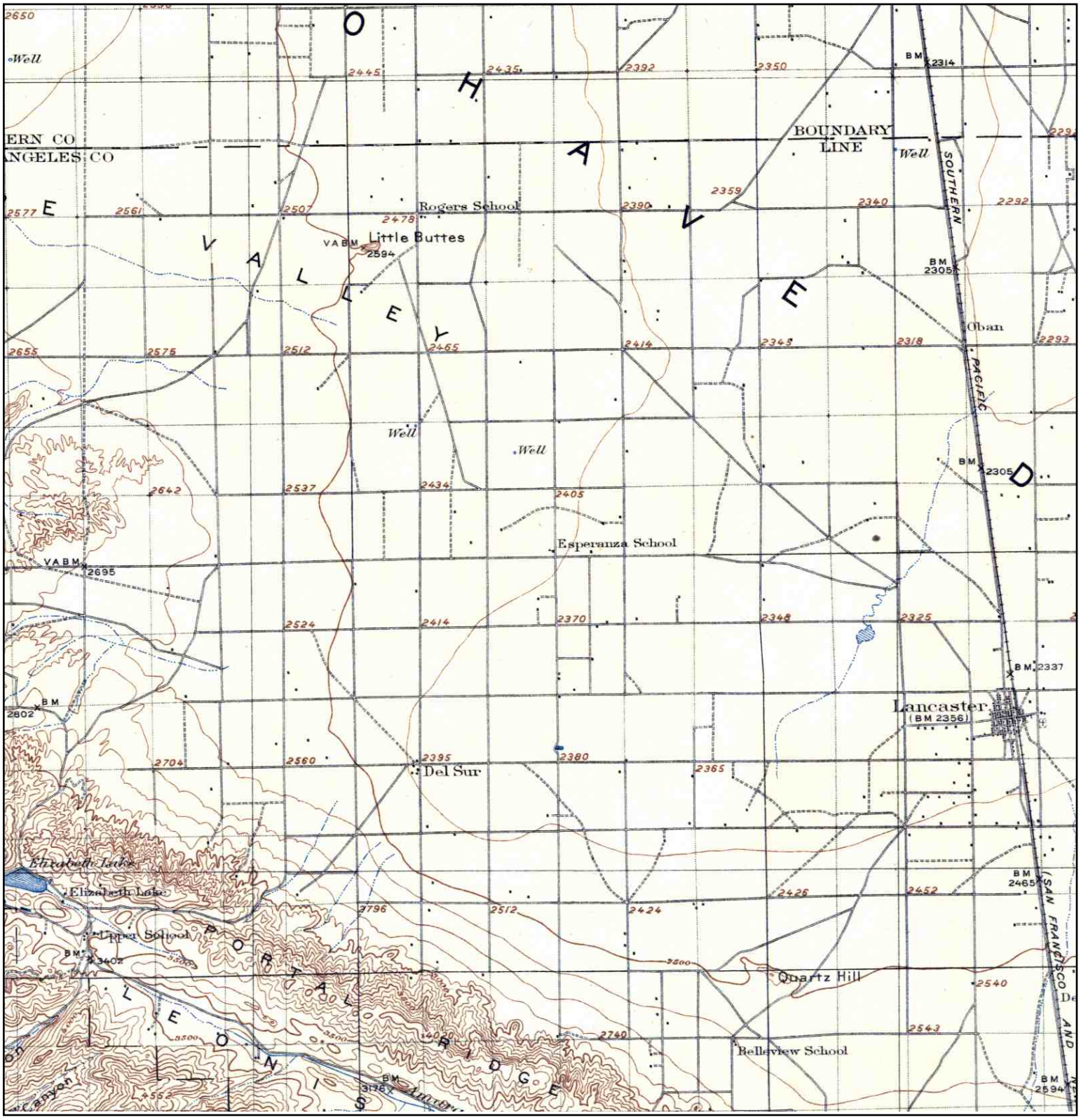
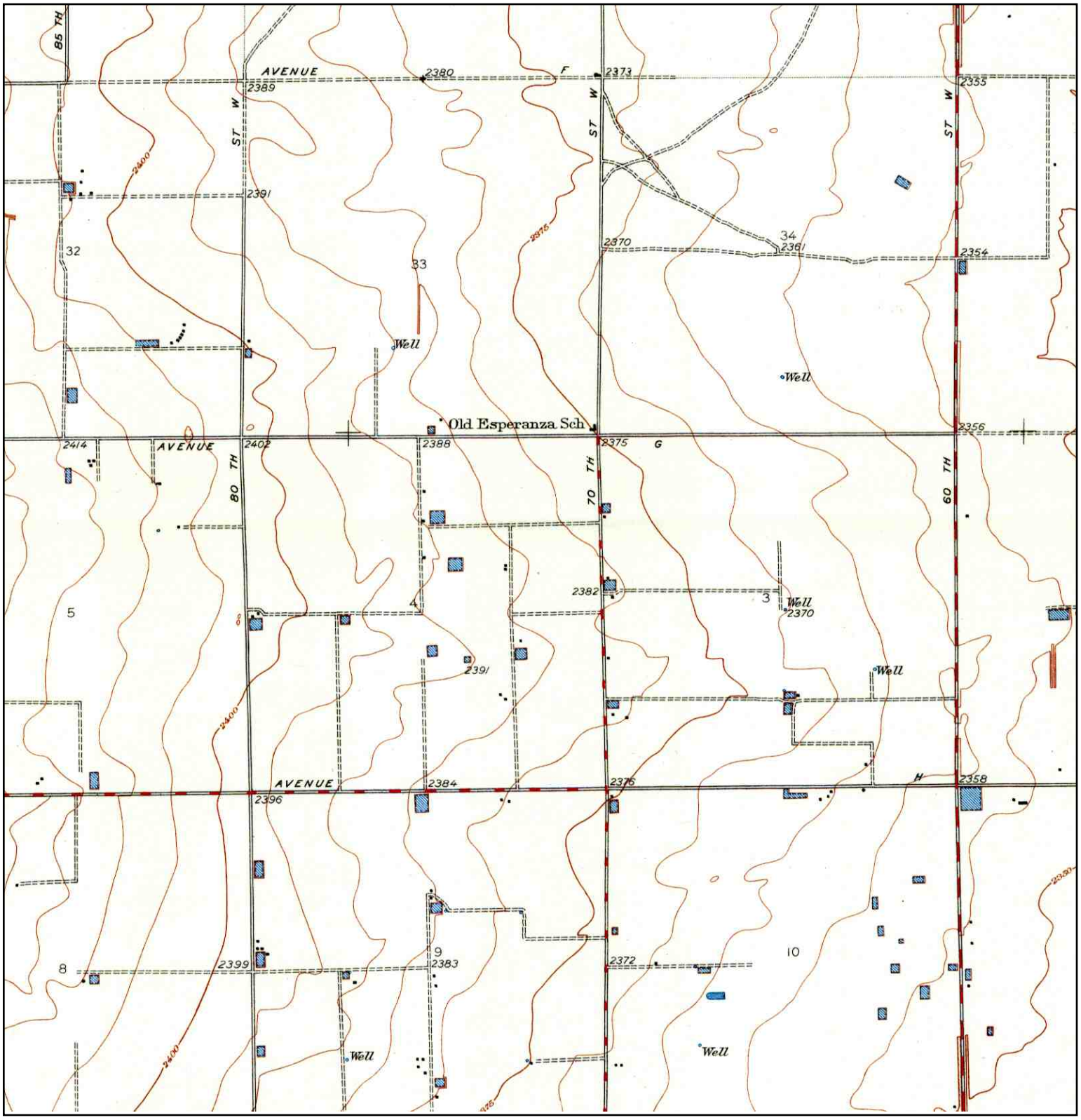
Historical Topographic Map



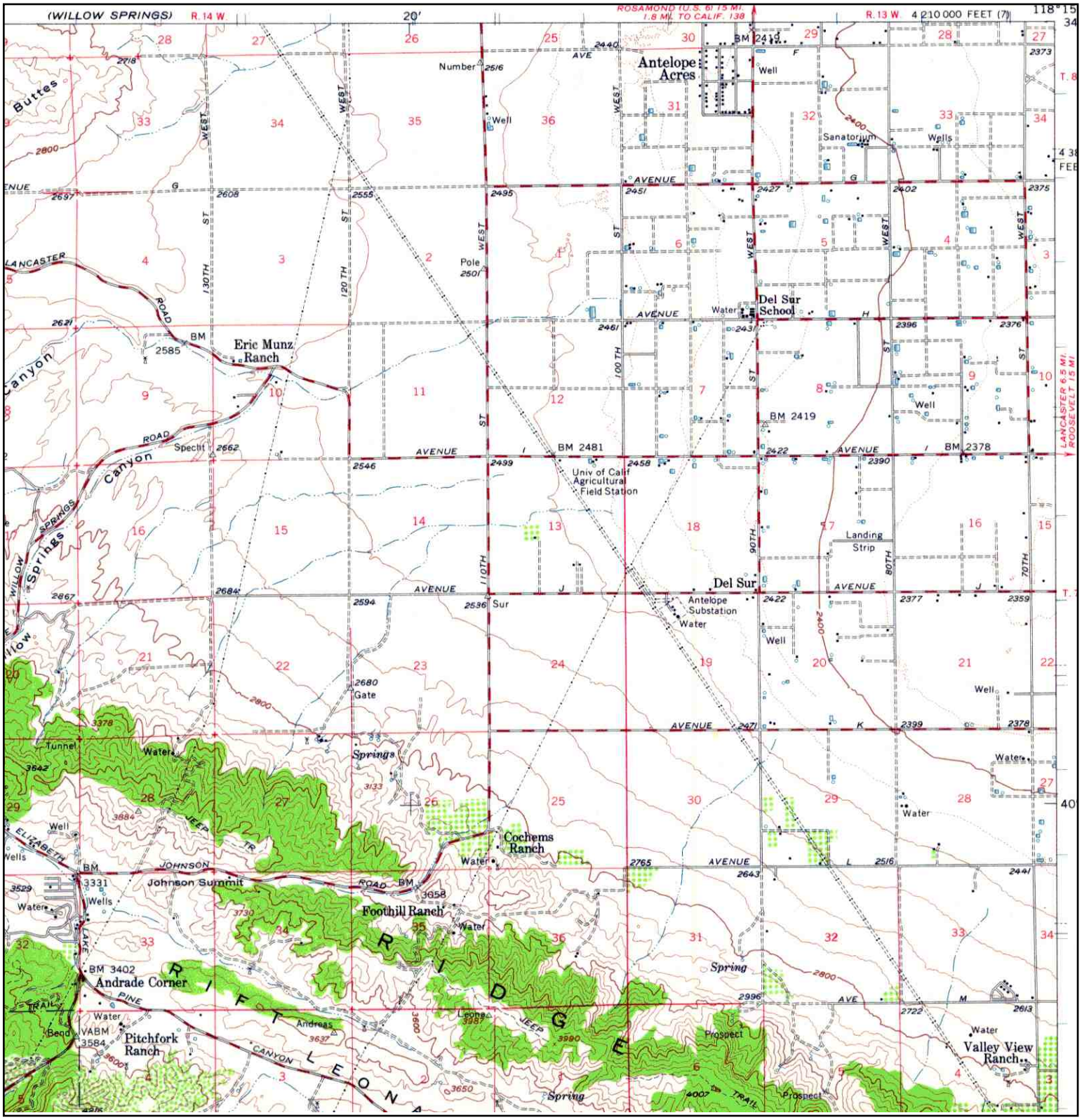
N	TARGET QUAD NAME: ELIZABETH LAKE MAP YEAR: 1917 SERIES: 30 SCALE: 1:125000	SITE NAME: American Solar Greenworks ADDRESS: 6 Lancaster, CA 93536 LAT/LONG: 34.7311 / -118.2571	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.116 RESEARCH DATE: 06/08/2011

Historical Topographic Map



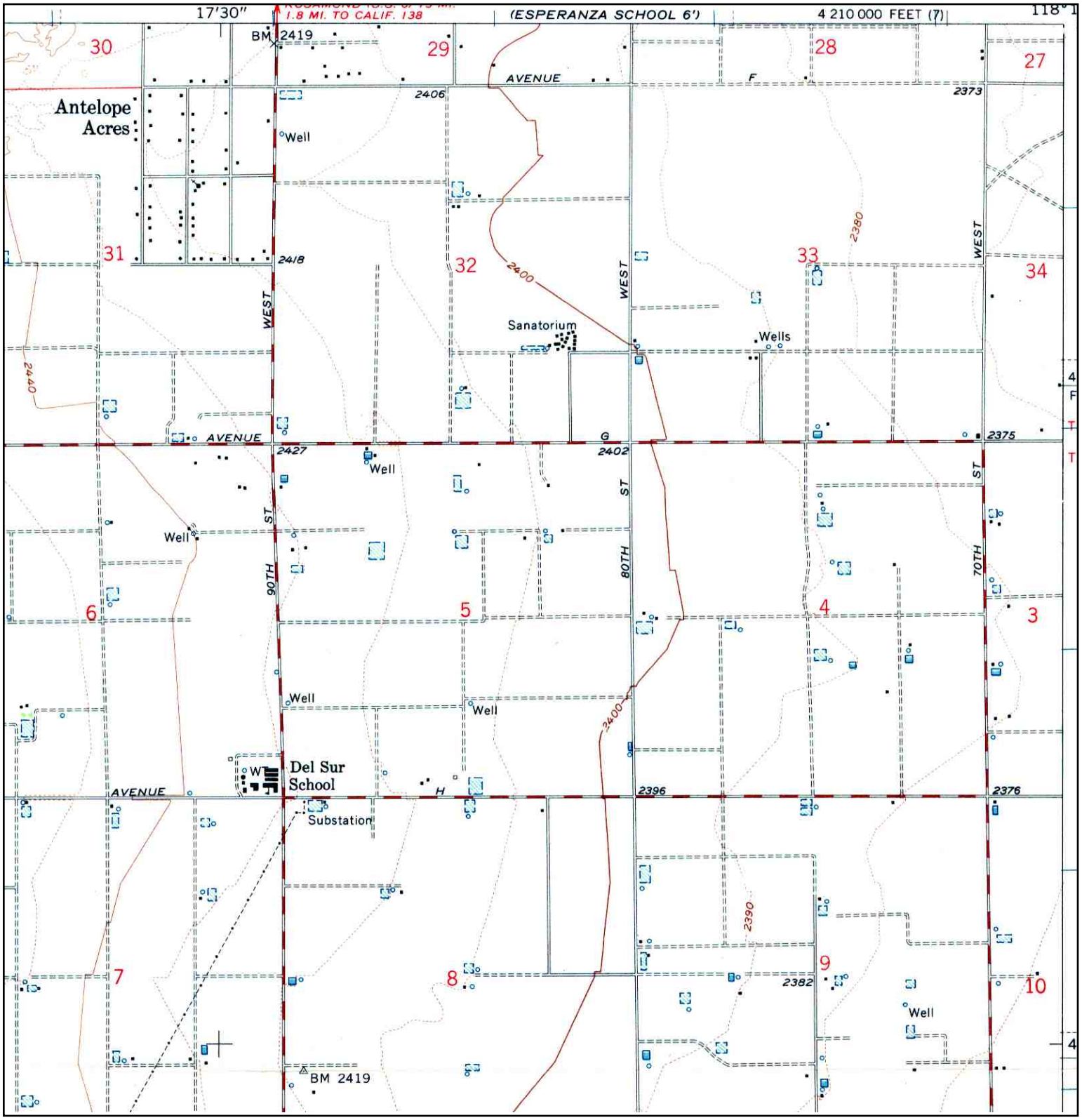
N	TARGET QUAD NAME: ESPERANZA SCHOOL MAP YEAR: 1951 SERIES: 6 SCALE: 1:24000	SITE NAME: American Solar Greenworks ADDRESS: 6 Lancaster, CA 93536 LAT/LONG: 34.7311 / -118.2571	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.116 RESEARCH DATE: 06/08/2011

Historical Topographic Map



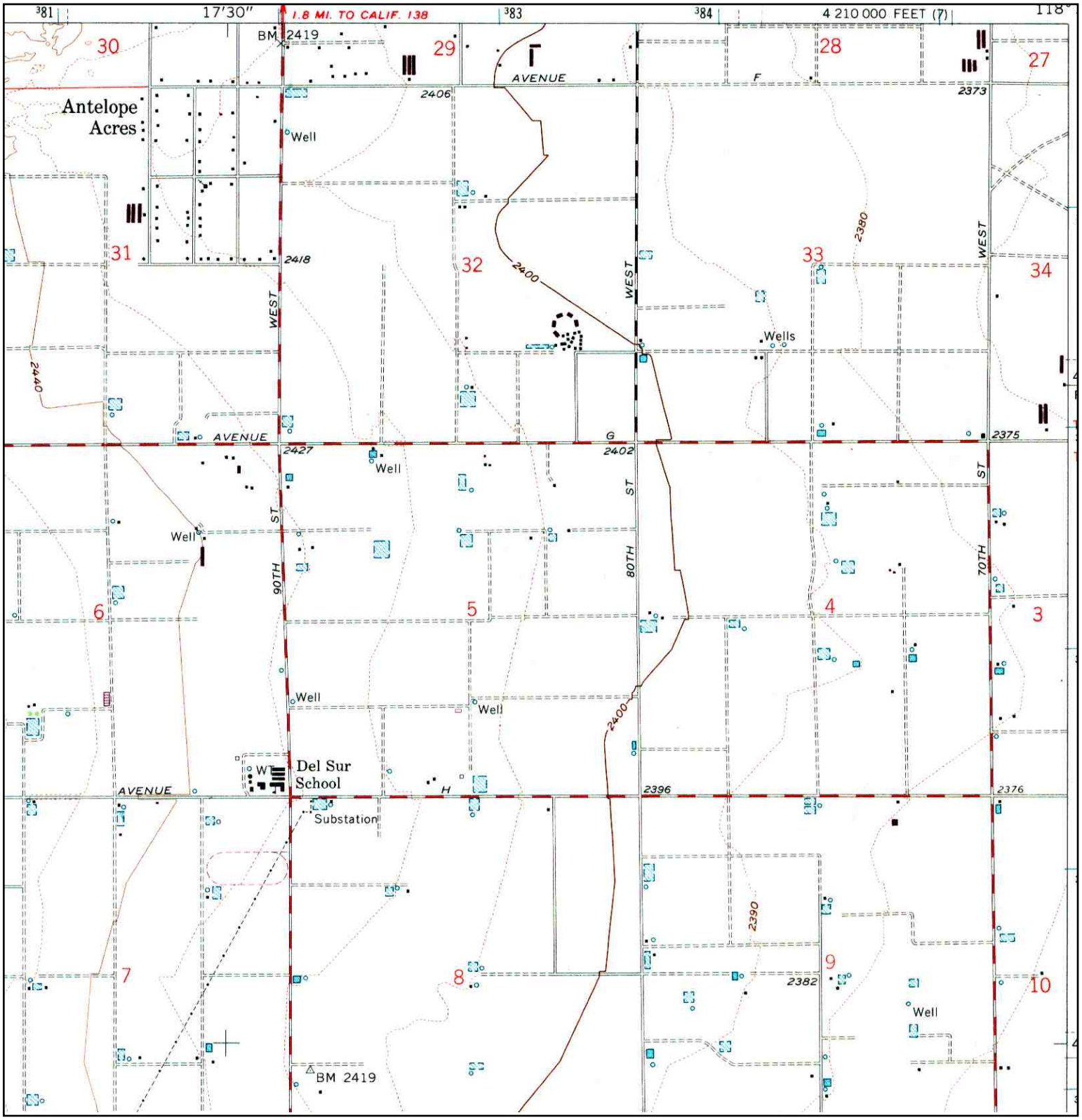
N	TARGET QUAD NAME: BOUQUET RESERVOIR MAP YEAR: 1958 SERIES: 15 SCALE: 1:62500	SITE NAME: American Solar Greenworks ADDRESS: 6 Lancaster, CA 93536 LAT/LONG: 34.7311 / -118.2571	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.116 RESEARCH DATE: 06/08/2011

Historical Topographic Map



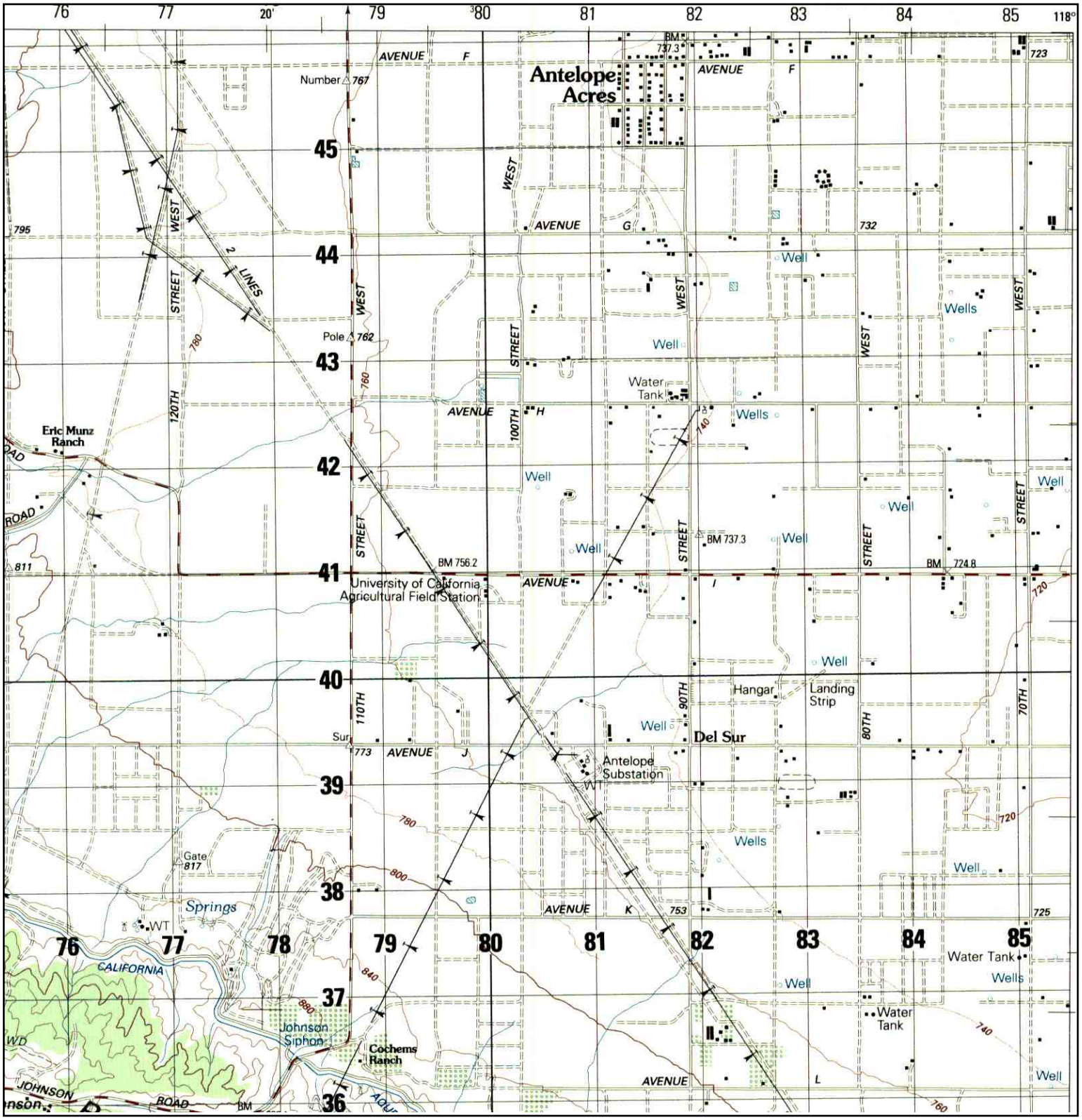
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: American Solar Greenworks ADDRESS: 6 Lancaster, CA 93536 LAT/LONG: 34.7311 / -118.2571	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.116 RESEARCH DATE: 06/08/2011

Historical Topographic Map



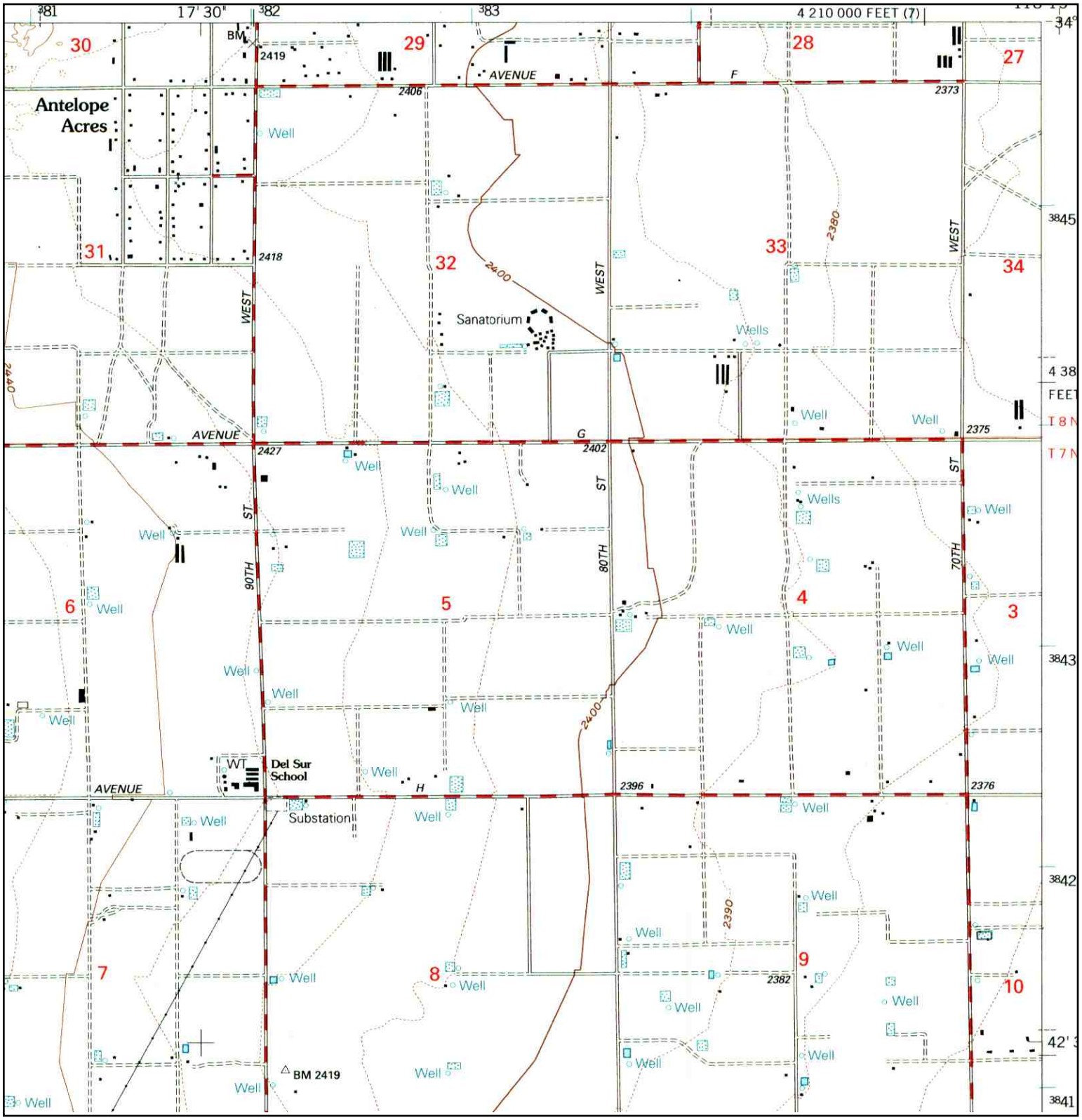
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1974 PHOTOREVISED:1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: American Solar Greenworks ADDRESS: 6 Lancaster, CA 93536 LAT/LONG: 34.7311 / -118.2571	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.116 RESEARCH DATE: 06/08/2011

Historical Topographic Map



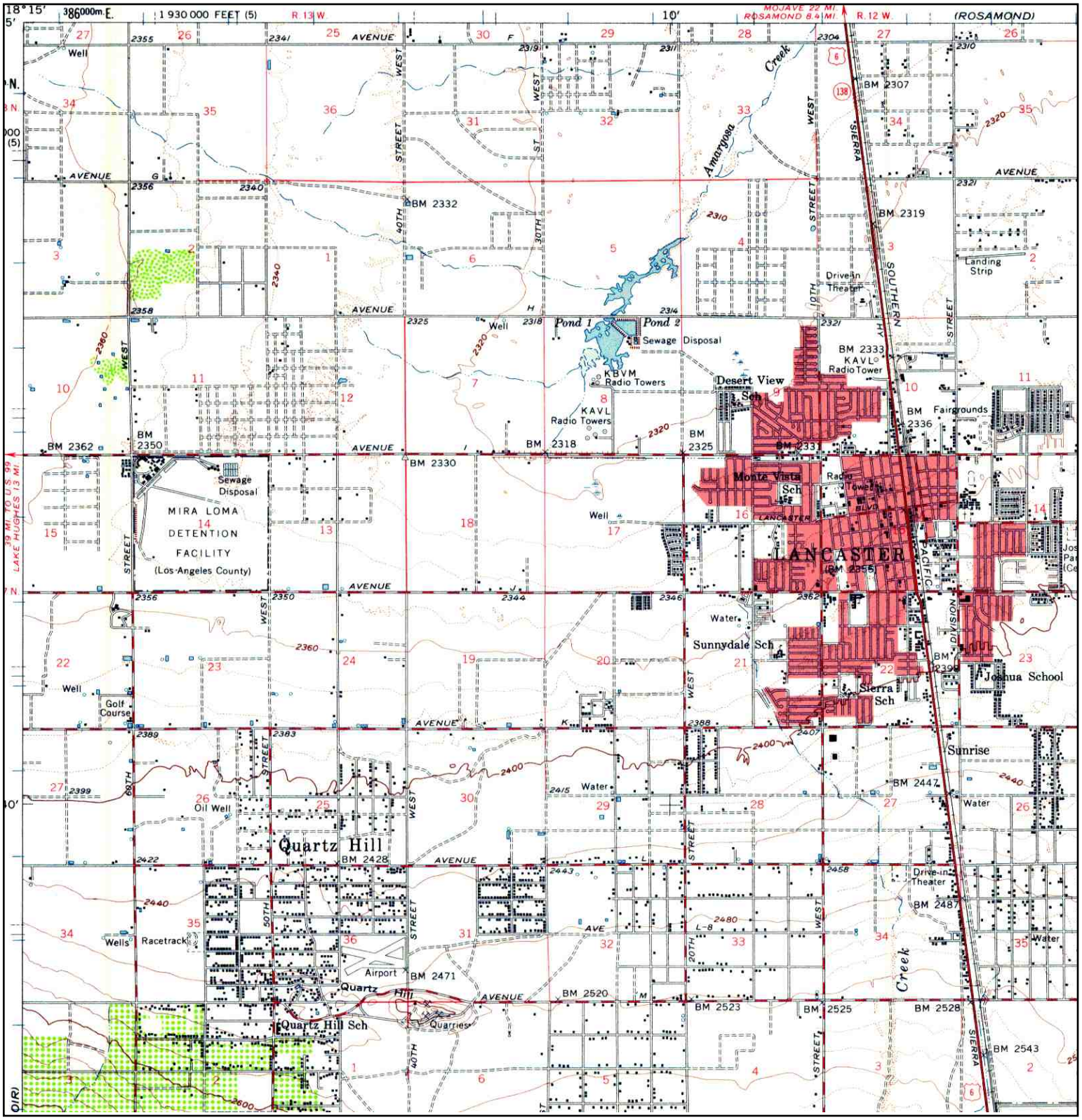
N	TARGET QUAD NAME: BOUQUET RESERVOIR MAP YEAR: 1987 SERIES: 15 SCALE: 1:50000	SITE NAME: American Solar Greenworks ADDRESS: 6 Lancaster, CA 93536 LAT/LONG: 34.7311 / -118.2571	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.116 RESEARCH DATE: 06/08/2011

Historical Topographic Map



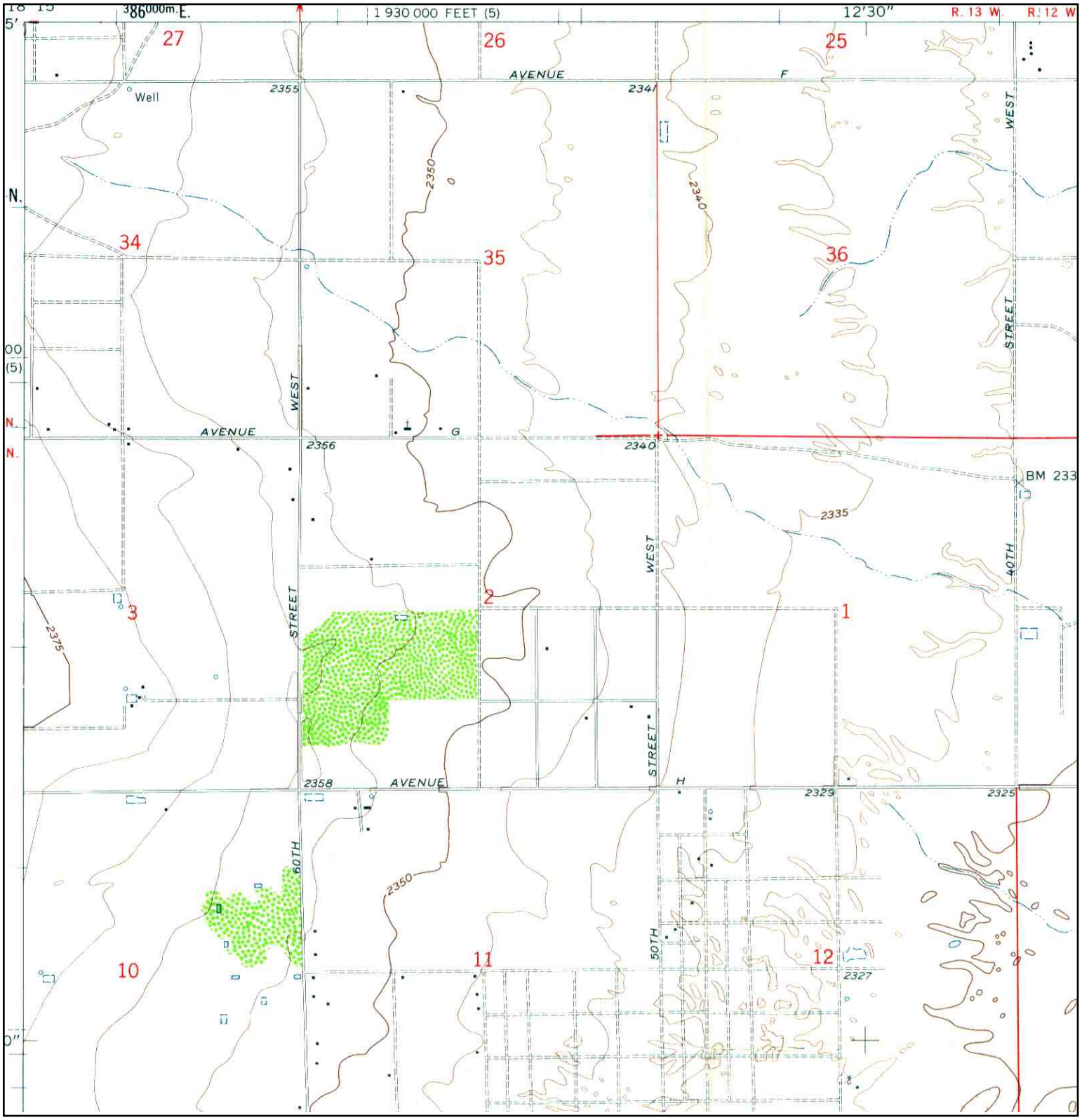
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1995 SERIES: 7.5 SCALE: 1:24000	SITE NAME: American Solar Greenworks ADDRESS: 6 Lancaster, CA 93536 LAT/LONG: 34.7311 / -118.2571	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.116 RESEARCH DATE: 06/08/2011

Historical Topographic Map



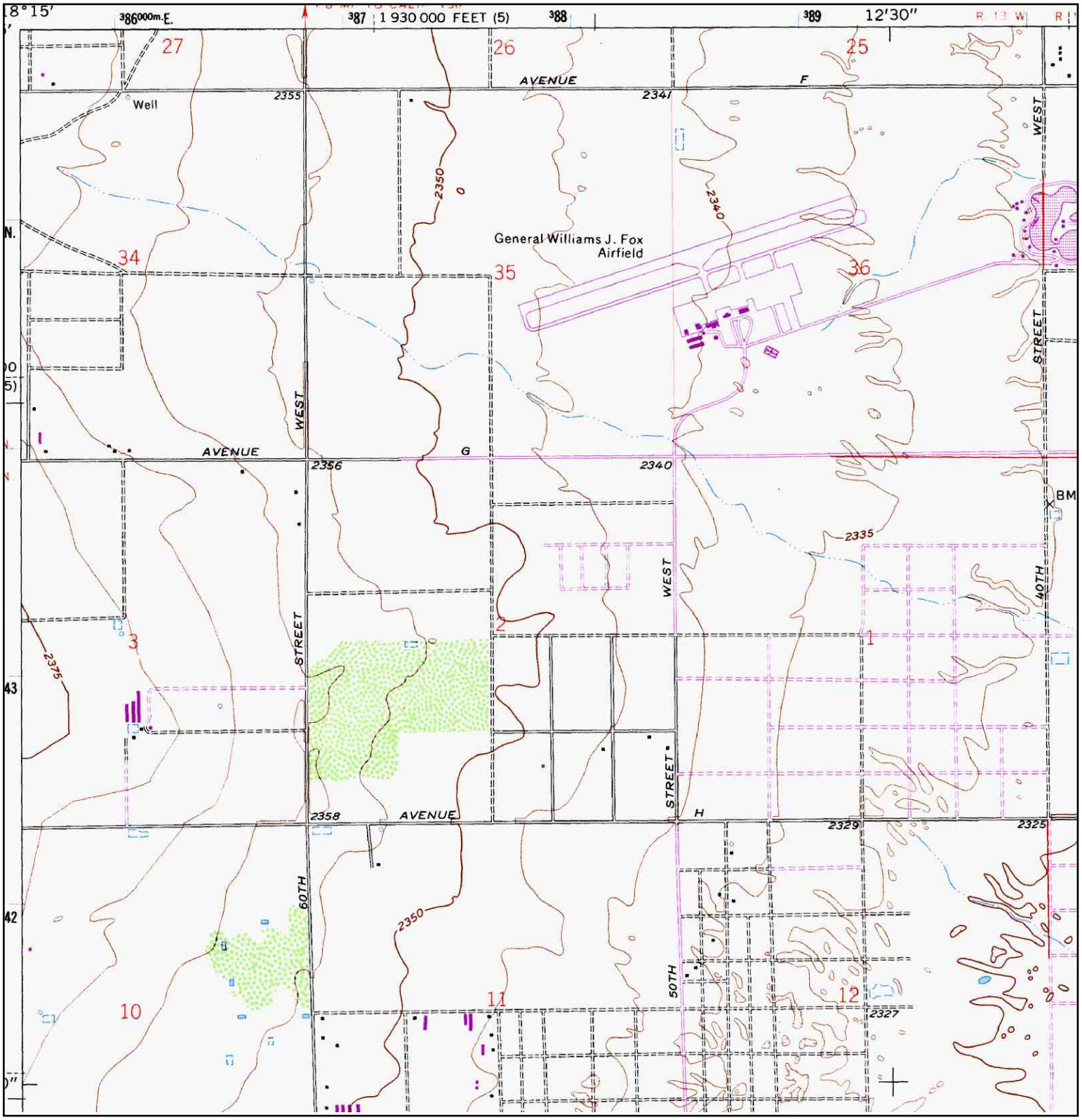
N	ADJOINING QUAD		SITE NAME:	American Solar Greenworks	CLIENT: Tetra Tech Inc.
	NAME:	LANCASTER			CONTACT: Garret Bean
	MAP YEAR:	1958	ADDRESS:	6	INQUIRY#: 3089735.116
				Lancaster, CA 93536	RESEARCH DATE: 06/08/2011
	SERIES:	15	LAT/LONG:	34.7311 / -118.2571	
	SCALE:	1:62500			

Historical Topographic Map



N	ADJOINING QUAD NAME: LANCASTER WEST MAP YEAR: 1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: American Solar Greenworks ADDRESS: 6 Lancaster, CA 93536 LAT/LONG: 34.7311 / -118.2571	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.116 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	ADJOINING QUAD NAME: LANCASTER WEST MAP YEAR: 1974 PHOTOREVISED:1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: American Solar Greenworks ADDRESS: 6 Lancaster, CA 93536 LAT/LONG: 34.7311 / -118.2571	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.116 RESEARCH DATE: 06/08/2011

American Solar Greenworks
6
Lancaster, CA 93536

Inquiry Number: 3089735.114s
June 08, 2011

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

6
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.731100 - 34° 43' 52.0''
Longitude (West):	118.257100 - 118° 15' 25.6''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	384907.6
UTM Y (Meters):	3843746.5
Elevation:	2383 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974
East Map:	34118-F2 LANCASTER WEST, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	2006, 2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
SLIC ---------- Statewide SLIC Cases

INDIAN LUST - Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST - Active UST Facilities
AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - Underground Storage Tanks on Indian Land
FEMA UST - Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP - Voluntary Cleanup Program Properties
INDIAN VCP - Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI - Open Dump Inventory
DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT - Waste Management Unit Database
SWRCY - Recycler Database
HAULERS - Registered Waste Tire Haulers Listing
INDIAN ODI - Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL - Clandestine Drug Labs
HIST Cal-Sites - Historical Calsites Database
SCH - School Property Evaluation Program
Toxic Pits - Toxic Pits Cleanup Act Sites
AOCONCERN - San Gabriel Valley Areas of Concern
CDL - Clandestine Drug Labs
US HIST CDL - National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

HIST UST - Hazardous Substance Storage Container Database

Local Land Records

LIENS 2 - CERCLA Lien Information
LUCIS - Land Use Control Information System
LIENS - Environmental Liens Listing
DEED - Deed Restriction Listing

Records of Emergency Release Reports

HMIRS - Hazardous Materials Information Reporting System
CHMIRS - California Hazardous Material Incident Report System

LDS Land Disposal Sites Listing
MCS Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen RCRA - Non Generators
DOT OPS Incident and Accident Data
DOD Department of Defense Sites
FUDS Formerly Used Defense Sites
CONSENT Superfund (CERCLA) Consent Decrees
ROD Records Of Decision
UMTRA Uranium Mill Tailings Sites
MINES Mines Master Index File
TRIS Toxic Chemical Release Inventory System
TSCA Toxic Substances Control Act
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
SSTS Section 7 Tracking Systems
ICIS Integrated Compliance Information System
PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database
FINDS Facility Index System/Facility Registry System
RAATS RCRA Administrative Action Tracking System
CA BOND EXP. PLAN Bond Expenditure Plan
NPDES NPDES Permits Listing
WDS Waste Discharge System
Cortese "Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE Hazardous Waste & Substance Site List
Notify 65 Proposition 65 Records
LA Co. Site Mitigation Site Mitigation List
DRYCLEANERS Cleaner Facilities
WIP Well Investigation Program Case List
LOS ANGELES CO. HMS HMS: Street Number List
HAZNET Facility and Manifest Data
EMI Emissions Inventory Data
INDIAN RESERV Indian Reservations
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
FINANCIAL ASSURANCE Financial Assurance Information Listing
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
PROC Certified Processors Database
MWMP Medical Waste Management Program Listing
COAL ASH DOE Sleam-Electric Plan Operation Data

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants EDR Proprietary Manufactured Gas Plants
EDR Historical Auto Stations EDR Proprietary Historic Gas Stations

EXECUTIVE SUMMARY

EDR Historical Cleaners ----- EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within approximately 0.375 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PERRY MORGAN	***7362 W AVENUE G***	***WNW 1/4 - 1/2 (0.266 mi.)***	***1***	***8***

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.375 miles of the target property.

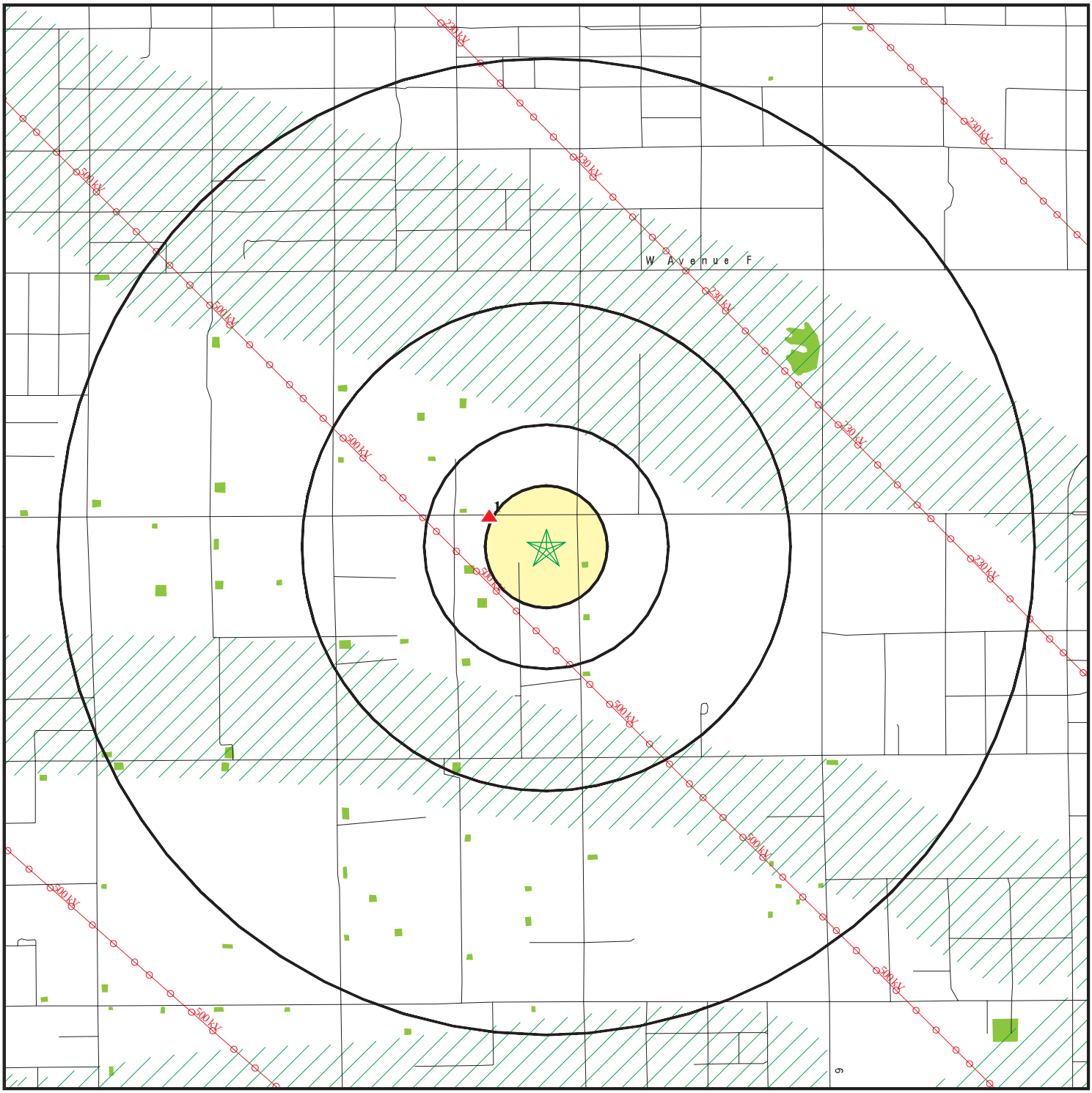
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PERRY MORGAN	***7362 W AVENUE G***	***WNW 1/4 - 1/2 (0.266 mi.)***	***1***	***8***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 36 records.

Site Name	Database(s)
TRACT NO 060987	NPDES
GRANDIFLORA	NPDES
TRACT NO 52797	NPDES
TRACT 60209	NPDES
AVE E ETAL	NPDES
SO CALIF EDISON CO	NPDES, HAZNET
AVENUE K & 47TH STREET WEST	NPDES
D & D WELDING	NPDES
TRACT 060430	NPDES
SUNSET LANDING	NPDES
70TH STREET WEST L 8 AVE	NPDES
TRTP YARD 28 MATERIAL STORAGE	NPDES
MERIDIAN AT QUARTZ HILL	NPDES
WILDFLOWER & CAPISTRANO	NPDES
HARSHFIELD TERRACE RETIREMENT HOUS	NPDES
CAL MAT	SWEEPS UST
ON AVENUE G, BETWEEN 100 WEST	CDL
ON NORTH 35TH STREET WEST AT A	CDL
28.15 MI.MARKER ON ANGELES CRE	CDL
5 MI NW OF HWY 138 & 300TH ST	AST
PAR ELECTRICAL CONTRACTORS INC	HAZNET
SOUTHERN CALIFORNIA EDISON/ANTELOP	HAZNET
JMC TRANSPORTATION	HAZNET
OSO PUMPING PLANT	HAZNET
ILLEGAL DRUG LAB/OPERATOR UNKNOWN	HAZNET
LOS ANGELES COUNTY DEPT OF PUBLIC	HAZNET
CNTY LOS ANGELES/RD 551	HAZNET
3995 AVENUE H W	US CDL
VALUE CLEANERS, STUART MATROS	EMI
ANTELOPE VALLEY COLLEGE	EMI
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
CASTA DWR- CHECK SITE 59	EMI
JOE WALKER MIDDLE SCHOOL	EMI
BURGER KING	EMI
LACO RD 551 ROAD MAINTENANCE YARD	EMI

OVERVIEW MAP - 3089735.114s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: American Solar Greenworks ADDRESS: 6 Lancaster CA 93536 LAT/LONG: 34.7311 / 118.2571	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.114s DATE: June 08, 2011 12:56 pm

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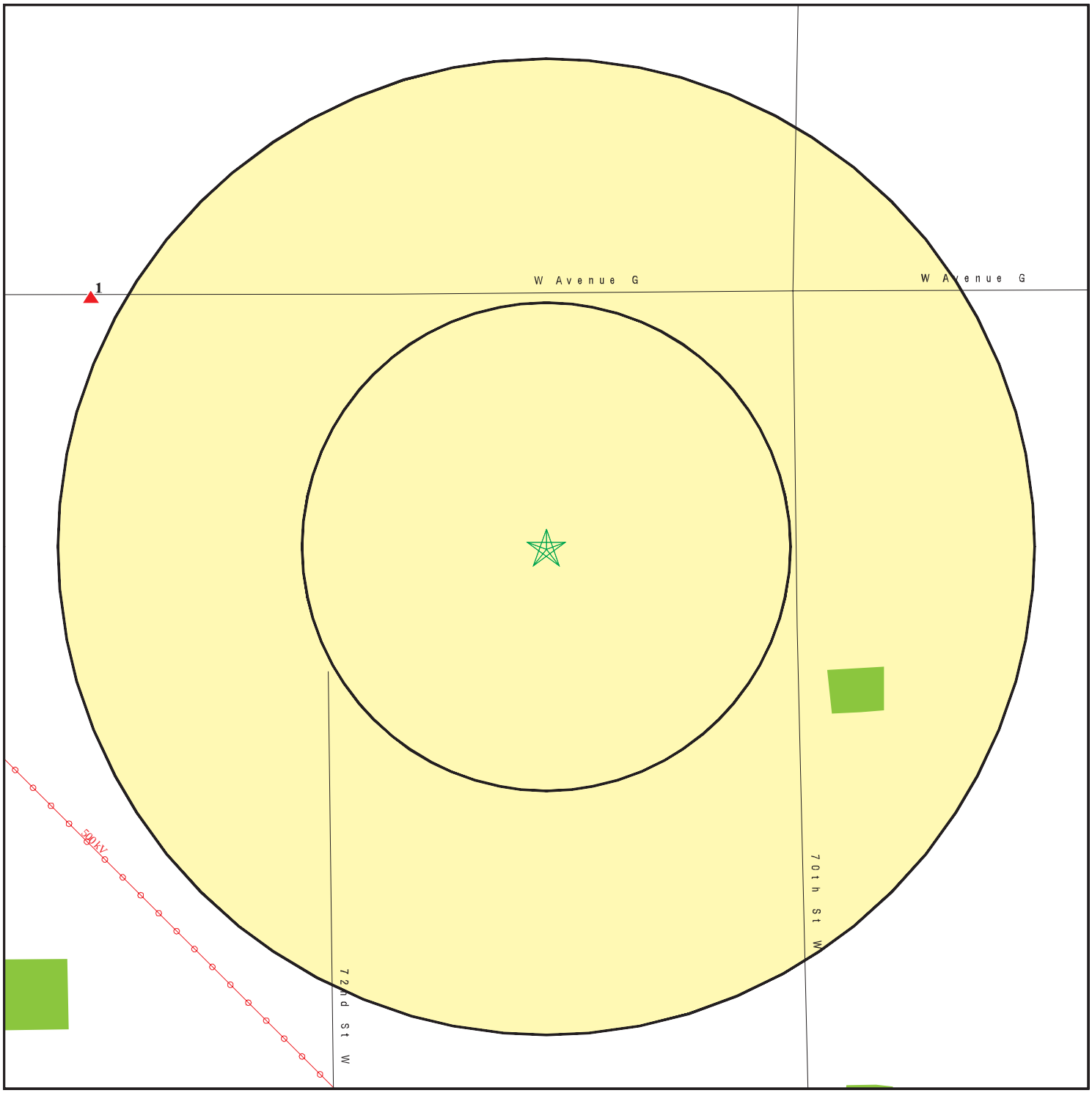
DETAIL MAP - 3089735.114s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

0 1/16 1/8 1/4 Miles

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: American Solar Greenworks	CLIENT: Tetra Tech Inc.
ADDRESS: 6	CONTACT: Garret Bean
Lancaster CA 93536	INQUIRY #: 3089735.114s
LAT/LONG: 34.7311 / 118.2571	DATE: June 08, 2011 12:57 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.125	0	0	0	0	0	0
Proposed NPL		1.125	0	0	0	0	0	0
NPL LIENS		0.125	0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.125	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		0.625	0	0	0	0	NR	0
FEDERAL FACILITY		1.125	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.625	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.125	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.625	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.375	0	0	0	NR	NR	0
RCRA-SQG		0.375	0	0	0	NR	NR	0
RCRA-CESQG		0.375	0	0	0	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.625	0	0	0	0	NR	0
US INST CONTROL		0.625	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.125	0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.125	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.125	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.625	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		0.625	0	0	0	0	NR	0
SLIC		0.625	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST		0.625	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.375	0	0	0	NR	NR	0
AST		0.375	0	0	0	NR	NR	0
INDIAN UST		0.375	0	0	0	NR	NR	0
FEMA UST		0.375	0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.625	0	0	0	0	NR	0
INDIAN VCP		0.625	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.625	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		0.625	0	0	0	0	NR	0
DEBRIS REGION 9		0.625	0	0	0	0	NR	0
WMUDS/SWAT		0.625	0	0	0	0	NR	0
SWRCY		0.625	0	0	0	0	NR	0
HAULERS		0.125	0	NR	NR	NR	NR	0
INDIAN ODI		0.625	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.125	0	NR	NR	NR	NR	0
HIST Cal-Sites		1.125	0	0	0	0	0	0
SCH		0.375	0	0	0	NR	NR	0
Toxic Pits		1.125	0	0	0	0	0	0
AOCONCERN		1.125	0	0	0	0	0	0
CDL		0.125	0	NR	NR	NR	NR	0
US HIST CDL		0.125	0	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.375	0	0	1	NR	NR	1
HIST UST		0.375	0	0	0	NR	NR	0
SWEEPS UST		0.375	0	0	1	NR	NR	1
Local Land Records								
LIENS 2		0.125	0	NR	NR	NR	NR	0
LUCIS		0.625	0	0	0	0	NR	0
LIENS		0.125	0	NR	NR	NR	NR	0
DEED		0.625	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.125	0	NR	NR	NR	NR	0
CHMIRS		0.125	0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS		0.125	0	NR	NR	NR	NR	0
MCS		0.125	0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.375	0	0	0	NR	NR	0
DOT OPS		0.125	0	NR	NR	NR	NR	0
DOD		1.125	0	0	0	0	0	0
FUDS		1.125	0	0	0	0	0	0
CONSENT		1.125	0	0	0	0	0	0
ROD		1.125	0	0	0	0	0	0
UMTRA		0.625	0	0	0	0	NR	0
MINES		0.375	0	0	0	NR	NR	0
TRIS		0.125	0	NR	NR	NR	NR	0
TSCA		0.125	0	NR	NR	NR	NR	0
FTTS		0.125	0	NR	NR	NR	NR	0
HIST FTTS		0.125	0	NR	NR	NR	NR	0
SSTS		0.125	0	NR	NR	NR	NR	0
ICIS		0.125	0	NR	NR	NR	NR	0
PADS		0.125	0	NR	NR	NR	NR	0
MLTS		0.125	0	NR	NR	NR	NR	0
RADINFO		0.125	0	NR	NR	NR	NR	0
FINDS		0.125	0	NR	NR	NR	NR	0
RAATS		0.125	0	NR	NR	NR	NR	0
CA BOND EXP. PLAN		1.125	0	0	0	0	0	0
NPDES		0.125	0	NR	NR	NR	NR	0
WDS		0.125	0	NR	NR	NR	NR	0
Cortese		0.625	0	0	0	0	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.125	0	0	0	0	0	0
LA Co. Site Mitigation		0.125	0	NR	NR	NR	NR	0
DRYCLEANERS		0.375	0	0	0	NR	NR	0
WIP		0.375	0	0	0	NR	NR	0
LOS ANGELES CO. HMS		0.125	0	NR	NR	NR	NR	0
HAZNET		0.125	0	NR	NR	NR	NR	0
EMI		0.125	0	NR	NR	NR	NR	0
INDIAN RESERV		1.125	0	0	0	0	0	0
SCRD DRYCLEANERS		0.625	0	0	0	0	NR	0
FINANCIAL ASSURANCE		0.125	0	NR	NR	NR	NR	0
HWP		1.125	0	0	0	0	0	0
HWT		0.375	0	0	0	NR	NR	0
COAL ASH EPA		0.625	0	0	0	0	NR	0
PCB TRANSFORMER		0.125	0	NR	NR	NR	NR	0
PROC		0.625	0	0	0	0	NR	0
MWMP		0.375	0	0	0	NR	NR	0
COAL ASH DOE		0.125	0	NR	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.125	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.375	0	0	0	NR	NR	0
EDR Historical Cleaners		0.375	0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
WNW
1/4-1/2
0.266 mi.
1404 ft.

PERRY MORGAN
7362 W AVENUE G
LANCASTER, CA 93536

CA FID UST **S101585008**
SWEEPS UST **N/A**

Relative:
Higher

Actual:
2387 ft.

CA FID UST:

Facility ID:	19018141
Regulated By:	UTNKA
Regulated ID:	Not reported
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	Not reported
Mail To:	Not reported
Mailing Address:	7734 EL MANOR AVE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	LANCASTER 93536
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

SWEEPS UST:

Status:	A
Comp Number:	16899
Number:	2
Board Of Equalization:	Not reported
Ref Date:	06-10-92
Act Date:	08-11-92
Created Date:	08-11-92
Tank Status:	A
Owner Tank Id:	1
Swrcb Tank Id:	19-000-016899-000001
Actv Date:	06-10-92
Capacity:	550
Tank Use:	M.V. FUEL
Stg:	P
Content:	LEADED
Number Of Tanks:	1

Count: 36 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
LANCASTER	S110374354	PAR ELECTRICAL CONTRACTORS INC	2866TH & 2 W AVENUE F	93536	HAZNET
LANCASTER	S109462558	TRACT NO 060987	52 52ND ST W / AVENUE J	93536	NPDES
LANCASTER	S109444838	GRANDIFLORA	60 60TH STREET WEST / AVENUE	93536	NPDES
LANCASTER	S110736918	TRACT NO 52797	W AVE K 6 & ECHARD AVE	93536	NPDES
LANCASTER	S110736869	TRACT 60209	W AVE M & 70TH ST W	93536	NPDES
LANCASTER	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES
LANCASTER	S104568573	SO CALIF EDISON CO	9634 W AVENUE J	93536	NPDES, HAZNET
LANCASTER	S107143259	SOUTHERN CALIFORNIA EDISON/ANTELOP	9634 W AVENUE J	93536	HAZNET
LANCASTER	S106842034	VALUE CLEANERS, STUART MATROS	2849 W AVENUE L	93536	EMI
LANCASTER	S106826009	ANTELOPE VALLEY COLLEGE	3041 W AVENUE K	93536	EMI
LANCASTER	S107539709		ON AVENUE G, BETWEEN 100 WEST	93536	CDL
LANCASTER	S109436818	AVENUE K & 47TH STREET WEST	AVENUE K / 47TH STREET WEST		NPDES
LANCASTER	1012055833	3995 AVENUE H W	3995 AVENUE H W		US CDL
LANCASTER	S110367727	JMC TRANSPORTATION	W AVENUE L AT 30TH ST	93536	HAZNET
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 / 300TH S	93536	HAZNET
LANCASTER	S107539974		ON NORTH 35TH STREET WEST AT A	93536	CDL
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
LANCASTER	S109441193	D & D WELDING	NWC AVENUE L I2 / 7TH ST E		NPDES
LANCASTER	S109461420	TRACT 060430	SE OF 37TH STREET WEST / AVE		NPDES
LANCASTER	S109460024	SUNSET LANDING	SE OF INTERSECTION OF 45 ST W	93536	NPDES
LOS ANGELES	S110731583	70TH STREET WEST L 8 AVE	70 70TH ST W	93536	NPDES
LOS ANGELES	S110736984	TRTP YARD 28 MATERIAL STORAGE	W AVENUE I AND 73RD ST	93536	NPDES
LOS ANGELES	S110734625	MERIDIAN AT QUARTZ HILL	NWC 70TH ST & AVE L 8	93536	NPDES
LOS ANGELES	S110737467	WILDFLOWER & CAPISTRANO	SEC OF 72ND ST W & AVE L	93536	NPDES
LOS ANGELES COUNTY	S107532211		28.15 MI.MARKER ON ANGELES CRE	0	CDL
PALMDALE	S103678194	ILLEGAL DRUG LAB/OPERATOR UNKNOWN	AVENUE T, 175TH ST EAST	93536	HAZNET
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HW	93536	EMI
QUARTZ HILL	S103975334	LOS ANGELES COUNTY DEPT OF PUBLIC	4859 W AVENUE L 12	93536	HAZNET
QUARTZ HILL	S103957875	CNTY LOS ANGELES/RD 551	4859 W AVENUE L 12	93536	HAZNET
QUARTZ HILL	S106920975	JOE WALKER MIDDLE SCHOOL	5632 W AVENUE L 8	93536	EMI
QUARTZ HILL	S106920186	BURGER KING	4107 W AVENUE L	93536	EMI
QUARTZ HILL	S108432323	LACO RD 551 ROAD MAINTENANCE YARD	4859 W AVENUE L 12	93536	EMI
QUARTZ HILL	S110042892	HARSHFIELD TERRACE RETIREMENT HOUS	6709 W AVENUE M	93536	NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPAa??s Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/15/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 05/25/2010
Date Data Arrived at EDR: 06/02/2010
Date Made Active in Reports: 10/04/2010
Number of Days to Update: 124

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/07/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 11/04/2009
Date Data Arrived at EDR: 05/04/2010
Date Made Active in Reports: 07/07/2010
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 12/02/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 57

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/03/2011
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/01/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 12/29/2010
Date Data Arrived at EDR: 12/30/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 02/24/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 46

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/07/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 03/04/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 05/02/2011
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/18/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 51

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/21/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 30

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2011
Date Data Arrived at EDR: 02/11/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/15/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 10/29/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 5

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/21/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 99

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/02/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/08/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/17/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 94

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/07/2011
Date Data Arrived at EDR: 01/21/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/11/2011
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Biennially

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/04/2011
Number of Days to Update: 29

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/15/2010
Date Data Arrived at EDR: 09/16/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 13

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/07/2010
Date Made Active in Reports: 08/12/2010
Number of Days to Update: 36

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/01/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 02/28/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/04/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/09/2010
Date Data Arrived at EDR: 08/11/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 9
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 04/26/2011
Number of Days to Update: 41

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 33

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 03/29/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COLUSA COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 12/01/2010
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/06/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/31/2011
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/25/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2011
Date Data Arrived at EDR: 02/09/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 23
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/18/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/12/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 30
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/26/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 22
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 04/25/2011
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/20/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/07/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/15/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 16
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/17/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 31
Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 20
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 11/16/2010
Date Made Active in Reports: 01/25/2011
Number of Days to Update: 70

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/21/2010
Next Scheduled EDR Contact: 03/28/2011
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/16/2011
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/30/2011
Date Data Arrived at EDR: 03/31/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 22
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/22/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 29
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 36
Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/14/2011
Date Data Arrived at EDR: 03/15/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 9
Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/25/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 25
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/07/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 35
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/07/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/08/2011
Number of Days to Update: 28
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 30
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 01/25/2011
Date Data Arrived at EDR: 02/03/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 29
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16
Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/26/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/22/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 05/12/2011
Date Made Active in Reports: 05/24/2011
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/12/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/06/2011
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/19/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 38

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/06/2010
Date Made Active in Reports: 07/26/2010
Number of Days to Update: 20

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

AMERICAN SOLAR GREENWORKS
6
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.73110 - 34° 43' 52.0''
Longitude (West):	118.2571 - 118° 15' 25.6''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	384907.6
UTM Y (Meters):	3843746.5
Elevation:	2383 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974
East Map:	34118-F2 LANCASTER WEST, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

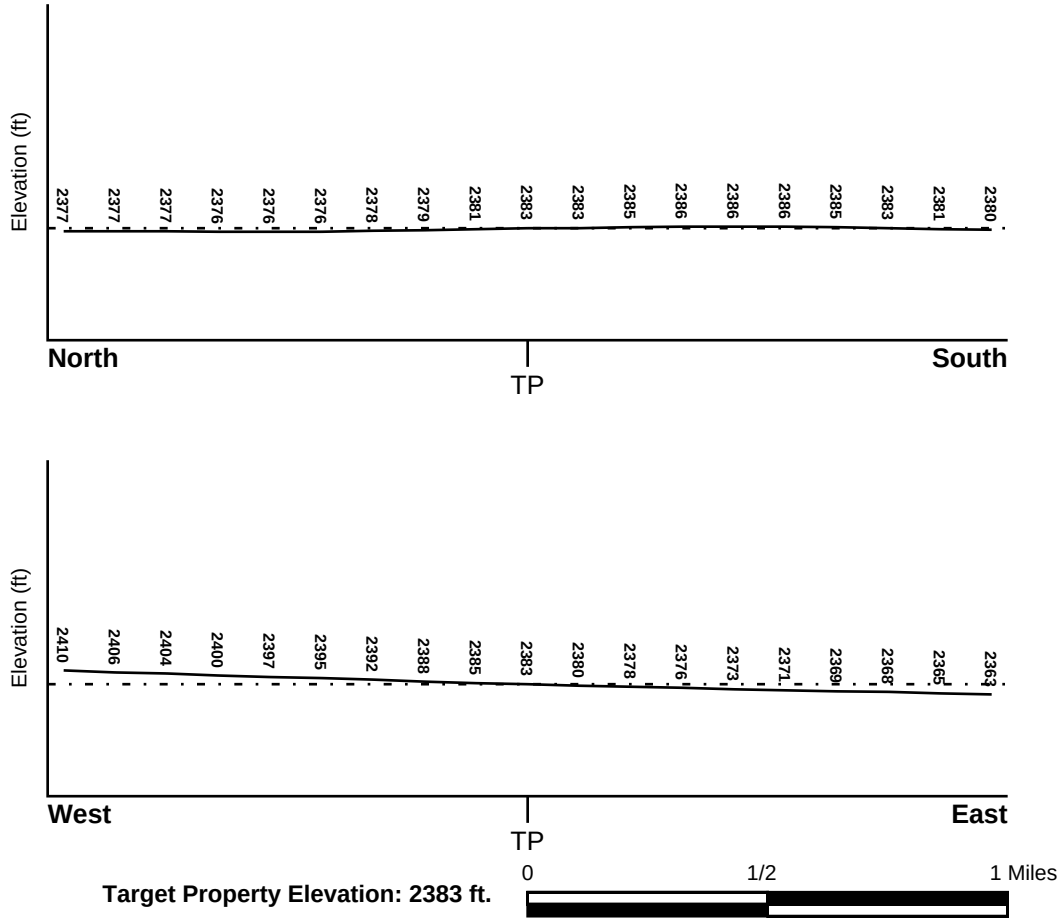
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
DEL SUR	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

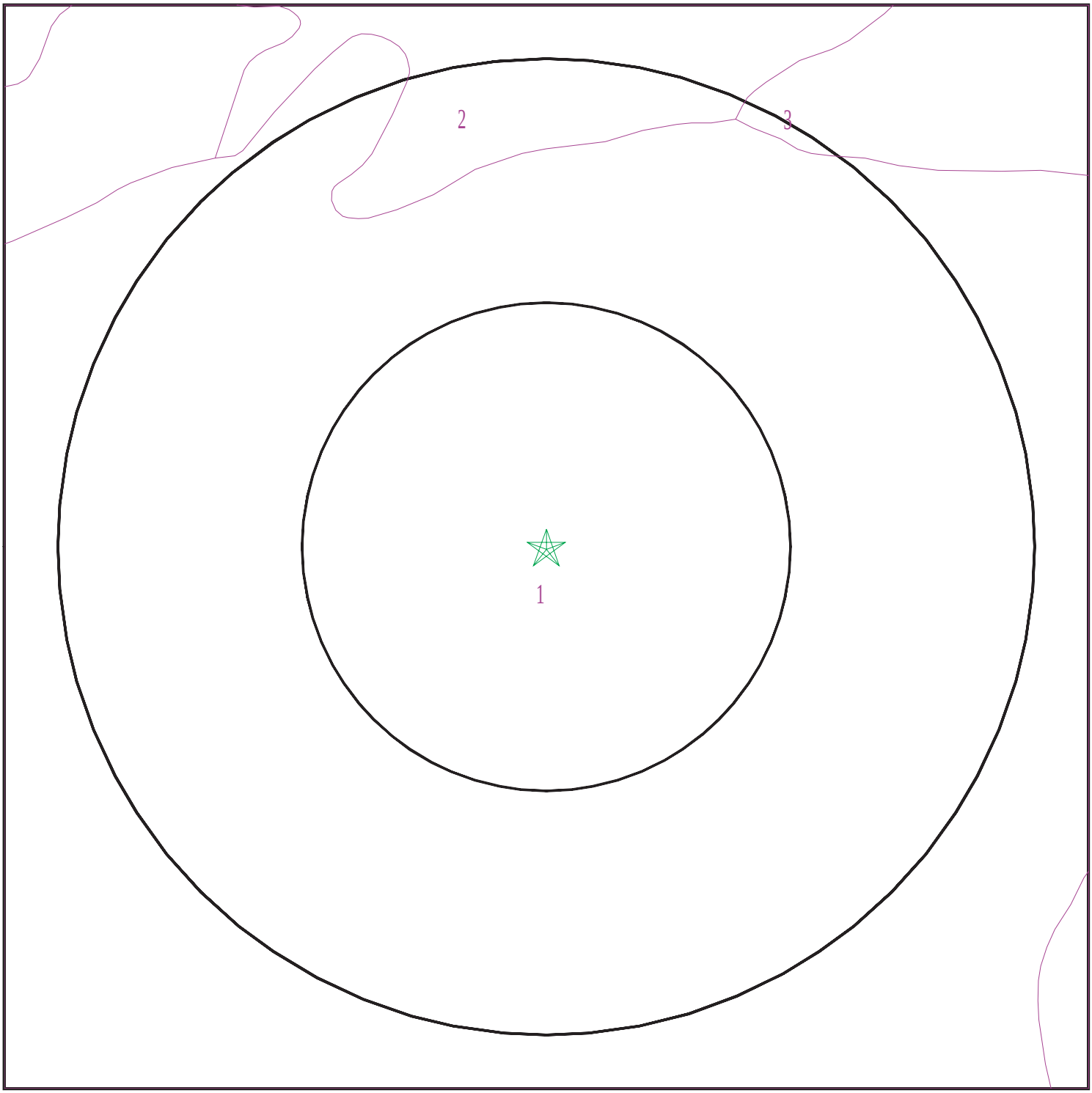
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3089735.114s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	American Solar Greenworks	CLIENT:	Tetra Tech Inc.
ADDRESS:	6 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.7311 / 118.2571	INQUIRY #:	3089735.114s
		DATE:	June 08, 2011 12:57 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Hesperia

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	3 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4
2	3 inches	53 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4
3	53 inches	77 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4

Soil Map ID: 2

Soil Component Name: Sunrise

Soil Surface Texture: loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	18 inches	31 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	31 inches	48 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
4	48 inches	64 inches	stratified gravelly sandy loam to loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 3

Soil Component Name: Sunrise

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	18 inches	31 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	31 inches	48 inches	cemented	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
4	48 inches	64 inches	stratified gravelly sandy loam to loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A4	USGS3158654	1/8 - 1/4 Mile ESE
B5	USGS3158498	1/8 - 1/4 Mile NNE
A6	USGS3158649	1/8 - 1/4 Mile ESE
7	USGS3158624	1/8 - 1/4 Mile SSW
C9	USGS3158606	1/4 - 1/2 Mile SSE
D10	USGS3158487	1/4 - 1/2 Mile ENE
D11	USGS3158486	1/4 - 1/2 Mile ENE
E12	USGS3158661	1/4 - 1/2 Mile West
F13	USGS3158625	1/4 - 1/2 Mile SW
G14	USGS3158506	1/4 - 1/2 Mile WNW
G15	USGS3158505	1/4 - 1/2 Mile WNW
G16	USGS3158507	1/4 - 1/2 Mile WNW
18	USGS3158799	1/4 - 1/2 Mile SSE
F20	USGS3158626	1/4 - 1/2 Mile WSW
I25	USGS3158504	1/4 - 1/2 Mile ENE
J26	USGS3158779	1/4 - 1/2 Mile SSW
H27	USGS3158546	1/4 - 1/2 Mile NE
J28	USGS3158777	1/4 - 1/2 Mile South
29	USGS3158539	1/4 - 1/2 Mile NE
33	USGS3158580	1/2 - 1 Mile NNE
K34	USGS3158772	1/2 - 1 Mile SSE
L35	USGS3158497	1/2 - 1 Mile ENE
37	USGS3158552	1/2 - 1 Mile NW
M38	USGS3158773	1/2 - 1 Mile SSW
M40	USGS3158774	1/2 - 1 Mile SW
L41	USGS3158503	1/2 - 1 Mile ENE
M42	USGS3158769	1/2 - 1 Mile SSW
N43	USGS3158694	1/2 - 1 Mile East
N44	USGS3158485	1/2 - 1 Mile ENE
P47	USGS3158782	1/2 - 1 Mile SW
P48	USGS3158783	1/2 - 1 Mile SW
49	USGS3158379	1/2 - 1 Mile NNW
O50	USGS3158798	1/2 - 1 Mile ESE
51	USGS3158721	1/2 - 1 Mile SSE
54	USGS3158399	1/2 - 1 Mile NNW
Q55	USGS3158565	1/2 - 1 Mile NE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
56	USGS3158555	1/2 - 1 Mile ENE
R58	USGS3158754	1/2 - 1 Mile SE
S59	USGS3158788	1/2 - 1 Mile WSW
S61	USGS3158789	1/2 - 1 Mile WSW
62	USGS3158863	1/2 - 1 Mile South
63	USGS3158846	1/2 - 1 Mile South
U64	USGS3158553	1/2 - 1 Mile WNW
65	USGS3158735	1/2 - 1 Mile SE
66	USGS3158839	1/2 - 1 Mile South
T68	USGS3158693	1/2 - 1 Mile East
70	USGS3158847	1/2 - 1 Mile SSW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

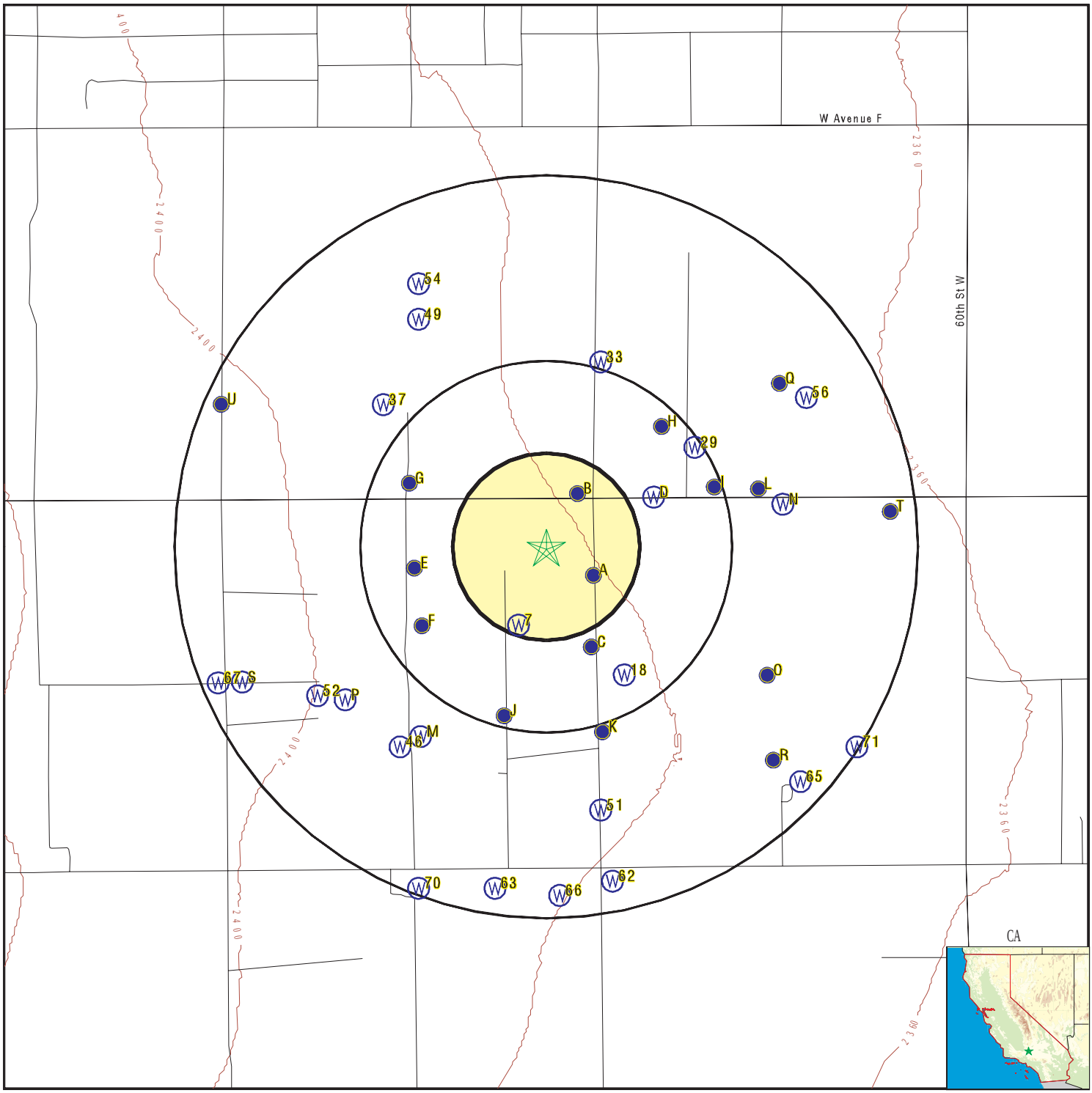
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	CADW40000014488	0 - 1/8 Mile ESE
A2	CADW40000014469	1/8 - 1/4 Mile SE
B3	8483	1/8 - 1/4 Mile NNE
C8	CADW40000014427	1/4 - 1/2 Mile SSE
E17	CADW40000014487	1/4 - 1/2 Mile West
F19	CADW40000014450	1/4 - 1/2 Mile WSW
G21	CADW40000014537	1/4 - 1/2 Mile WNW
G22	CADW40000014538	1/4 - 1/2 Mile WNW
G23	CADW40000014539	1/4 - 1/2 Mile WNW
H24	CADW40000014579	1/4 - 1/2 Mile NE
J30	CADW40000014371	1/4 - 1/2 Mile SSW
I31	CADW40000014529	1/2 - 1 Mile ENE
K32	CADW40000014365	1/2 - 1 Mile SSE
L36	CADW40000014540	1/2 - 1 Mile ENE
L39	CADW40000014526	1/2 - 1 Mile ENE
O45	CADW40000014397	1/2 - 1 Mile ESE
46	CADW40000014351	1/2 - 1 Mile SW
52	CADW40000014378	1/2 - 1 Mile WSW
Q53	CADW40000014590	1/2 - 1 Mile NE
R57	CADW40000014339	1/2 - 1 Mile SE
T60	CADW40000014524	1/2 - 1 Mile East
67	CADW40000014387	1/2 - 1 Mile WSW
U69	CADW40000014582	1/2 - 1 Mile WNW
71	CADW40000014352	1/2 - 1 Mile ESE

PHYSICAL SETTING SOURCE MAP - 3089735.114s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: American Solar Greenworks	CLIENT: Tetra Tech Inc.
ADDRESS: 6 Lancaster CA 93536	CONTACT: Garret Bean
LAT/LONG: 34.7311 / 118.2571	INQUIRY #: 3089735.114s DATE: June 08, 2011 12:57 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
ESE
0 - 1/8 Mile
Lower | **CA WELLS** | **CADW40000014488**

Longitude:	-118.2543
Latiude:	34.7303
Stwellno:	07N13W03D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014488

A2
SE
1/8 - 1/4 Mile
Lower | **CA WELLS** | **CADW40000014469**

Longitude:	-118.2545
Latiude:	34.7297
Stwellno:	07N13W03D002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014469

B3
NNE
1/8 - 1/4 Mile
Lower | **CA WELLS** | **8483**

Water System Information:

Prime Station Code:	08N/13W-33R01 S	User ID:	19C
FRDS Number:	1900116001	County:	Los Angeles
District Number:	49	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	344359.0 1181517.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 01		
System Number:	1900116		
System Name:	WESTSIDE UNION SCHOOL HDQT		
Organization That Operates System:			
	46809 W. 70TH ST.		
	LANCASTER, CA 93534		
Pop Served:	25	Connections:	1
Area Served:	Not Reported		
Sample Collected:	04/01/2009	Findings:	1000. US
Chemical:	SPECIFIC CONDUCTANCE		

Sample Collected:	04/01/2009	Findings:	7.8
Chemical:	PH, LABORATORY		
Sample Collected:	04/01/2009	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04/01/2009	Findings:	260. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04/01/2009	Findings:	350. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04/01/2009	Findings:	110. MG/L
Chemical:	CALCIUM		
Sample Collected:	04/01/2009	Findings:	21. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04/01/2009	Findings:	78. MG/L
Chemical:	SODIUM		
Sample Collected:	04/01/2009	Findings:	1.6 MG/L
Chemical:	POTASSIUM		
Sample Collected:	04/01/2009	Findings:	130. MG/L
Chemical:	CHLORIDE		
Sample Collected:	04/01/2009	Findings:	0.38 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04/01/2009	Findings:	130. UG/L
Chemical:	BARIUM		
Sample Collected:	04/01/2009	Findings:	390. UG/L
Chemical:	BORON		
Sample Collected:	04/01/2009	Findings:	7. UG/L
Chemical:	VANADIUM		
Sample Collected:	04/01/2009	Findings:	82. UG/L
Chemical:	ZINC		
Sample Collected:	04/01/2009	Findings:	670. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04/01/2009	Findings:	21. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/01/2009	Findings:	4700. UG/L
Chemical:	NITRATE + NITRITE (AS N)		

A4
ESE
1/8 - 1/4 Mile
Lower

FED USGS **USGS3158654**

Agency cd:	USGS	Site no:	344348118151101
Site name:	007N013W03D001S		
Latitude:	344349.0	EDR Site id:	USGS3158654
Longitude:	1181515.6	Dec lat:	34.73027778
Dec lon:	-118.25433333	Coor meth:	G
Coor accr:	1	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2378.		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19370301
Date inventoried:	19630528	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	Not Reported
Source of depth data:	reporting agency (generally USGS)		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-29	Ground water data end date:	2004-09-14
Ground water data count:	7		

Ground-water levels, Number of Measurements: 7

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-09-14	167.91		2004-03-30	167.45	
2003-09-15	168.32		2002-09-19	168.69	
2002-03-26	158.29		2001-05-02	157.92	
1963-05-29	169.00				

B5
NNE **FED USGS** **USGS3158498**
1/8 - 1/4 Mile
Lower

Agency cd:	USGS	Site no:	344400118151701
Site name:	008N013W33R001S		
Latitude:	344400	EDR Site id:	USGS3158498
Longitude:	1181517	Dec lat:	34.73331633
Dec lon:	-118.25563128	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2376.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	180	Hole depth:	180
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

A6
ESE **FED USGS** **USGS3158649**
1/8 - 1/4 Mile
Lower

Agency cd:	USGS	Site no:	344347118151301
Site name:	007N013W03D002S		
Latitude:	344347	EDR Site id:	USGS3158649
Longitude:	1181513	Dec lat:	34.72970537
Dec lon:	-118.25452016	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2378.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1945-03-27	Ground water data end date:	1963-05-28
Ground water data count:	10		

Ground-water levels, Number of Measurements: 10

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-28	77.65		1952-11-13	64.50	
1951-12-05	62.35		1950-11-28	60.00	
1949-12-02	57.15		1948-12-08	54.55	
1947-12-09	51.55		1946-12-12	48.70	
1945-11-08	48.35		1945-03-27	43.50	

7
SSW **FED USGS** **USGS3158624**
1/8 - 1/4 Mile
Higher

Agency cd:	USGS	Site no:	344341118152701
Site name:	007N013W04H001S		
Latitude:	344341	EDR Site id:	USGS3158624
Longitude:	1181527	Dec lat:	34.72803877
Dec lon:	-118.25840918	Coor meth:	M
Coor accr:	U	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2381.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	11.0	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

C8
SSE
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014427**

Longitude:	-118.2545
Latiude:	34.7272
Stwellno:	07N13W03E001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014427

C9
SSE
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158606**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency cd:	USGS	Site no:	344338118151301
Site name:	007N013W03E001S		
Latitude:	344338	EDR Site id:	USGS3158606
Longitude:	1181513	Dec lat:	34.72720548
Dec lon:	-118.25452018	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2381.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19180801
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	other government (other than USGS)		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1920-01-16	Ground water data end date:	1998-03-16
Ground water data count:	62		

Ground-water levels, Number of Measurements: 62

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1998-03-16					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1997-11-18					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1997-03-03	156.41		1996-11-13	159.48	
1996-04-16	157.6		1995-12-05	157.12	
1995-04-19	155.87		1994-10-24	158.45	
1994-04-13	156.38		1993-12-13	156.31	
1993-04-20	156.54		1992-11-04	159.13	
1992-04-14	155.60		1991-10-24	159.69	
1991-03-18	157.72		1990-10-16	160.57	
1990-03-13	158.04		1989-10-18	161.84	
1989-03-22	158.80		1988-03-29	159.49	
1987-11-03	160.80		1987-02-25	159.96	
1986-10-22	162.09		1986-03-18	160.74	
1985-10-30	163.89		1985-03-26	162.89	
1984-10-30	165.74		1984-03-06	163.43	
1983-10-26	166.69		1983-04-15	164.23	
1982-10-06	169.98		1982-02-09	167.47	
1981-11-18	169.96		1981-04-15	172.88	
1980-10-14	176.83		1980-03-24	169.38	
1979-10-23	176.36		1979-02-13	171.39	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1978-10-18	181.70		1978-03-29	189.79	
1977-10-13	193.57		1977-03-09	183.40	
1976-11-04	182.90		1976-03-08	173.06	
1975-10-15	190.13		1975-02-12	175.15	
1974-10-22	196.40		1974-02-11	175.40	
1973-10-03	201.00		1973-02-15	176.30	
1972-10-11	190.90		1972-03-15	189.93	
1971-10-28	190.01		1971-03-16	188.15	
1970-10-22	200.50		1970-03-17	188.40	
1969-04-15	204.64		1968-03-15	201.15	
1967-11-03	200.00		1967-03-17	198.89	
1963-05-29	219.10		1920-01-16	32.00	

D10
ENE **FED USGS** **USGS3158487**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	344359118150402
Site name:	008N013W34N002S		
Latitude:	344359	EDR Site id:	USGS3158487
Longitude:	1181504	Dec lat:	34.73303858
Dec lon:	-118.25202005	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2372.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

D11
ENE
1/4 - 1/2 Mile
Lower | **FED USGS** | **USGS3158486**

Agency cd:	USGS	Site no:	344359118150401
Site name:	008N013W34N001S		
Latitude:	344359	EDR Site id:	USGS3158486
Longitude:	1181504	Dec lat:	34.73303858
Dec lon:	-118.25202005	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2372.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19610101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	208	Hole depth:	208
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

E12
West
1/4 - 1/2 Mile
Higher | **FED USGS** | **USGS3158661**

Agency cd:	USGS	Site no:	344349118154301
Site name:	007N013W04B001S		
Latitude:	344349	EDR Site id:	USGS3158661
Longitude:	1181543	Dec lat:	34.73026089
Dec lon:	-118.26285376	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2389.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	550	Hole depth:	550
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-02-21	Ground water data end date:	1957-02-21
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1957-02-21	135.00	

F13
SW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158625**

Agency cd:	USGS	Site no:	344341118154101
Site name:	007N013W04G001S		
Latitude:	344341	EDR Site id:	USGS3158625
Longitude:	1181541	Dec lat:	34.72803876
Dec lon:	-118.2622982	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2389.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-22	Ground water data end date:	1963-05-22
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-22	257.65	

G14
WNW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158506**

Agency cd:	USGS	Site no:	344401118154402
Site name:	008N013W33Q002S		
Latitude:	344401	EDR Site id:	USGS3158506
Longitude:	1181544	Dec lat:	34.73359408
Dec lon:	-118.26313152	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-12-10	Ground water data end date:	1951-12-05
Ground water data count:	6		

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1951-12-05					
Note: The well was destroyed (no water level is recorded).					
1950-11-28	70.90		1949-11-29	85.50	
1948-12-08	81.60		1947-12-09	69.30	
1946-12-10	65.40				

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

G15
WNW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158505**

Agency cd:	USGS	Site no:	344401118154401
Site name:	008N013W33Q001S		
Latitude:	344401	EDR Site id:	USGS3158505
Longitude:	1181544	Dec lat:	34.73359408
Dec lon:	-118.26313152	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1943-01-10	Ground water data end date:	1946-12-10
Ground water data count:	7		

Ground-water levels, Number of Measurements: 7

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1946-12-10					
Note: The well was destroyed (no water level is recorded).					
1945-11-08	19.05		1945-03-27	21.10	
1945-03-05	20.05		1944-05-04	20.00	
1943-12-06	20.10		1943-01-10	20.70	

G16
WNW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158507**

Agency cd:	USGS	Site no:	344401118154403
Site name:	008N013W33Q003S		
Latitude:	344401	EDR Site id:	USGS3158507
Longitude:	1181544	Dec lat:	34.73359408
Dec lon:	-118.26313152	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1956-03-08
Water quality data end date:	1956-03-08	Water quality data count:	1
Ground water data begin date:	1950-11-28	Ground water data end date:	1963-05-08
Ground water data count:	18		

Ground-water levels, Number of Measurements: 18

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-08	169.45		1962-11-14	174.20	
1961-10-19	171.00		1961-04-03	171.50	
1960-10-28	189.10		1959-11-12	164.30	
1958-11-28	149.00		1958-03-13	132.30	
1957-11-13	158.50		1957-03-06	143.70	
1956-11-20	149.70		1955-11-01	157.20	
1955-03-16	113.40		1954-11-11	139.30	
1954-03-24	109.90		1953-11-23	119.40	
1951-12-07	102.70		1950-11-28	69.90	

E17
West
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014487**

Longitude:	-118.2629
Latiude:	34.7303
Stwellno:	07N13W04B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014487

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

18
SSE
1/4 - 1/2 Mile
Higher | **FED USGS** | **USGS3158799**

Agency cd:	USGS	Site no:	344334118150901
Site name:	007N013W03E002S		
Latitude:	344334	EDR Site id:	USGS3158799
Longitude:	1181509	Dec lat:	34.72609441
Dec lon:	-118.25340904	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2380.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

F19
WSW
1/4 - 1/2 Mile
Higher | **CA WELLS** | **CADW40000014450**

Longitude:	-118.2623
Latiude:	34.728
Stwellno:	07N13W04G001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014450

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

F20
WSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158626**

Agency cd:	USGS	Site no:	344341118154501
Site name:	007N013W04G002S		
Latitude:	344341	EDR Site id:	USGS3158626
Longitude:	1181545	Dec lat:	34.72803875
Dec lon:	-118.26340935	Coor meth:	M
Coor accr:	U	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2391.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	9.0	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

G21
WNW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014537**

Longitude:	-118.2631
Latiude:	34.7336
Stwellno:	08N13W33Q001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014537

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
G22 **WNW** **1/4 - 1/2 Mile** **Higher**		**CA WELLS**	**CADW40000014538**
Longitude:	-118.2631		
Latiude:	34.7336		
Stwellno:	08N13W33Q002S		
Districtco:	3		
Welluseco:	Z		
Countyco:	19		
Gwcode:	604400		
Site id:	CADW40000014538		
G23 **WNW** **1/4 - 1/2 Mile** **Higher**		**CA WELLS**	**CADW40000014539**
Longitude:	-118.2631		
Latiude:	34.7336		
Stwellno:	08N13W33Q003S		
Districtco:	3		
Welluseco:	Z		
Countyco:	19		
Gwcode:	604400		
Site id:	CADW40000014539		
H24 **NE** **1/4 - 1/2 Mile** **Lower**		**CA WELLS**	**CADW40000014579**
Longitude:	-118.2512		
Latiude:	34.7358		
Stwellno:	08N13W34N003S		
Districtco:	3		
Welluseco:	Z		
Countyco:	19		
Gwcode:	604400		
Site id:	CADW40000014579		
I25 **ENE** **1/4 - 1/2 Mile** **Lower**		**FED USGS**	**USGS3158504**

Agency cd:	USGS	Site no:	344401118145601
Site name:	008N013W34P002S		
Latitude:	344401	EDR Site id:	USGS3158504
Longitude:	1181456	Dec lat:	34.73359412
Dec lon:	-118.24979776	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2369.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	160
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

J26
SSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158779**

Agency cd:	USGS	Site no:	344329118152901
Site name:	007N013W04J002S		
Latitude:	344329	EDR Site id:	USGS3158779
Longitude:	1181529	Dec lat:	34.72470557
Dec lon:	-118.25896478	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19200618
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	384	Hole depth:	460
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

H27
NE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3158546**

Agency cd:	USGS	Site no:	344409118150101
Site name:	008N013W34N003S		
Latitude:	344409	EDR Site id:	USGS3158546
Longitude:	1181501	Dec lat:	34.73581624
Dec lon:	-118.25118667	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2367.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19550101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	235	Hole depth:	235
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-28	Ground water data end date:	1963-05-28
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-28	71.95	

J28
South
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158777**

Agency cd:	USGS	Site no:	344328118152801
Site name:	007N013W04J001S		
Latitude:	344328	EDR Site id:	USGS3158777
Longitude:	1181528	Dec lat:	34.7244278
Dec lon:	-118.258687	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19530201
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	568	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1953-04-00	Ground water data end date:	1963-06-12
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel
1963-06-12	223.50	
Note: The site was being pumped.		
1963-05-22	238.12	
Note: The site was being pumped.		
1962-07-23	261.50	
Note: The site was being pumped.		
1959-06-16	119.50	
Note: The site was being pumped.		
1953-04	124.50	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

29
NE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3158539**

Agency cd:	USGS	Site no:	344406118145701
Site name:	008N013W34P001S		
Latitude:	344406	EDR Site id:	USGS3158539
Longitude:	1181457	Dec lat:	34.73498295
Dec lon:	-118.25007554	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2367.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19510101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	174
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

J30
SSW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014371**

Longitude:	-118.2587
Latiude:	34.7244
Stwellno:	07N13W04J001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014371

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

I31
ENE
1/2 - 1 Mile
Lower | **CA WELLS** | **CADW40000014529**

Longitude:	-118.2476
Latiude:	34.7333
Stwellno:	08N13W34P003S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014529

K32
SSE
1/2 - 1 Mile
Higher | **CA WELLS** | **CADW40000014365**

Longitude:	-118.254
Latiude:	34.7239
Stwellno:	07N13W03M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014365

33
NNE
1/2 - 1 Mile
Lower | **FED USGS** | **USGS3158580**

Agency cd:	USGS	Site no:	344418118151301
Site name:	008N013W34M001S		
Latitude:	344418	EDR Site id:	USGS3158580
Longitude:	1181513	Dec lat:	34.73831613
Dec lon:	-118.2545201	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2369.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

K34
SSE **FED USGS** **USGS3158772**
1/2 - 1 Mile
Higher

Agency cd:	USGS	Site no:	344326118151101
Site name:	007N013W03M001S		
Latitude:	344326	EDR Site id:	USGS3158772
Longitude:	1181511	Dec lat:	34.72387228
Dec lon:	-118.25396463	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2383.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19300101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	620	Hole depth:	620
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-29	Ground water data end date:	1963-05-29
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-29	173.60	

L35
ENE **FED USGS** **USGS3158497**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344400118144801
Site name:	008N013W34P003S		
Latitude:	344400	EDR Site id:	USGS3158497
Longitude:	1181448	Dec lat:	34.73331636
Dec lon:	-118.24757549	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LANCASTER WEST	Map scale:	24000
Altitude:	2365.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19510101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	200
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-08-01	Ground water data end date:	1987-03-04
Ground water data count:	31		

Ground-water levels, Number of Measurements: 31

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1987-03-04					
Note: The measurement was discontinued.					
1985-03-26	94.64		1984-10-30	93.89	
1984-03-05	93.90		1983-10-26	93.32	
1983-04-12	92.62		1982-10-06	92.00	
1982-02-08	91.05		1981-11-18	90.97	
1981-04-13	90.20		1980-10-14	89.44	
1980-04-08	88.84		1979-10-23	87.98	
1979-02-12	86.82		1978-10-18	86.37	
1978-03-27	84.92		1976-02-09	84.64	
1975-10-15	81.32		1975-02-18	80.21	
1974-02-11	78.62		1973-10-03	78.42	
1973-02-15	77.79		1972-10-11	77.66	
1972-03-15	76.98		1971-10-28	76.73	
1970-10-23	76.42		1970-03-17	75.90	
1967-11-02	75.10		1967-03-17	74.75	
1963-08-09	72.83		1963-08-01	73.00	

L36
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014540**

Longitude:	-118.2465
Latiude:	34.7336
Stwellno:	08N13W34P004S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014540

37
NW
1/2 - 1 Mile
Higher

FED USGS **USGS3158552**

Agency cd:	USGS	Site no:	344412118155001
Site name:	008N013W33L001S		
Latitude:	344412	EDR Site id:	USGS3158552
Longitude:	1181550	Dec lat:	34.73664951
Dec lon:	-118.26479822	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2390.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19620718
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

M38
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS3158773**

Agency cd:	USGS	Site no:	344326118154201
Site name:	007N013W04K001S		
Latitude:	344326	EDR Site id:	USGS3158773
Longitude:	1181542	Dec lat:	34.72387226
Dec lon:	-118.26257601	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2392.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19500401
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	496	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

L39
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014526**

Longitude:	-118.2459
Latiude:	34.733
Stwellno:	08N13W34Q001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014526

M40
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3158774**

Agency cd:	USGS	Site no:	344326118154501
Site name:	007N013W04K003S		
Latitude:	344326	EDR Site id:	USGS3158774
Longitude:	1181545	Dec lat:	34.72387226
Dec lon:	-118.26340937	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	124000
Altitude:	2392.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	98.0	Hole depth:	98.0
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

L41
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158503**

Agency cd:	USGS	Site no:	344401118144401
Site name:	008N013W34P004S		
Latitude:	344401	EDR Site id:	USGS3158503
Longitude:	1181444	Dec lat:	34.73359413
Dec lon:	-118.24646434	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2364.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19600101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	200
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-08-01	Ground water data end date:	1963-08-09
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-08-09	70.35		1963-08-01	70.00	

M42
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS3158769**

Agency cd:	USGS	Site no:	344324118154401
Site name:	007N013W04K002S		
Latitude:	344324	EDR Site id:	USGS3158769
Longitude:	1181544	Dec lat:	34.72331673
Dec lon:	-118.26313159	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2392.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19200817
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	502	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1920-08-17	Ground water data end date:	1920-08-17
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1920-08-17	40.00	

N43
East
1/2 - 1 Mile
Lower

FED USGS **USGS3158694**

Agency cd:	USGS	Site no:	344357118144201
Site name:	007N013W03B001S		
Latitude:	344357	EDR Site id:	USGS3158694
Longitude:	1181442	Dec lat:	34.73248307
Dec lon:	-118.24590878	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2366.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

N44
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158485**

Agency cd:	USGS	Site no:	344359118144201
Site name:	008N013W34Q001S		
Latitude:	344359	EDR Site id:	USGS3158485
Longitude:	1181442	Dec lat:	34.7330386
Dec lon:	-118.24590878	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2365.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-08-01	Ground water data end date:	1963-08-09
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-08-09	77.86		1963-08-01	78.00	

O45
ESE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014397**

Longitude:	-118.2462
Latiude:	34.7261
Stwellno:	07N13W03G001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014397

46
SW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014351**

Longitude:	-118.2631
Latiude:	34.7233
Stwellno:	07N13W04K002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014351

P47
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3158782**

Agency cd:	USGS	Site no:	344330118155501
Site name:	007N013W04L002S		
Latitude:	344330	EDR Site id:	USGS3158782
Longitude:	1181555	Dec lat:	34.72498332
Dec lon:	-118.26618723	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2396.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

P48
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3158783**

Agency cd:	USGS	Site no:	344331118155801
Site name:	007N013W04L001S		
Latitude:	344331	EDR Site id:	USGS3158783
Longitude:	1181558	Dec lat:	34.72526108
Dec lon:	-118.26702059	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2396.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	481	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-21	Ground water data end date:	1963-05-21
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-21	227.30	

Note: A nearby site that taps the same aquifer was being pumped.

49
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3158379**

Agency cd:	USGS	Site no:	344424118154401
Site name:	008N013W33K001S		
Latitude:	344424	EDR Site id:	USGS3158379
Longitude:	1181544	Dec lat:	34.73998271
Dec lon:	-118.26313148	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2383.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

O50
ESE **FED USGS** **USGS3158798**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344334118144301
Site name:	007N013W03G001S		
Latitude:	344334	EDR Site id:	USGS3158798
Longitude:	1181443	Dec lat:	34.72609444
Dec lon:	-118.24618661	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2370.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19280101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1928-03-21	Ground water data end date:	1928-03-21
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1928-03-21	56.00	

51
SSE **FED USGS** **USGS3158721**
1/2 - 1 Mile
Higher

Agency cd:	USGS	Site no:	344315118151301
Site name:	007N013W03N001S		
Latitude:	344315	EDR Site id:	USGS3158721
Longitude:	1181513	Dec lat:	34.72081685
Dec lon:	-118.25452022	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	SWSWS3T7NR13WS
Location map:	DEL SUR	Map scale:	24000
Altitude:	2380.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19490711
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	550	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

52
WSW **CA WELLS** **CADW40000014378**
1/2 - 1 Mile
Higher

Longitude:	-118.267
Latiude:	34.7253
Stwellno:	07N13W04L001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014378

Q53
NE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014590**

Longitude:	-118.2456
Latiude:	34.7375
Stwellno:	08N13W34L001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014590

54
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3158399**

Agency cd:	USGS	Site no:	344429118154401
Site name:	008N013W33G001S		
Latitude:	344429	EDR Site id:	USGS3158399
Longitude:	1181544	Dec lat:	34.74137154
Dec lon:	-118.26313147	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2385.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19161124
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	401	Hole depth:	401
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

Q55
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3158565**

Agency cd:	USGS	Site no:	344415118144101
Site name:	008N013W34L001S		
Latitude:	344415	EDR Site id:	USGS3158565
Longitude:	1181441	Dec lat:	34.73748287
Dec lon:	-118.24563096	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2364.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	109
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-08-01	Ground water data end date:	1963-08-08
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-08-08	82		1963-08-01	82.00	

56
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158555**

Agency cd:	USGS	Site no:	344413118143801
Site name:	008N013W34K001S		
Latitude:	344413	EDR Site id:	USGS3158555
Longitude:	1181438	Dec lat:	34.73692734
Dec lon:	-118.24479761	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2360.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

R57
SE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014339**

Longitude:	-118.2459
Latiude:	34.7228
Stwellno:	07N13W03K001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014339

R58
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3158754**

Agency cd:	USGS	Site no:	344322118144201
Site name:	007N013W03K001S		
Latitude:	344322	EDR Site id:	USGS3158754
Longitude:	1181442	Dec lat:	34.72276124
Dec lon:	-118.24590885	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2373.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19370101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1953-00-00	Ground water data end date:	1960-03-23
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1960-03-23	125.00		1953	165.00	

S59
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3158788**

Agency cd:	USGS	Site no:	344333118161301
Site name:	007N013W04M001S		
Latitude:	344333	EDR Site id:	USGS3158788
Longitude:	1181613	Dec lat:	34.72581661
Dec lon:	-118.27118739	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2403.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19520702
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	908	Hole depth:	908
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

T60
East
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014524**

Longitude:	-118.2404
Latiude:	34.7325
Stwellno:	07N13W03A001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014524

S61
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3158789**

Agency cd:	USGS	Site no:	344333118161501
Site name:	007N013W04M002S		
Latitude:	344333	EDR Site id:	USGS3158789
Longitude:	1181615	Dec lat:	34.72581661
Dec lon:	-118.27174296	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2403.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19290101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	820	Hole depth:	820
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-14	Ground water data end date:	1963-05-14
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-14	190.00	

Note: A nearby site that taps the same aquifer was being pumped.

62
South
1/2 - 1 Mile
Lower

FED USGS **USGS3158863**

Agency cd:	USGS	Site no:	344305118151101
Site name:	007N013W10D001S		
Latitude:	344305	EDR Site id:	USGS3158863
Longitude:	1181511	Dec lat:	34.71803918
Dec lon:	-118.25396467	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2375.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19200630
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	445	Hole depth:	445
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

63
South
1/2 - 1 Mile
Higher

FED USGS **USGS3158846**

Agency cd:	USGS	Site no:	344304118153101
Site name:	007N013W09Z001S		
Latitude:	344304	EDR Site id:	USGS3158846
Longitude:	1181531	Dec lat:	34.71776141
Dec lon:	-118.2595204	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2380.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1944-09-12
Water quality data end date:	1944-09-12	Water quality data count:	1
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

U64
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS3158553**

Agency cd:	USGS	Site no:	344412118161601
Site name:	008N013W33M001S		
Latitude:	344412	EDR Site id:	USGS3158553
Longitude:	1181616	Dec lat:	34.73664949
Dec lon:	-118.27202068	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2400.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19260306
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1962-07-01	Ground water data end date:	1962-07-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1962-07-01	278.50	

65
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3158735**

Agency cd:	USGS	Site no:	344319118143901
Site name:	007N013W03Q001S		
Latitude:	344319	EDR Site id:	USGS3158735
Longitude:	1181439	Dec lat:	34.72192795
Dec lon:	-118.2450755	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2373.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19240101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

66
South
1/2 - 1 Mile
Lower

FED USGS **USGS3158839**

Agency cd:	USGS	Site no:	344303118153201
Site name:	007N013W09B001S		
Latitude:	344303	EDR Site id:	USGS3158839
Longitude:	1181520	Dec lat:	34.71748364
Dec lon:	-118.25646475	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2379.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

67
WSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014387**

Longitude:	-118.2717
Latiude:	34.7258
Stwellno:	07N13W04M002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014387

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

T68
East
1/2 - 1 Mile
Lower

FED USGS **USGS3158693**

Agency cd:	USGS	Site no:	344357118142201
Site name:	007N013W03A001S		
Latitude:	344357	EDR Site id:	USGS3158693
Longitude:	1181422	Dec lat:	34.73248309
Dec lon:	-118.24035308	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2360.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19550101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	120
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-07-31	Ground water data end date:	1963-07-31
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-07-31	55.00	

U69
WNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014582**

Longitude:	-118.272
Latiude:	34.7367
Stwellno:	08N13W33M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014582

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

70
SSW
1/2 - 1 Mile
Higher | **FED USGS** | **USGS3158847**

Agency cd:	USGS	Site no:	344304118154401
Site name:	007N013W09B002S		
Latitude:	344304	EDR Site id:	USGS3158847
Longitude:	1181544	Dec lat:	34.7177614
Dec lon:	-118.26313163	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2383.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19181212
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	502	Hole depth:	502
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1944-09-12
Water quality data end date:	1944-09-12	Water quality data count:	1
Ground water data begin date:	1918-12-12	Ground water data end date:	1918-12-12
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1918-12-12	33.00	

71
ESE
1/2 - 1 Mile
Lower | **CA WELLS** | **CADW40000014352**

Longitude:	-118.2415
Latiude:	34.7233
Stwellno:	07N13W03J001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014352

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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American Solar Greenworks
6
Lancaster, CA 93536

Inquiry Number: 3089735.115
June 08, 2011

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
American Solar Greenworks
6
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089735.115

Contact: Garret Bean

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Tetra Tech Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: American Solar Greenworks
Address: 6
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 9
Certification # 4A63-455B-9F24

Sanborn® Library search results
Certification # 4A63-455B-9F24

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Pinnacle Solar Ranch
23
Lancaster, CA 93536

Inquiry Number: 3089735.121s
June 08, 2011

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

23
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.727600 - 34° 43' 39.4''
Longitude (West):	118.259200 - 118° 15' 33.1''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	384710.5
UTM Y (Meters):	3843360.8
Elevation:	2388 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974
East Map:	34118-F2 LANCASTER WEST, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	2006, 2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
SLIC ---------- Statewide SLIC Cases

INDIAN LUST - Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST - Active UST Facilities
AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - Underground Storage Tanks on Indian Land
FEMA UST - Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP - Voluntary Cleanup Program Properties
INDIAN VCP - Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI - Open Dump Inventory
DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT - Waste Management Unit Database
SWRCY - Recycler Database
HAULERS - Registered Waste Tire Haulers Listing
INDIAN ODI - Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL - Clandestine Drug Labs
HIST Cal-Sites - Historical Calsites Database
SCH - School Property Evaluation Program
Toxic Pits - Toxic Pits Cleanup Act Sites
AOCONCERN - San Gabriel Valley Areas of Concern
CDL - Clandestine Drug Labs
US HIST CDL - National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

HIST UST - Hazardous Substance Storage Container Database

Local Land Records

LIENS 2 - CERCLA Lien Information
LUCIS - Land Use Control Information System
LIENS - Environmental Liens Listing
DEED - Deed Restriction Listing

Records of Emergency Release Reports

HMIRS - Hazardous Materials Information Reporting System
CHMIRS - California Hazardous Material Incident Report System

LDS Land Disposal Sites Listing
MCS Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen RCRA - Non Generators
DOT OPS Incident and Accident Data
DOD Department of Defense Sites
FUDS Formerly Used Defense Sites
CONSENT Superfund (CERCLA) Consent Decrees
ROD Records Of Decision
UMTRA Uranium Mill Tailings Sites
MINES Mines Master Index File
TRIS Toxic Chemical Release Inventory System
TSCA Toxic Substances Control Act
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
SSTS Section 7 Tracking Systems
ICIS Integrated Compliance Information System
PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database
FINDS Facility Index System/Facility Registry System
RAATS RCRA Administrative Action Tracking System
CA BOND EXP. PLAN Bond Expenditure Plan
NPDES NPDES Permits Listing
WDS Waste Discharge System
Cortese "Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE Hazardous Waste & Substance Site List
Notify 65 Proposition 65 Records
LA Co. Site Mitigation Site Mitigation List
DRYCLEANERS Cleaner Facilities
WIP Well Investigation Program Case List
LOS ANGELES CO. HMS HMS: Street Number List
HAZNET Facility and Manifest Data
EMI Emissions Inventory Data
INDIAN RESERV Indian Reservations
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
FINANCIAL ASSURANCE Financial Assurance Information Listing
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
PROC Certified Processors Database
MWMP Medical Waste Management Program Listing
COAL ASH DOE Sleam-Electric Plan Operation Data

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants EDR Proprietary Manufactured Gas Plants
EDR Historical Auto Stations EDR Proprietary Historic Gas Stations

EXECUTIVE SUMMARY

EDR Historical Cleaners ----- EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
PERRY MORGAN	***7362 W AVENUE G***	***NNW 1/4 - 1/2 (0.386 mi.)***	***1***	***8***

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.5 miles of the target property.

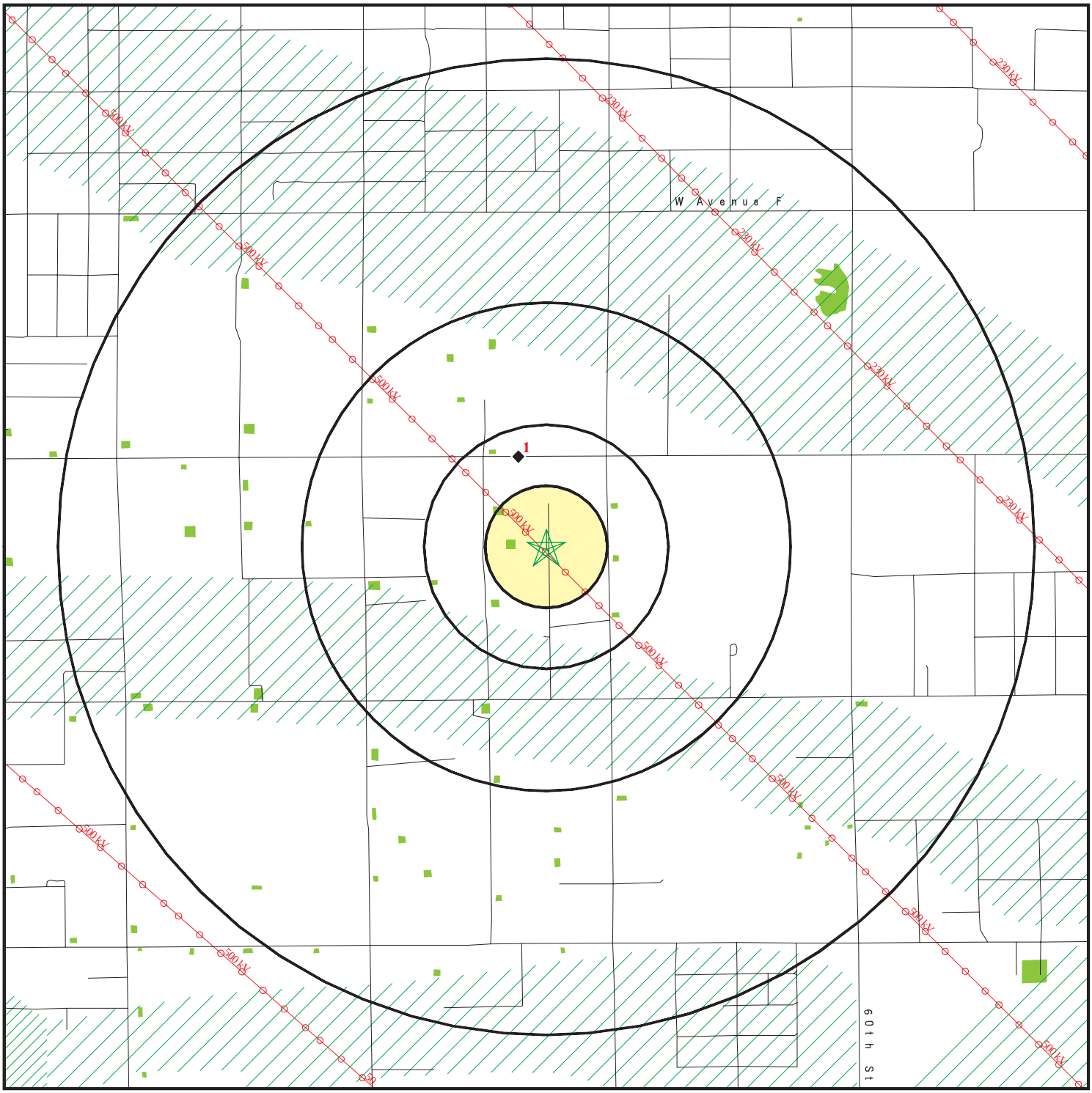
Lower Elevation	Address	Direction / Distance	Map ID	Page
PERRY MORGAN	***7362 W AVENUE G***	***NNW 1/4 - 1/2 (0.386 mi.)***	***1***	***8***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 38 records.

Site Name	Database(s)
TRACT NO 060987	NPDES
GRANDIFLORA	NPDES
TRACT 60209	NPDES
AVE E ETAL	NPDES
SO CALIF EDISON CO	NPDES, HAZNET
AVENUE K & 47TH STREET WEST	NPDES
D & D WELDING	NPDES
TRACT 060430	NPDES
SUNSET LANDING	NPDES
70TH STREET WEST L 8 AVE	NPDES
TRTP YARD 28 MATERIAL STORAGE	NPDES
MERIDIAN AT QUARTZ HILL	NPDES
GREGG ANDERSON SCHOOL PALM RANCH I	NPDES
WILDFLOWER & CAPISTRANO	NPDES
HARSHFIELD TERRACE RETIREMENT HOUS	NPDES
CAL MAT	SWEEPS UST
RETLAW WEST RANCH	CA FID UST, SWEEPS UST
ON AVENUE G, BETWEEN 100 WEST	CDL
ON NORTH 35TH STREET WEST AT A	CDL
28.15 MI.MARKER ON ANGELES CRE	CDL
5 MI NW OF HWY 138 & 300TH ST	AST
PAR ELECTRICAL CONTRACTORS INC	HAZNET
SOUTHERN CALIFORNIA EDISON/ANTELOP	HAZNET
JMC TRANSPORTATION	HAZNET
OSO PUMPING PLANT	HAZNET
ILLEGAL DRUG LAB/OPERATOR UNKNOWN	HAZNET
LOS ANGELES COUNTY DEPT OF PUBLIC	HAZNET
CNTY LOS ANGELES/RD 551	HAZNET
SOARING VISTA RANCH COMPOSTING	WDS
3995 AVENUE H W	US CDL
VALUE CLEANERS, STUART MATROS	EMI
ANTELOPE VALLEY COLLEGE	EMI
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
CASTA DWR- CHECK SITE 59	EMI
JOE WALKER MIDDLE SCHOOL	EMI
BURGER KING	EMI
LACO RD 551 ROAD MAINTENANCE YARD	EMI

OVERVIEW MAP - 3089735.121s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/2 1 2 Miles

- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Pinnacle Solar Ranch ADDRESS: 23 Lancaster CA 93536 LAT/LONG: 34.7276 / 118.2592	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.121s DATE: June 08, 2011 12:59 pm

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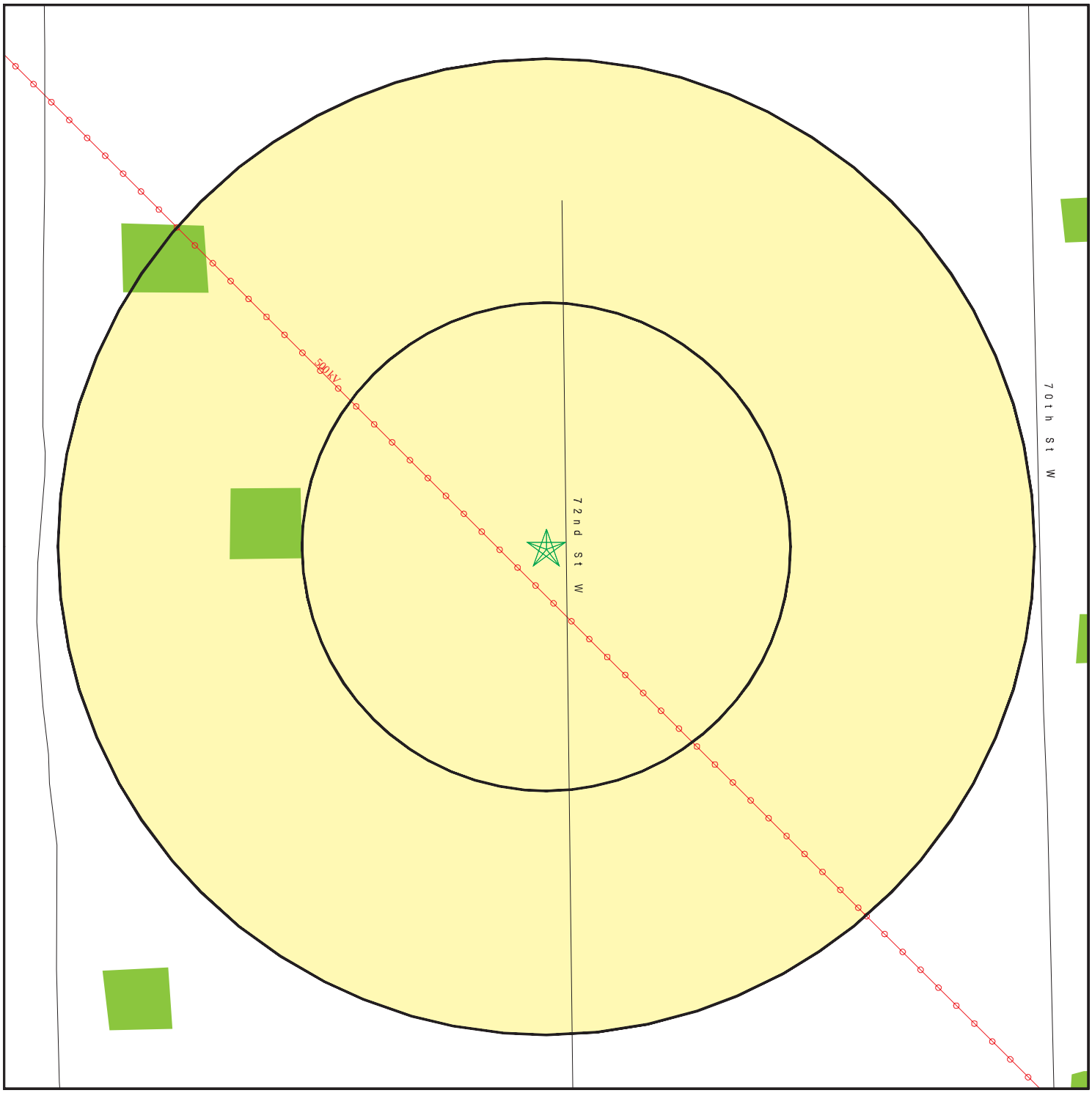
DETAIL MAP - 3089735.121s



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Pinnacle Solar Ranch ADDRESS: 23 Lancaster CA 93536 LAT/LONG: 34.7276 / 118.2592	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.121s DATE: June 08, 2011 1:01 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.250	0	0	0	0	0	0
Proposed NPL		1.250	0	0	0	0	0	0
NPL LIENS		0.250	0	0	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.250	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		0.750	0	0	0	0	NR	0
FEDERAL FACILITY		1.250	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.750	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.250	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.750	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.500	0	0	0	NR	NR	0
RCRA-SQG		0.500	0	0	0	NR	NR	0
RCRA-CESQG		0.500	0	0	0	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.750	0	0	0	0	NR	0
US INST CONTROL		0.750	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.250	0	0	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.250	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.250	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.750	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		0.750	0	0	0	0	NR	0
SLIC		0.750	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST		0.750	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.500	0	0	0	NR	NR	0
AST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.500	0	0	0	NR	NR	0
FEMA UST		0.500	0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.750	0	0	0	0	NR	0
INDIAN VCP		0.750	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.750	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		0.750	0	0	0	0	NR	0
DEBRIS REGION 9		0.750	0	0	0	0	NR	0
WMUDS/SWAT		0.750	0	0	0	0	NR	0
SWRCY		0.750	0	0	0	0	NR	0
HAULERS		0.250	0	0	NR	NR	NR	0
INDIAN ODI		0.750	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.250	0	0	NR	NR	NR	0
HIST Cal-Sites		1.250	0	0	0	0	0	0
SCH		0.500	0	0	0	NR	NR	0
Toxic Pits		1.250	0	0	0	0	0	0
AOCONCERN		1.250	0	0	0	0	0	0
CDL		0.250	0	0	NR	NR	NR	0
US HIST CDL		0.250	0	0	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.500	0	0	1	NR	NR	1
HIST UST		0.500	0	0	0	NR	NR	0
SWEEPS UST		0.500	0	0	1	NR	NR	1
Local Land Records								
LIENS 2		0.250	0	0	NR	NR	NR	0
LUCIS		0.750	0	0	0	0	NR	0
LIENS		0.250	0	0	NR	NR	NR	0
DEED		0.750	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.250	0	0	NR	NR	NR	0
CHMIRS		0.250	0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS		0.250	0	0	NR	NR	NR	0
MCS		0.250	0	0	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.500	0	0	0	NR	NR	0
DOT OPS		0.250	0	0	NR	NR	NR	0
DOD		1.250	0	0	0	0	0	0
FUDS		1.250	0	0	0	0	0	0
CONSENT		1.250	0	0	0	0	0	0
ROD		1.250	0	0	0	0	0	0
UMTRA		0.750	0	0	0	0	NR	0
MINES		0.500	0	0	0	NR	NR	0
TRIS		0.250	0	0	NR	NR	NR	0
TSCA		0.250	0	0	NR	NR	NR	0
FTTS		0.250	0	0	NR	NR	NR	0
HIST FTTS		0.250	0	0	NR	NR	NR	0
SSTS		0.250	0	0	NR	NR	NR	0
ICIS		0.250	0	0	NR	NR	NR	0
PADS		0.250	0	0	NR	NR	NR	0
MLTS		0.250	0	0	NR	NR	NR	0
RADINFO		0.250	0	0	NR	NR	NR	0
FINDS		0.250	0	0	NR	NR	NR	0
RAATS		0.250	0	0	NR	NR	NR	0
CA BOND EXP. PLAN		1.250	0	0	0	0	0	0
NPDES		0.250	0	0	NR	NR	NR	0
WDS		0.250	0	0	NR	NR	NR	0
Cortese		0.750	0	0	0	0	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.250	0	0	0	0	0	0
LA Co. Site Mitigation		0.250	0	0	NR	NR	NR	0
DRYCLEANERS		0.500	0	0	0	NR	NR	0
WIP		0.500	0	0	0	NR	NR	0
LOS ANGELES CO. HMS		0.250	0	0	NR	NR	NR	0
HAZNET		0.250	0	0	NR	NR	NR	0
EMI		0.250	0	0	NR	NR	NR	0
INDIAN RESERV		1.250	0	0	0	0	0	0
SCRD DRYCLEANERS		0.750	0	0	0	0	NR	0
FINANCIAL ASSURANCE		0.250	0	0	NR	NR	NR	0
HWP		1.250	0	0	0	0	0	0
HWT		0.500	0	0	0	NR	NR	0
COAL ASH EPA		0.750	0	0	0	0	NR	0
PCB TRANSFORMER		0.250	0	0	NR	NR	NR	0
PROC		0.750	0	0	0	0	NR	0
MWMP		0.500	0	0	0	NR	NR	0
COAL ASH DOE		0.250	0	0	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.250	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.500	0	0	0	NR	NR	0
EDR Historical Cleaners		0.500	0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
NNW
1/4-1/2
0.386 mi.
2040 ft.

PERRY MORGAN
7362 W AVENUE G
LANCASTER, CA 93536

CA FID UST **S101585008**
SWEEPS UST **N/A**

Relative:
Lower

Actual:
2387 ft.

CA FID UST:

Facility ID:	19018141
Regulated By:	UTNKA
Regulated ID:	Not reported
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	Not reported
Mail To:	Not reported
Mailing Address:	7734 EL MANOR AVE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	LANCASTER 93536
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

SWEEPS UST:

Status:	A
Comp Number:	16899
Number:	2
Board Of Equalization:	Not reported
Ref Date:	06-10-92
Act Date:	08-11-92
Created Date:	08-11-92
Tank Status:	A
Owner Tank Id:	1
Swrcb Tank Id:	19-000-016899-000001
Actv Date:	06-10-92
Capacity:	550
Tank Use:	M.V. FUEL
Stg:	P
Content:	LEADED
Number Of Tanks:	1

Count: 38 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
LANCASTER	S110374354	PAR ELECTRICAL CONTRACTORS INC	2866TH & 2 W AVENUE F	93536	HAZNET
LANCASTER	S109462558	TRACT NO 060987	52 52ND ST W / AVENUE J	93536	NPDES
LANCASTER	S109444838	GRANDIFLORA	60 60TH STREET WEST / AVENUE	93536	NPDES
LANCASTER	S104586626	SOARING VISTA RANCH COMPOSTING	AVE A 140 ST W.	0	WDS
LANCASTER	S110736869	TRACT 60209	W AVE M & 70TH ST W	93536	NPDES
LANCASTER	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES
LANCASTER	S104568573	SO CALIF EDISON CO	9634 W AVENUE J	93536	NPDES, HAZNET
LANCASTER	S107143259	SOUTHERN CALIFORNIA EDISON/ANTELOP	9634 W AVENUE J	93536	HAZNET
LANCASTER	S106842034	VALUE CLEANERS, STUART MATROS	2849 W AVENUE L	93536	EMI
LANCASTER	S106826009	ANTELOPE VALLEY COLLEGE	3041 W AVENUE K	93536	EMI
LANCASTER	S107539709		ON AVENUE G, BETWEEN 100 WEST	93536	CDL
LANCASTER	S109436818	AVENUE K & 47TH STREET WEST	AVENUE K / 47TH STREET WEST		NPDES
LANCASTER	1012055833	3995 AVENUE H W	3995 AVENUE H W		US CDL
LANCASTER	S110367727	JMC TRANSPORTATION	W AVENUE L AT 30TH ST	93536	HAZNET
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S101620943	RETLAW WEST RANCH	44040 E N 110TH ST		CA FID UST, SWEEPS UST
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 / 300TH S	93536	HAZNET
LANCASTER	S107539974		ON NORTH 35TH STREET WEST AT A	93536	CDL
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
LANCASTER	S109441193	D & D WELDING	NWC AVENUE L I2 / 7TH ST E		NPDES
LANCASTER	S109461420	TRACT 060430	SE OF 37TH STREET WEST / AVE		NPDES
LANCASTER	S109460024	SUNSET LANDING	SE OF INTERSECTION OF 45 ST W	93536	NPDES
LOS ANGELES	S110731583	70TH STREET WEST L 8 AVE	70 70TH ST W	93536	NPDES
LOS ANGELES	S110736984	TRTP YARD 28 MATERIAL STORAGE	W AVENUE I AND 73RD ST	93536	NPDES
LOS ANGELES	S110734625	MERIDIAN AT QUARTZ HILL	NWC 70TH ST & AVE L 8	93536	NPDES
LOS ANGELES	S110733596	GREGG ANDERSON SCHOOL PALM RANCH I	W OF RANCHO VISTA BLVD N	93536	NPDES
LOS ANGELES	S110737467	WILDFLOWER & CAPISTRANO	SEC OF 72ND ST W & AVE L	93536	NPDES
LOS ANGELES COUNTY	S107532211		28.15 MI.MARKER ON ANGELES CRE	0	CDL
PALMDALE	S103678194	ILLEGAL DRUG LAB/OPERATOR UNKNOWN	AVENUE T, 175TH ST EAST	93536	HAZNET
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HW	93536	EMI
QUARTZ HILL	S103975334	LOS ANGELES COUNTY DEPT OF PUBLIC	4859 W AVENUE L 12	93536	HAZNET
QUARTZ HILL	S103957875	CNTY LOS ANGELES/RD 551	4859 W AVENUE L 12	93536	HAZNET
QUARTZ HILL	S106920975	JOE WALKER MIDDLE SCHOOL	5632 W AVENUE L 8	93536	EMI
QUARTZ HILL	S106920186	BURGER KING	4107 W AVENUE L	93536	EMI
QUARTZ HILL	S108432323	LACO RD 551 ROAD MAINTENANCE YARD	4859 W AVENUE L 12	93536	EMI
QUARTZ HILL	S110042892	HARSHFIELD TERRACE RETIREMENT HOUS	6709 W AVENUE M	93536	NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPAa??s Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/15/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 05/25/2010
Date Data Arrived at EDR: 06/02/2010
Date Made Active in Reports: 10/04/2010
Number of Days to Update: 124

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/07/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 11/04/2009
Date Data Arrived at EDR: 05/04/2010
Date Made Active in Reports: 07/07/2010
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 12/02/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 57

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/03/2011
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/01/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 12/29/2010
Date Data Arrived at EDR: 12/30/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 02/24/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 46

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/07/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 03/04/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 05/02/2011
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/18/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 51

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/21/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 30

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

Other Ascertainable Records

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2011
Date Data Arrived at EDR: 02/11/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/15/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 10/29/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 5

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/21/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 99

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/02/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/08/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/17/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 94

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/07/2011
Date Data Arrived at EDR: 01/21/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/11/2011
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Biennially

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/04/2011
Number of Days to Update: 29

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/15/2010
Date Data Arrived at EDR: 09/16/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 13

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/07/2010
Date Made Active in Reports: 08/12/2010
Number of Days to Update: 36

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/01/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 02/28/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/04/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/09/2010
Date Data Arrived at EDR: 08/11/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 9
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 04/26/2011
Number of Days to Update: 41

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 33

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 03/29/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COLUSA COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 12/01/2010
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/06/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/31/2011
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/25/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2011
Date Data Arrived at EDR: 02/09/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 23
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/18/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/12/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 30
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/26/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 22
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 04/25/2011
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/20/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/07/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/15/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 16

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/17/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 31

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 20

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 11/16/2010
Date Made Active in Reports: 01/25/2011
Number of Days to Update: 70

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/21/2010
Next Scheduled EDR Contact: 03/28/2011
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/16/2011
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/30/2011
Date Data Arrived at EDR: 03/31/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 22
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/22/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 29
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 36
Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/14/2011
Date Data Arrived at EDR: 03/15/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 9
Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/25/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 25
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/07/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 35
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/07/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/08/2011
Number of Days to Update: 28

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 30

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 01/25/2011
Date Data Arrived at EDR: 02/03/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 29

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/26/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/22/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 05/12/2011
Date Made Active in Reports: 05/24/2011
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/12/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/06/2011
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/19/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 38

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/06/2010
Date Made Active in Reports: 07/26/2010
Number of Days to Update: 20

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

PINNACLE SOLAR RANCH
23
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.72760 - 34° 43' 39.4''
Longitude (West):	118.2592 - 118° 15' 33.1''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	384710.5
UTM Y (Meters):	3843360.8
Elevation:	2388 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974
East Map:	34118-F2 LANCASTER WEST, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

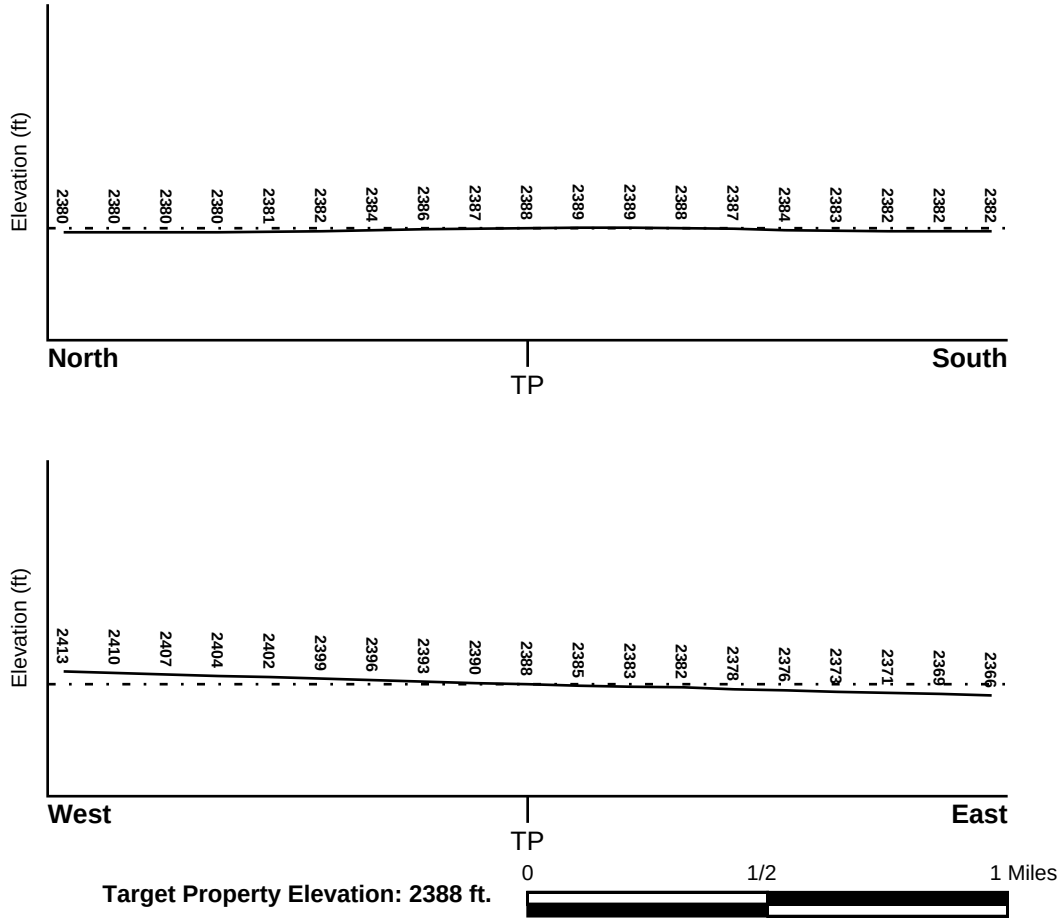
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 2388 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
DEL SUR	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

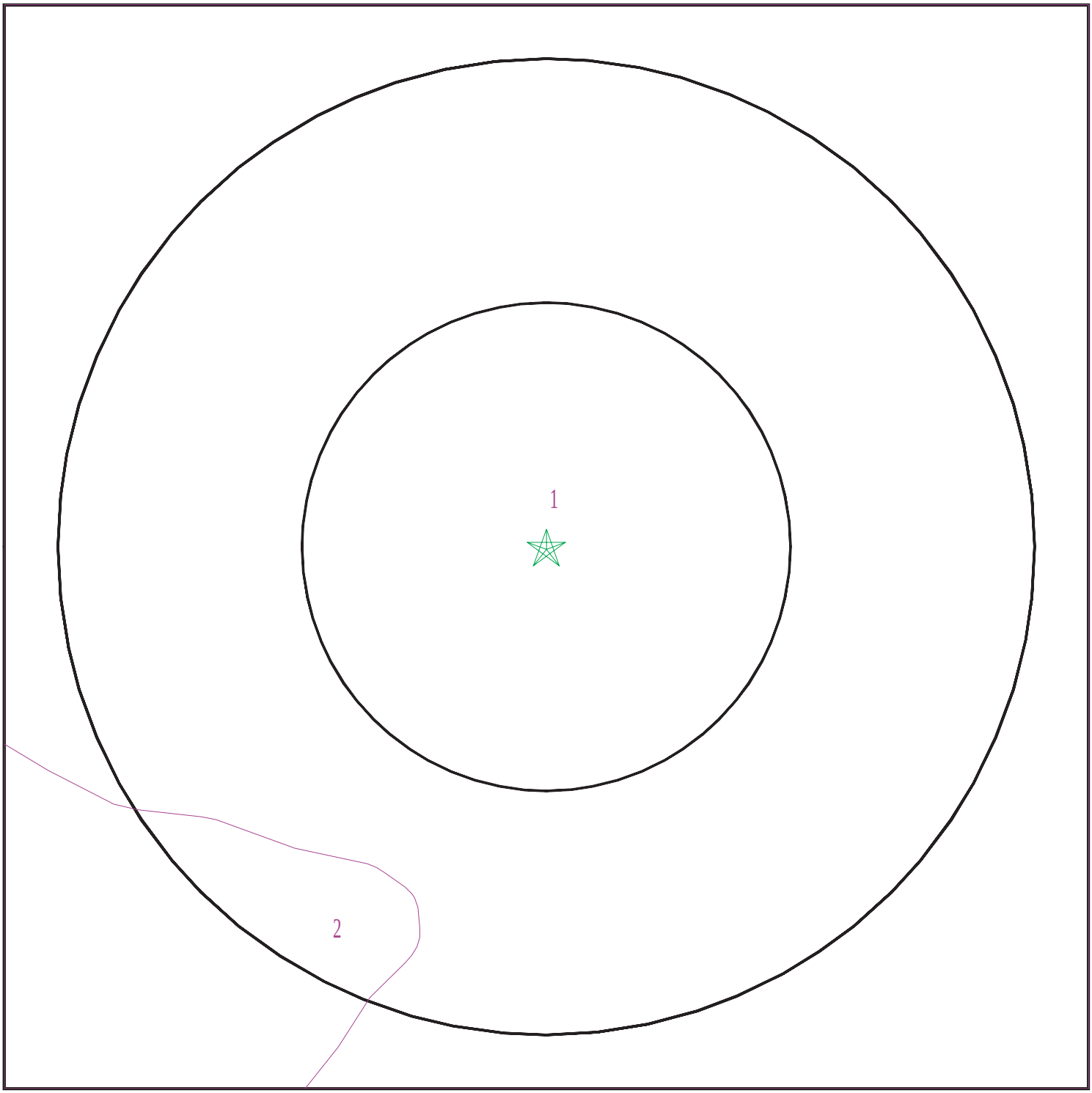
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3089735.121s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Pinnacle Solar Ranch	CLIENT:	Tetra Tech Inc.
ADDRESS:	23 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.7276 / 118.2592	INQUIRY #:	3089735.121s
		DATE:	June 08, 2011 1:02 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Hesperia

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	3 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4
2	3 inches	53 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4
3	53 inches	77 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 2

Soil Component Name: Cajon

Soil Surface Texture: loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.4
2	9 inches	59 inches	sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 7.4

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS3158624	0 - 1/8 Mile NE
A2	USGS3158625	1/8 - 1/4 Mile West
B3	USGS3158779	1/8 - 1/4 Mile South
B5	USGS3158777	1/8 - 1/4 Mile South
A8	USGS3158626	1/8 - 1/4 Mile West
C10	USGS3158606	1/4 - 1/2 Mile East
E11	USGS3158661	1/4 - 1/2 Mile NW
D13	USGS3158649	1/4 - 1/2 Mile ENE
F14	USGS3158773	1/4 - 1/2 Mile SW
D16	USGS3158654	1/4 - 1/2 Mile ENE
17	USGS3158799	1/4 - 1/2 Mile ESE
F18	USGS3158774	1/4 - 1/2 Mile SW
F20	USGS3158769	1/4 - 1/2 Mile SW
G21	USGS3158772	1/4 - 1/2 Mile SE
I24	USGS3158782	1/4 - 1/2 Mile WSW
H25	USGS3158498	1/4 - 1/2 Mile NNE
J26	USGS3158506	1/4 - 1/2 Mile NNW
J27	USGS3158505	1/4 - 1/2 Mile NNW
J28	USGS3158507	1/4 - 1/2 Mile NNW
I29	USGS3158783	1/4 - 1/2 Mile WSW
34	USGS3158721	1/2 - 1 Mile SSE
K35	USGS3158487	1/2 - 1 Mile NE
K36	USGS3158486	1/2 - 1 Mile NE
L37	USGS3158504	1/2 - 1 Mile NE
38	USGS3158846	1/2 - 1 Mile South
M39	USGS3158788	1/2 - 1 Mile West
42	USGS3158552	1/2 - 1 Mile NNW
P43	USGS3158847	1/2 - 1 Mile SSW
44	USGS3158839	1/2 - 1 Mile SSE
45	USGS3158863	1/2 - 1 Mile SSE
M47	USGS3158789	1/2 - 1 Mile West
48	USGS3158539	1/2 - 1 Mile NE
N49	USGS3158546	1/2 - 1 Mile NE
O51	USGS3158798	1/2 - 1 Mile East
Q52	USGS3158497	1/2 - 1 Mile ENE
55	USGS3158580	1/2 - 1 Mile NNE
R58	USGS3158754	1/2 - 1 Mile ESE
S59	USGS3158694	1/2 - 1 Mile ENE
Q60	USGS3158503	1/2 - 1 Mile ENE
S61	USGS3158485	1/2 - 1 Mile ENE
62	USGS3158379	1/2 - 1 Mile NNW

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
T63	USGS3158739	1/2 - 1 Mile WSW
64	USGS3158735	1/2 - 1 Mile ESE
T65	USGS3158747	1/2 - 1 Mile WSW
66	USGS3159015	1/2 - 1 Mile SSE
U67	USGS3159013	1/2 - 1 Mile South
U68	USGS3159014	1/2 - 1 Mile SSW
69	USGS3158553	1/2 - 1 Mile NW
71	USGS3158399	1/2 - 1 Mile NNW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

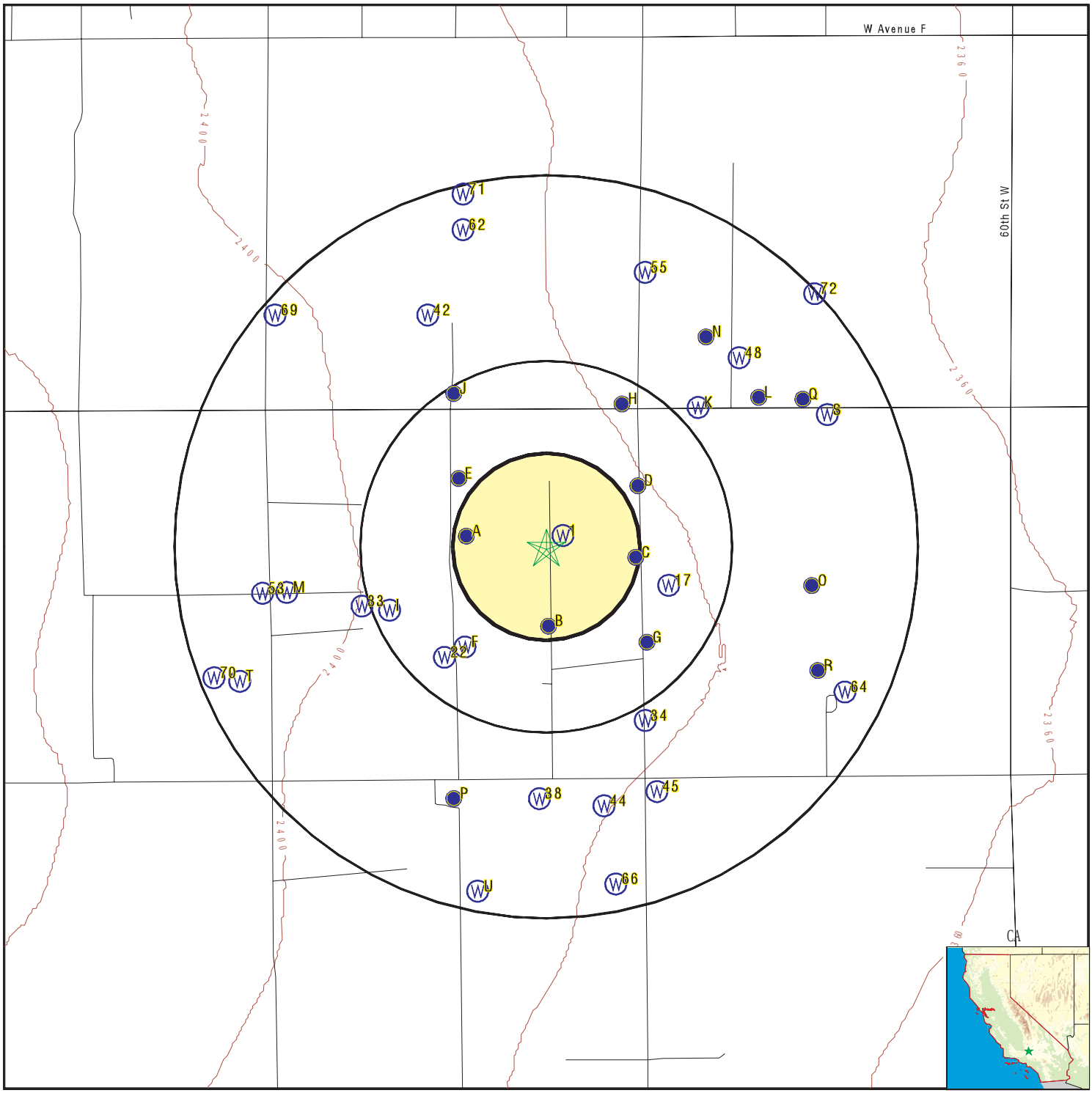
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
C4	CADW40000014427	1/8 - 1/4 Mile East
B6	CADW40000014371	1/8 - 1/4 Mile South
A7	CADW40000014450	1/8 - 1/4 Mile West
D9	CADW40000014469	1/4 - 1/2 Mile ENE
D12	CADW40000014488	1/4 - 1/2 Mile NE
E15	CADW40000014487	1/4 - 1/2 Mile NW
G19	CADW40000014365	1/4 - 1/2 Mile SE
22	CADW40000014351	1/4 - 1/2 Mile SW
H23	8483	1/4 - 1/2 Mile NNE
J30	CADW40000014537	1/4 - 1/2 Mile NNW
J31	CADW40000014538	1/4 - 1/2 Mile NNW
J32	CADW40000014539	1/4 - 1/2 Mile NNW
33	CADW40000014378	1/2 - 1 Mile WSW
N40	CADW40000014579	1/2 - 1 Mile NE
O41	CADW40000014397	1/2 - 1 Mile East
L46	CADW40000014529	1/2 - 1 Mile ENE
P50	CADW40000014251	1/2 - 1 Mile SSW
53	CADW40000014387	1/2 - 1 Mile West
R54	CADW40000014339	1/2 - 1 Mile ESE
Q56	CADW40000014540	1/2 - 1 Mile ENE
Q57	CADW40000014526	1/2 - 1 Mile ENE
70	CADW40000014337	1/2 - 1 Mile WSW
72	CADW40000014590	1/2 - 1 Mile NE

PHYSICAL SETTING SOURCE MAP - 3089735.121s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

SITE NAME: Pinnacle Solar Ranch	CLIENT: Tetra Tech Inc.
ADDRESS: 23 Lancaster CA 93536	CONTACT: Garret Bean
LAT/LONG: 34.7276 / 118.2592	INQUIRY #: 3089735.121s DATE: June 08, 2011 1:02 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
NE
0 - 1/8 Mile
Lower

FED USGS **USGS3158624**

Agency cd:	USGS	Site no:	344341118152701
Site name:	007N013W04H001S		
Latitude:	344341	EDR Site id:	USGS3158624
Longitude:	1181527	Dec lat:	34.72803877
Dec lon:	-118.25840918	Coor meth:	M
Coor accr:	U	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2381.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	11.0	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

A2
West
1/8 - 1/4 Mile
Higher

FED USGS **USGS3158625**

Agency cd:	USGS	Site no:	344341118154101
Site name:	007N013W04G001S		
Latitude:	344341	EDR Site id:	USGS3158625
Longitude:	1181541	Dec lat:	34.72803876
Dec lon:	-118.2622982	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2389.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-22	Ground water data end date:	1963-05-22
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-22	257.65	

B3
South
1/8 - 1/4 Mile
Higher

FED USGS **USGS3158779**

Agency cd:	USGS	Site no:	344329118152901
Site name:	007N013W04J002S		
Latitude:	344329	EDR Site id:	USGS3158779
Longitude:	1181529	Dec lat:	34.72470557
Dec lon:	-118.25896478	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19200618
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	384	Hole depth:	460
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

C4
East
1/8 - 1/4 Mile
Lower

CA WELLS **CADW40000014427**

Longitude:	-118.2545
Latiude:	34.7272
Stwellno:	07N13W03E001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014427

B5
South
1/8 - 1/4 Mile
Higher

FED USGS **USGS3158777**

Agency cd:	USGS	Site no:	344328118152801
Site name:	007N013W04J001S		
Latitude:	344328	EDR Site id:	USGS3158777
Longitude:	1181528	Dec lat:	34.7244278
Dec lon:	-118.258687	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19530201
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	568	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1953-04-00	Ground water data end date:	1963-06-12
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel
1963-06-12	223.50	
Note: The site was being pumped.		
1963-05-22	238.12	
Note: The site was being pumped.		
1962-07-23	261.50	
Note: The site was being pumped.		
1959-06-16	119.50	
Note: The site was being pumped.		
1953-04	124.50	

B6
South
1/8 - 1/4 Mile
Higher

CA WELLS **CADW40000014371**

Longitude:	-118.2587
Latiude:	34.7244
Stwellno:	07N13W04J001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014371

A7
West
1/8 - 1/4 Mile
Higher

CA WELLS **CADW40000014450**

Longitude:	-118.2623
Latiude:	34.728
Stwellno:	07N13W04G001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014450

A8
West
1/8 - 1/4 Mile
Higher

FED USGS **USGS3158626**

Agency cd:	USGS	Site no:	344341118154501
Site name:	007N013W04G002S		
Latitude:	344341	EDR Site id:	USGS3158626
Longitude:	1181545	Dec lat:	34.72803875
Dec lon:	-118.26340935	Coor meth:	M
Coor accr:	U	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2391.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	9.0	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

D9
ENE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000014469**

Longitude:	-118.2545
Latiude:	34.7297
Stwellno:	07N13W03D002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014469

C10
East
1/4 - 1/2 Mile
Lower

FED USGS **USGS3158606**

Agency cd:	USGS	Site no:	344338118151301
Site name:	007N013W03E001S		
Latitude:	344338	EDR Site id:	USGS3158606
Longitude:	1181513	Dec lat:	34.72720548
Dec lon:	-118.25452018	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Altitude:	2381.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19180801
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	other government (other than USGS)		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1920-01-16	Ground water data end date:	1998-03-16
Ground water data count:	62		

Ground-water levels, Number of Measurements: 62

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1998-03-16					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1997-11-18					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1997-03-03	156.41		1996-11-13	159.48	
1996-04-16	157.6		1995-12-05	157.12	
1995-04-19	155.87		1994-10-24	158.45	
1994-04-13	156.38		1993-12-13	156.31	
1993-04-20	156.54		1992-11-04	159.13	
1992-04-14	155.60		1991-10-24	159.69	
1991-03-18	157.72		1990-10-16	160.57	
1990-03-13	158.04		1989-10-18	161.84	
1989-03-22	158.80		1988-03-29	159.49	
1987-11-03	160.80		1987-02-25	159.96	
1986-10-22	162.09		1986-03-18	160.74	
1985-10-30	163.89		1985-03-26	162.89	
1984-10-30	165.74		1984-03-06	163.43	
1983-10-26	166.69		1983-04-15	164.23	
1982-10-06	169.98		1982-02-09	167.47	
1981-11-18	169.96		1981-04-15	172.88	
1980-10-14	176.83		1980-03-24	169.38	
1979-10-23	176.36		1979-02-13	171.39	
1978-10-18	181.70		1978-03-29	189.79	
1977-10-13	193.57		1977-03-09	183.40	
1976-11-04	182.90		1976-03-08	173.06	
1975-10-15	190.13		1975-02-12	175.15	
1974-10-22	196.40		1974-02-11	175.40	
1973-10-03	201.00		1973-02-15	176.30	
1972-10-11	190.90		1972-03-15	189.93	
1971-10-28	190.01		1971-03-16	188.15	
1970-10-22	200.50		1970-03-17	188.40	
1969-04-15	204.64		1968-03-15	201.15	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1967-11-03	200.00		1967-03-17	198.89	
1963-05-29	219.10		1920-01-16	32.00	

E11
NW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158661**

Agency cd:	USGS	Site no:	344349118154301
Site name:	007N013W04B001S		
Latitude:	344349	EDR Site id:	USGS3158661
Longitude:	1181543	Dec lat:	34.73026089
Dec lon:	-118.26285376	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2389.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	550	Hole depth:	550
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-02-21	Ground water data end date:	1957-02-21
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1957-02-21	135.00	

D12
NE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000014488**

Longitude:	-118.2543
Latiude:	34.7303
Stwellno:	07N13W03D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014488

D13
ENE **FED USGS** **USGS3158649**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	344347118151301
Site name:	007N013W03D002S		
Latitude:	344347	EDR Site id:	USGS3158649
Longitude:	1181513	Dec lat:	34.72970537
Dec lon:	-118.25452016	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2378.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1945-03-27	Ground water data end date:	1963-05-28
Ground water data count:	10		

Ground-water levels, Number of Measurements: 10

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-28	77.65		1952-11-13	64.50	
1951-12-05	62.35		1950-11-28	60.00	
1949-12-02	57.15		1948-12-08	54.55	
1947-12-09	51.55		1946-12-12	48.70	
1945-11-08	48.35		1945-03-27	43.50	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

F14
SW
1/4 - 1/2 Mile
Higher | **FED USGS** | **USGS3158773**

Agency cd:	USGS	Site no:	344326118154201
Site name:	007N013W04K001S		
Latitude:	344326	EDR Site id:	USGS3158773
Longitude:	1181542	Dec lat:	34.72387226
Dec lon:	-118.26257601	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2392.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19500401
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	496	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

E15
NW
1/4 - 1/2 Mile
Higher | **CA WELLS** | **CADW40000014487**

Longitude:	-118.2629
Latiude:	34.7303
Stwellno:	07N13W04B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014487

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

D16
ENE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3158654**

Agency cd:	USGS	Site no:	344348118151101
Site name:	007N013W03D001S		
Latitude:	344349.0	EDR Site id:	USGS3158654
Longitude:	1181515.6	Dec lat:	34.73027778
Dec lon:	-118.25433333	Coor meth:	G
Coor accr:	1	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2378.		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19370301
Date inventoried:	19630528	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	Not Reported
Source of depth data:	reporting agency (generally USGS)		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-29	Ground water data end date:	2004-09-14
Ground water data count:	7		

Ground-water levels, Number of Measurements: 7

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-09-14	167.91		2004-03-30	167.45	
2003-09-15	168.32		2002-09-19	168.69	
2002-03-26	158.29		2001-05-02	157.92	
1963-05-29	169.00				

17
ESE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3158799**

Agency cd:	USGS	Site no:	344334118150901
Site name:	007N013W03E002S		
Latitude:	344334	EDR Site id:	USGS3158799
Longitude:	1181509	Dec lat:	34.72609441
Dec lon:	-118.25340904	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2380.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

F18
SW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158774**

Agency cd:	USGS	Site no:	344326118154501
Site name:	007N013W04K003S		
Latitude:	344326	EDR Site id:	USGS3158774
Longitude:	1181545	Dec lat:	34.72387226
Dec lon:	-118.26340937	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	124000
Altitude:	2392.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	98.0	Hole depth:	98.0
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

G19
SE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000014365**

Longitude:	-118.254
Latiude:	34.7239
Stwellno:	07N13W03M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014365

F20
SW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158769**

Agency cd:	USGS	Site no:	344324118154401
Site name:	007N013W04K002S		
Latitude:	344324	EDR Site id:	USGS3158769
Longitude:	1181544	Dec lat:	34.72331673
Dec lon:	-118.26313159	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2392.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19200817
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	502	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1920-08-17	Ground water data end date:	1920-08-17
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1920-08-17	40.00	

G21
SE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3158772**

Agency cd:	USGS	Site no:	344326118151101
Site name:	007N013W03M001S		
Latitude:	344326	EDR Site id:	USGS3158772
Longitude:	1181511	Dec lat:	34.72387228
Dec lon:	-118.25396463	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2383.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19300101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	620	Hole depth:	620
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-29	Ground water data end date:	1963-05-29
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-29	173.60	

22
SW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014351**

Longitude:	-118.2631
Latiude:	34.7233
Stwellno:	07N13W04K002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014351

H23
NNE **CA WELLS** **8483**
1/4 - 1/2 Mile
Lower

Water System Information:

Prime Station Code:	08N/13W-33R01 S	User ID:	19C
FRDS Number:	1900116001	County:	Los Angeles
District Number:	49	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	344359.0 1181517.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 01		
System Number:	1900116		
System Name:	WESTSIDE UNION SCHOOL HDQT		
Organization That Operates System:			
	46809 W. 70TH ST. LANCASTER, CA 93534		
Pop Served:	25	Connections:	1
Area Served:	Not Reported		
Sample Collected:	04/01/2009	Findings:	1000. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	04/01/2009	Findings:	7.8
Chemical:	PH, LABORATORY		
Sample Collected:	04/01/2009	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04/01/2009	Findings:	260. MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	04/01/2009	Findings:	350. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04/01/2009	Findings:	110. MG/L
Chemical:	CALCIUM		
Sample Collected:	04/01/2009	Findings:	21. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04/01/2009	Findings:	78. MG/L
Chemical:	SODIUM		
Sample Collected:	04/01/2009	Findings:	1.6 MG/L
Chemical:	POTASSIUM		
Sample Collected:	04/01/2009	Findings:	130. MG/L
Chemical:	CHLORIDE		

Sample Collected:	04/01/2009	Findings:	0.38 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04/01/2009	Findings:	130. UG/L
Chemical:	BARIUM		
Sample Collected:	04/01/2009	Findings:	390. UG/L
Chemical:	BORON		
Sample Collected:	04/01/2009	Findings:	7. UG/L
Chemical:	VANADIUM		
Sample Collected:	04/01/2009	Findings:	82. UG/L
Chemical:	ZINC		
Sample Collected:	04/01/2009	Findings:	670. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04/01/2009	Findings:	21. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/01/2009	Findings:	4700. UG/L
Chemical:	NITRATE + NITRITE (AS N)		

I24
WSW **FED USGS** **USGS3158782**
1/4 - 1/2 Mile
Higher

Agency cd:	USGS	Site no:	344330118155501
Site name:	007N013W04L002S		
Latitude:	344330	EDR Site id:	USGS3158782
Longitude:	1181555	Dec lat:	34.72498332
Dec lon:	-118.26618723	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2396.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

H25
NNE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3158498**

Agency cd:	USGS	Site no:	344400118151701
Site name:	008N013W33R001S		
Latitude:	344400	EDR Site id:	USGS3158498
Longitude:	1181517	Dec lat:	34.73331633
Dec lon:	-118.25563128	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2376.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	180	Hole depth:	180
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

J26
NNW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158506**

Agency cd:	USGS	Site no:	344401118154402
Site name:	008N013W33Q002S		
Latitude:	344401	EDR Site id:	USGS3158506
Longitude:	1181544	Dec lat:	34.73359408
Dec lon:	-118.26313152	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-12-10	Ground water data end date:	1951-12-05
Ground water data count:	6		

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1951-12-05					
Note: The well was destroyed (no water level is recorded).					
1950-11-28	70.90		1949-11-29	85.50	
1948-12-08	81.60		1947-12-09	69.30	
1946-12-10	65.40				

J27
NNW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158505**

Agency cd:	USGS	Site no:	344401118154401
Site name:	008N013W33Q001S		
Latitude:	344401	EDR Site id:	USGS3158505
Longitude:	1181544	Dec lat:	34.73359408
Dec lon:	-118.26313152	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 0000-00-00
Water quality data end date: 0000-00-00
Water quality data count: 0
Ground water data begin date: 1943-01-10
Ground water data end date: 1946-12-10
Ground water data count: 7

Ground-water levels, Number of Measurements: 7

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1946-12-10					
Note: The well was destroyed (no water level is recorded).					
1945-11-08	19.05		1945-03-27	21.10	
1945-03-05	20.05		1944-05-04	20.00	
1943-12-06	20.10		1943-01-10	20.70	

J28
NNW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158507**

Agency cd: USGS
Site no: 344401118154403
Site name: 008N013W33Q003S
Latitude: 344401
EDR Site id: USGS3158507
Longitude: 1181544
Dec lat: 34.73359408
Dec lon: -118.26313152
Coor meth: M
Coor accr: S
Latlong datum: NAD27
Dec latlong datum: NAD83
District: 06
State: 06
County: 037
Country: US
Land net: Not Reported
Location map: DEL SUR
Map scale: 24000
Altitude: 2387.00
Altitude method: Interpolated from topographic map
Altitude accuracy: 010
Altitude datum: National Geodetic Vertical Datum of 1929
Hydrologic: AntelopeFremont Valleys. California. Area = 3310 sq.mi.
Topographic: Not Reported
Site type: Ground-water other than Spring
Date construction: Not Reported
Date inventoried: Not Reported
Mean greenwich time offset: PST
Local standard time flag: Y
Type of ground water site: Single well, other than collector or Ranney type
Aquifer Type: Not Reported
Aquifer: Not Reported
Well depth: Not Reported
Hole depth: Not Reported
Source of depth data: Not Reported
Project number: 479381106
Real time data flag: 0
Daily flow data begin date: 0000-00-00
Daily flow data end date: 0000-00-00
Daily flow data count: 0
Peak flow data begin date: 0000-00-00
Peak flow data end date: 0000-00-00
Peak flow data count: 0
Water quality data begin date: 1956-03-08
Water quality data end date: 1956-03-08
Water quality data count: 1
Ground water data begin date: 1950-11-28
Ground water data end date: 1963-05-08
Ground water data count: 18

Ground-water levels, Number of Measurements: 18

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-08	169.45		1962-11-14	174.20	
1961-10-19	171.00		1961-04-03	171.50	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1960-10-28	189.10		1959-11-12	164.30	
1958-11-28	149.00		1958-03-13	132.30	
1957-11-13	158.50		1957-03-06	143.70	
1956-11-20	149.70		1955-11-01	157.20	
1955-03-16	113.40		1954-11-11	139.30	
1954-03-24	109.90		1953-11-23	119.40	
1951-12-07	102.70		1950-11-28	69.90	

I29
WSW **FED USGS** **USGS3158783**
1/4 - 1/2 Mile
Higher

Agency cd:	USGS	Site no:	344331118155801
Site name:	007N013W04L001S		
Latitude:	344331	EDR Site id:	USGS3158783
Longitude:	1181558	Dec lat:	34.72526108
Dec lon:	-118.26702059	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2396.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	481	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-21	Ground water data end date:	1963-05-21
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-21	227.30	

Note: A nearby site that taps the same aquifer was being pumped.

Map ID Direction Distance Elevation		Database	EDR ID Number
J30 **NNW** **1/4 - 1/2 Mile** **Higher**		**CA WELLS**	**CADW40000014537**
Longitude:	-118.2631		
Latiude:	34.7336		
Stwellno:	08N13W33Q001S		
Districtco:	3		
Welluseco:	Z		
Countyco:	19		
Gwcode:	604400		
Site id:	CADW40000014537		
J31 **NNW** **1/4 - 1/2 Mile** **Higher**		**CA WELLS**	**CADW40000014538**
Longitude:	-118.2631		
Latiude:	34.7336		
Stwellno:	08N13W33Q002S		
Districtco:	3		
Welluseco:	Z		
Countyco:	19		
Gwcode:	604400		
Site id:	CADW40000014538		
J32 **NNW** **1/4 - 1/2 Mile** **Higher**		**CA WELLS**	**CADW40000014539**
Longitude:	-118.2631		
Latiude:	34.7336		
Stwellno:	08N13W33Q003S		
Districtco:	3		
Welluseco:	Z		
Countyco:	19		
Gwcode:	604400		
Site id:	CADW40000014539		
33 **WSW** **1/2 - 1 Mile** **Higher**		**CA WELLS**	**CADW40000014378**
Longitude:	-118.267		
Latiude:	34.7253		
Stwellno:	07N13W04L001S		
Districtco:	3		
Welluseco:	Z		
Countyco:	19		
Gwcode:	604400		
Site id:	CADW40000014378		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

34
SSE
1/2 - 1 Mile
Lower | **FED USGS** | **USGS3158721**

Agency cd:	USGS	Site no:	344315118151301
Site name:	007N013W03N001S		
Latitude:	344315	EDR Site id:	USGS3158721
Longitude:	1181513	Dec lat:	34.72081685
Dec lon:	-118.25452022	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	SWSWS3T7NR13WS
Location map:	DEL SUR	Map scale:	24000
Altitude:	2380.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19490711
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	550	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

K35
NE
1/2 - 1 Mile
Lower | **FED USGS** | **USGS3158487**

Agency cd:	USGS	Site no:	344359118150402
Site name:	008N013W34N002S		
Latitude:	344359	EDR Site id:	USGS3158487
Longitude:	1181504	Dec lat:	34.73303858
Dec lon:	-118.25202005	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2372.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

K36
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3158486**

Agency cd:	USGS	Site no:	344359118150401
Site name:	008N013W34N001S		
Latitude:	344359	EDR Site id:	USGS3158486
Longitude:	1181504	Dec lat:	34.73303858
Dec lon:	-118.25202005	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2372.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19610101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	208	Hole depth:	208
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

L37
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3158504**

Agency cd:	USGS	Site no:	344401118145601
Site name:	008N013W34P002S		
Latitude:	344401	EDR Site id:	USGS3158504
Longitude:	1181456	Dec lat:	34.73359412
Dec lon:	-118.24979776	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2369.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	160
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

38
South
1/2 - 1 Mile
Lower

FED USGS **USGS3158846**

Agency cd:	USGS	Site no:	344304118153101
Site name:	007N013W09Z001S		
Latitude:	344304	EDR Site id:	USGS3158846
Longitude:	1181531	Dec lat:	34.71776141
Dec lon:	-118.2595204	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2380.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1944-09-12
Water quality data end date:	1944-09-12	Water quality data count:	1
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

M39
West
1/2 - 1 Mile
Higher

FED USGS **USGS3158788**

Agency cd:	USGS	Site no:	344333118161301
Site name:	007N013W04M001S		
Latitude:	344333	EDR Site id:	USGS3158788
Longitude:	1181613	Dec lat:	34.72581661
Dec lon:	-118.27118739	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2403.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19520702
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	908	Hole depth:	908
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

N40
NE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014579**

Longitude:	-118.2512
Latiude:	34.7358
Stwellno:	08N13W34N003S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014579

O41
East
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014397**

Longitude:	-118.2462
Latiude:	34.7261
Stwellno:	07N13W03G001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014397

42
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3158552**

Agency cd:	USGS	Site no:	344412118155001
Site name:	008N013W33L001S		
Latitude:	344412	EDR Site id:	USGS3158552
Longitude:	1181550	Dec lat:	34.73664951
Dec lon:	-118.26479822	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2390.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19620718
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

P43
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS3158847**

Agency cd:	USGS	Site no:	344304118154401
Site name:	007N013W09B002S		
Latitude:	344304	EDR Site id:	USGS3158847
Longitude:	1181544	Dec lat:	34.7177614
Dec lon:	-118.26313163	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2383.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19181212
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	502	Hole depth:	502
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1944-09-12
Water quality data end date:	1944-09-12	Water quality data count:	1
Ground water data begin date:	1918-12-12	Ground water data end date:	1918-12-12
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1918-12-12	33.00	

44
SSE **FED USGS** **USGS3158839**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344303118153201
Site name:	007N013W09B001S		
Latitude:	344303	EDR Site id:	USGS3158839
Longitude:	1181520	Dec lat:	34.71748364
Dec lon:	-118.25646475	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2379.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

45
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS3158863**

Agency cd:	USGS	Site no:	344305118151101
Site name:	007N013W10D001S		
Latitude:	344305	EDR Site id:	USGS3158863
Longitude:	1181511	Dec lat:	34.71803918
Dec lon:	-118.25396467	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2375.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19200630
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	445	Hole depth:	445
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

L46
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014529**

Longitude:	-118.2476
Latiude:	34.7333
Stwellno:	08N13W34P003S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014529

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

M47
West
1/2 - 1 Mile
Higher

FED USGS **USGS3158789**

Agency cd:	USGS	Site no:	344333118161501
Site name:	007N013W04M002S		
Latitude:	344333	EDR Site id:	USGS3158789
Longitude:	1181615	Dec lat:	34.72581661
Dec lon:	-118.27174296	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2403.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19290101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	820	Hole depth:	820
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-14	Ground water data end date:	1963-05-14
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-14	190.00	

Note: A nearby site that taps the same aquifer was being pumped.

48
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3158539**

Agency cd:	USGS	Site no:	344406118145701
Site name:	008N013W34P001S		
Latitude:	344406	EDR Site id:	USGS3158539
Longitude:	1181457	Dec lat:	34.73498295
Dec lon:	-118.25007554	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2367.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19510101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	174
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

N49
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3158546**

Agency cd:	USGS	Site no:	344409118150101
Site name:	008N013W34N003S		
Latitude:	344409	EDR Site id:	USGS3158546
Longitude:	1181501	Dec lat:	34.73581624
Dec lon:	-118.25118667	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2367.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19550101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	235	Hole depth:	235
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-28	Ground water data end date:	1963-05-28
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-28	71.95	

P50
SSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014251**

Longitude:	-118.2631
Latiude:	34.7178
Stwellno:	07N13W09B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014251

O51
East
1/2 - 1 Mile
Lower

FED USGS **USGS3158798**

Agency cd:	USGS	Site no:	344334118144301
Site name:	007N013W03G001S		
Latitude:	344334	EDR Site id:	USGS3158798
Longitude:	1181443	Dec lat:	34.72609444
Dec lon:	-118.24618661	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2370.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19280101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1928-03-21	Ground water data end date:	1928-03-21
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1928-03-21	56.00	

Q52
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158497**

Agency cd:	USGS	Site no:	344400118144801
Site name:	008N013W34P003S		
Latitude:	344400	EDR Site id:	USGS3158497
Longitude:	1181448	Dec lat:	34.73331636
Dec lon:	-118.24757549	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LANCASTER WEST	Map scale:	24000
Altitude:	2365.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19510101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	200
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-08-01	Ground water data end date:	1987-03-04
Ground water data count:	31		

Ground-water levels, Number of Measurements: 31

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1987-03-04					
Note: The measurement was discontinued.					
1985-03-26	94.64		1984-10-30	93.89	
1984-03-05	93.90		1983-10-26	93.32	
1983-04-12	92.62		1982-10-06	92.00	
1982-02-08	91.05		1981-11-18	90.97	
1981-04-13	90.20		1980-10-14	89.44	
1980-04-08	88.84		1979-10-23	87.98	
1979-02-12	86.82		1978-10-18	86.37	
1978-03-27	84.92		1976-02-09	84.64	
1975-10-15	81.32		1975-02-18	80.21	
1974-02-11	78.62		1973-10-03	78.42	
1973-02-15	77.79		1972-10-11	77.66	
1972-03-15	76.98		1971-10-28	76.73	
1970-10-23	76.42		1970-03-17	75.90	
1967-11-02	75.10		1967-03-17	74.75	
1963-08-09	72.83		1963-08-01	73.00	

53
West
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014387**

Longitude:	-118.2717
Latiude:	34.7258
Stwellno:	07N13W04M002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014387

R54
ESE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014339**

Longitude:	-118.2459
Latiude:	34.7228
Stwellno:	07N13W03K001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014339

55
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3158580**

Agency cd:	USGS	Site no:	344418118151301
Site name:	008N013W34M001S		
Latitude:	344418	EDR Site id:	USGS3158580
Longitude:	1181513	Dec lat:	34.73831613
Dec lon:	-118.2545201	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2369.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

Q56
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014540**

Longitude:	-118.2465
Latiude:	34.7336
Stwellno:	08N13W34P004S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014540

Q57
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014526**

Longitude:	-118.2459
Latiude:	34.733
Stwellno:	08N13W34Q001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014526

R58
ESE **FED USGS** **USGS3158754**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344322118144201
Site name:	007N013W03K001S		
Latitude:	344322	EDR Site id:	USGS3158754
Longitude:	1181442	Dec lat:	34.72276124
Dec lon:	-118.24590885	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2373.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19370101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1953-00-00	Ground water data end date:	1960-03-23
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1960-03-23	125.00		1953	165.00	

S59
ENE **FED USGS** **USGS3158694**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344357118144201
Site name:	007N013W03B001S		
Latitude:	344357	EDR Site id:	USGS3158694
Longitude:	1181442	Dec lat:	34.73248307
Dec lon:	-118.24590878	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2366.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

Q60
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158503**

Agency cd:	USGS	Site no:	344401118144401
Site name:	008N013W34P004S		
Latitude:	344401	EDR Site id:	USGS3158503
Longitude:	1181444	Dec lat:	34.73359413
Dec lon:	-118.24646434	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2364.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19600101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	200
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-08-01	Ground water data end date:	1963-08-09
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-08-09	70.35		1963-08-01	70.00	

S61
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158485**

Agency cd:	USGS	Site no:	344359118144201
Site name:	008N013W34Q001S		
Latitude:	344359	EDR Site id:	USGS3158485
Longitude:	1181442	Dec lat:	34.7330386
Dec lon:	-118.24590878	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2365.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-08-01	Ground water data end date:	1963-08-09
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-08-09	77.86		1963-08-01	78.00	

62
NNW
1/2 - 1 Mile
Lower

FED USGS **USGS3158379**

Agency cd:	USGS	Site no:	344424118154401
Site name:	008N013W33K001S		
Latitude:	344424	EDR Site id:	USGS3158379
Longitude:	1181544	Dec lat:	34.73998271
Dec lon:	-118.26313148	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2383.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

T63
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3158739**

Agency cd:	USGS	Site no:	344320118162101
Site name:	007N013W05H002S		
Latitude:	344320	EDR Site id:	USGS3158739
Longitude:	1181621	Dec lat:	34.72220564
Dec lon:	-118.27340971	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S5T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2408.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	504	Hole depth:	504
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

64
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS3158735**

Agency cd:	USGS	Site no:	344319118143901
Site name:	007N013W03Q001S		
Latitude:	344319	EDR Site id:	USGS3158735
Longitude:	1181439	Dec lat:	34.72192795
Dec lon:	-118.2450755	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2373.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19240101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

T65
WSW **FED USGS** **USGS3158747**
1/2 - 1 Mile
Higher

Agency cd:	USGS	Site no:	344321118162301
Site name:	007N013W05H001S		
Latitude:	344321	EDR Site id:	USGS3158747
Longitude:	1181623	Dec lat:	34.7224834
Dec lon:	-118.27396528	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S5T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2408.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19240801
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	370	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1924-08-01	Ground water data end date:	1924-08-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1924-08-01	40.00	

66
SSE **FED USGS** **USGS3159015**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344252118151801
Site name:	007N013W16H001S		
Latitude:	344252	EDR Site id:	USGS3159015
Longitude:	1181518	Dec lat:	34.71442822
Dec lon:	-118.2559092	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2363.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

U67
South **FED USGS** **USGS3159013**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344251118154101
Site name:	007N013W09G001S		
Latitude:	344251	EDR Site id:	USGS3159013
Longitude:	1181541	Dec lat:	34.71415044
Dec lon:	-118.26229829	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2385.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19540228
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

U68
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS3159014**

Agency cd:	USGS	Site no:	344251118154201
Site name:	007N013W09G002S		
Latitude:	344251	EDR Site id:	USGS3159014
Longitude:	1181542	Dec lat:	34.71415044
Dec lon:	-118.26257608	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2385.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

69
NW
1/2 - 1 Mile
Higher

FED USGS **USGS3158553**

Agency cd:	USGS	Site no:	344412118161601
Site name:	008N013W33M001S		
Latitude:	344412	EDR Site id:	USGS3158553
Longitude:	1181616	Dec lat:	34.73664949
Dec lon:	-118.27202068	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2400.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19260306
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1962-07-01	Ground water data end date:	1962-07-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1962-07-01	278.50	

70
WSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014337**

Longitude:	-118.274
Latiude:	34.7225
Stwellno:	07N13W05H001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014337

71
NNW
1/2 - 1 Mile
Lower

FED USGS **USGS3158399**

Agency cd:	USGS	Site no:	344429118154401
Site name:	008N013W33G001S		
Latitude:	344429	EDR Site id:	USGS3158399
Longitude:	1181544	Dec lat:	34.74137154
Dec lon:	-118.26313147	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2385.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19161124
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	401	Hole depth:	401
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database	EDR ID Number
CA WELLS	**CADW40000014590**

72
NE
1/2 - 1 Mile
Lower

Longitude:	-118.2456
Latiude:	34.7375
Stwellno:	08N13W34L001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014590

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Pinnacle Solar Ranch
23
Lancaster, CA 93536

Inquiry Number: 3089735.122
June 08, 2011

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
Pinnacle Solar Ranch
23
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089735.122

Contact: Garret Bean

EDR® Environmental Data Resources Inc

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Certified Sanborn Results:

Site Name: Pinnacle Solar Ranch
Address: 23
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 9
Certification # 6D90-4AE8-B359

Sanborn® Library search results
Certification # 6D90-4AE8-B359

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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Pinnacle Solar Ranch
23
Lancaster, CA 93536

Inquiry Number: 3089735.123
June 08, 2011

EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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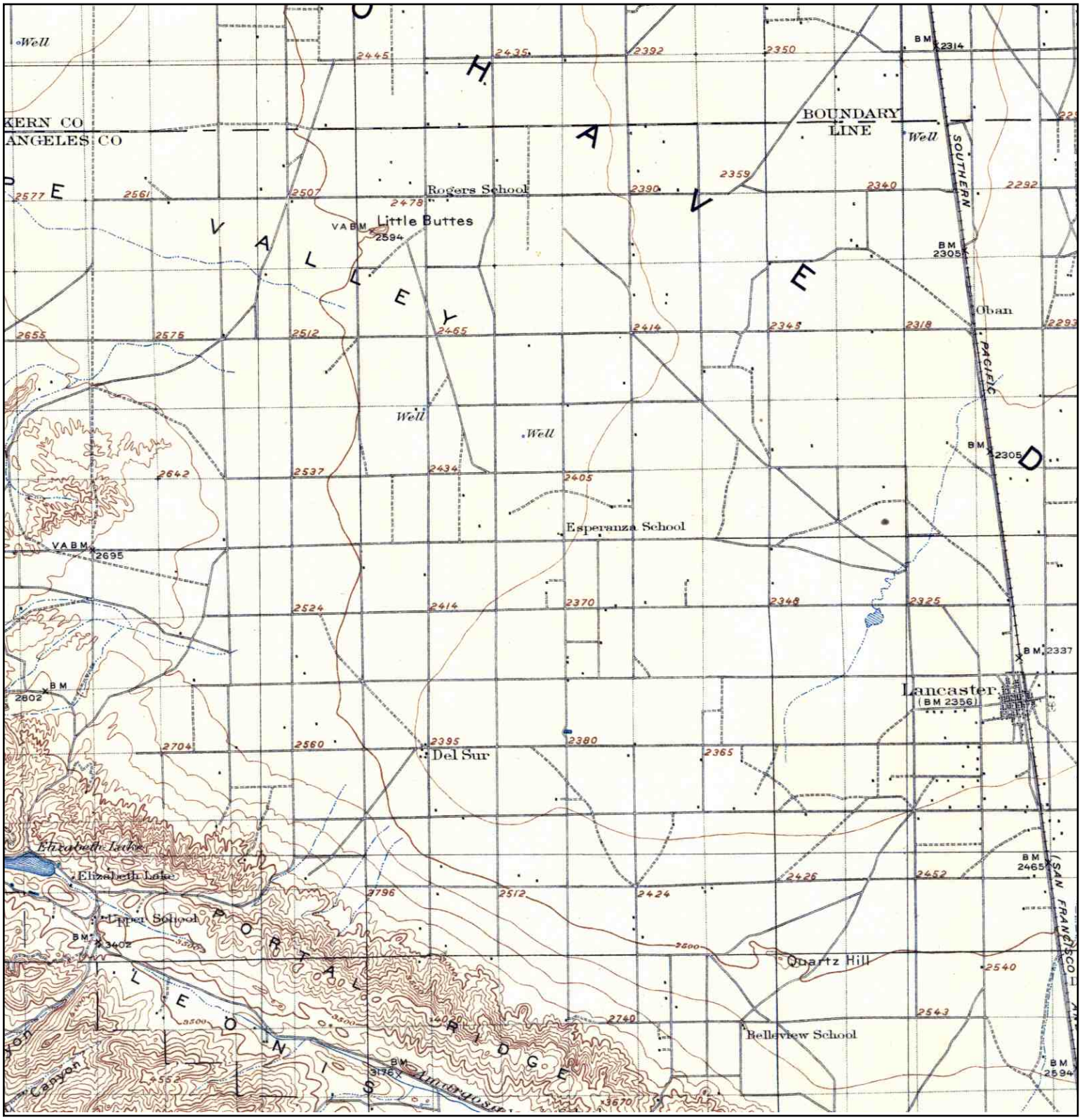
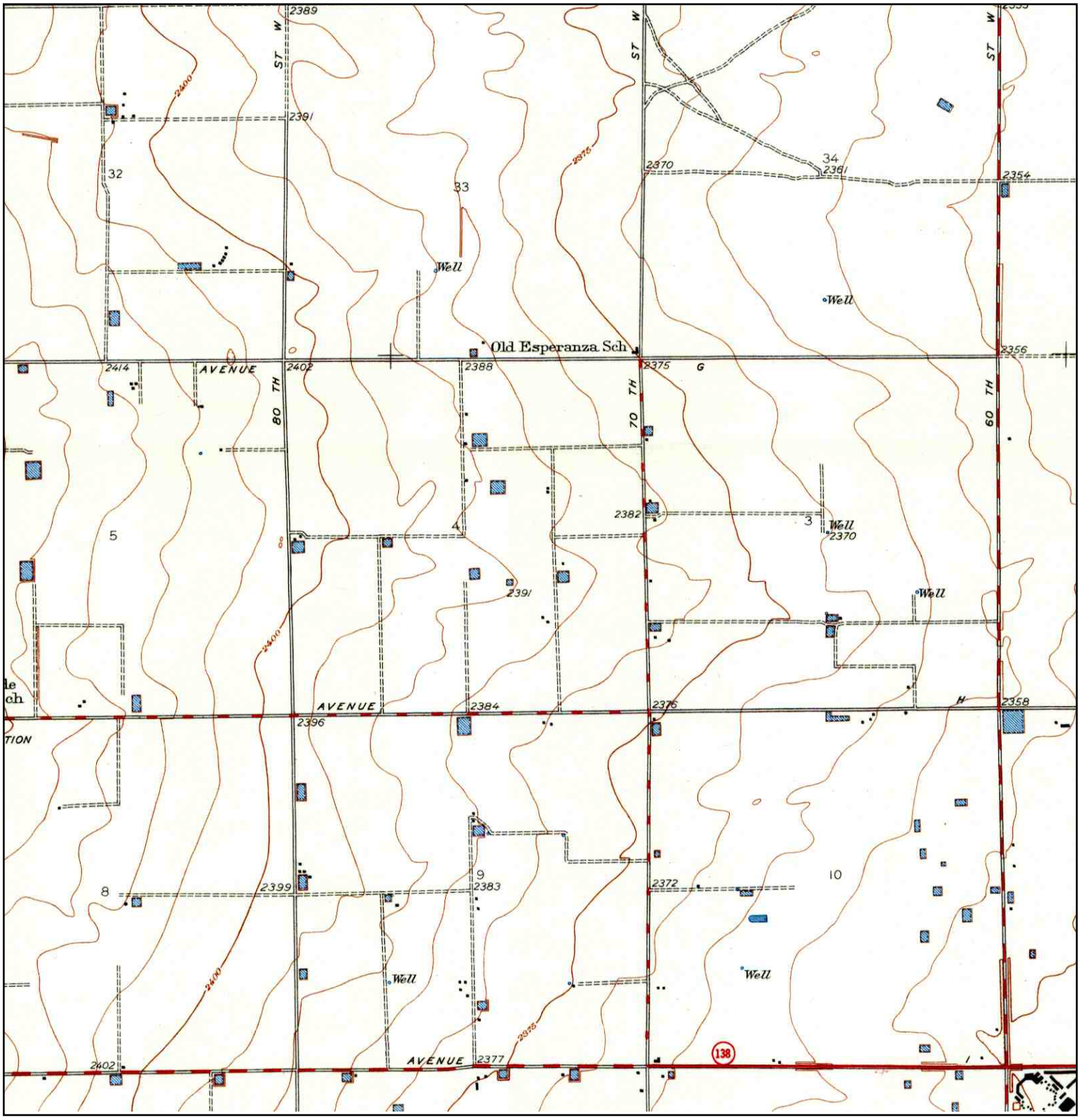
Historical Topographic Map



N	TARGET QUAD NAME: ELIZABETH LAKE MAP YEAR: 1917 SERIES: 30 SCALE: 1:125000	SITE NAME: Pinnacle Solar Ranch ADDRESS: 23 Lancaster, CA 93536 LAT/LONG: 34.7276 / -118.2592	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.123 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	TARGET QUAD NAME: ESPERANZA SCHOOL MAP YEAR: 1951 SERIES: 6 SCALE: 1:24000	SITE NAME: Pinnacle Solar Ranch ADDRESS: 23 Lancaster, CA 93536 LAT/LONG: 34.7276 / -118.2592	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.123 RESEARCH DATE: 06/08/2011

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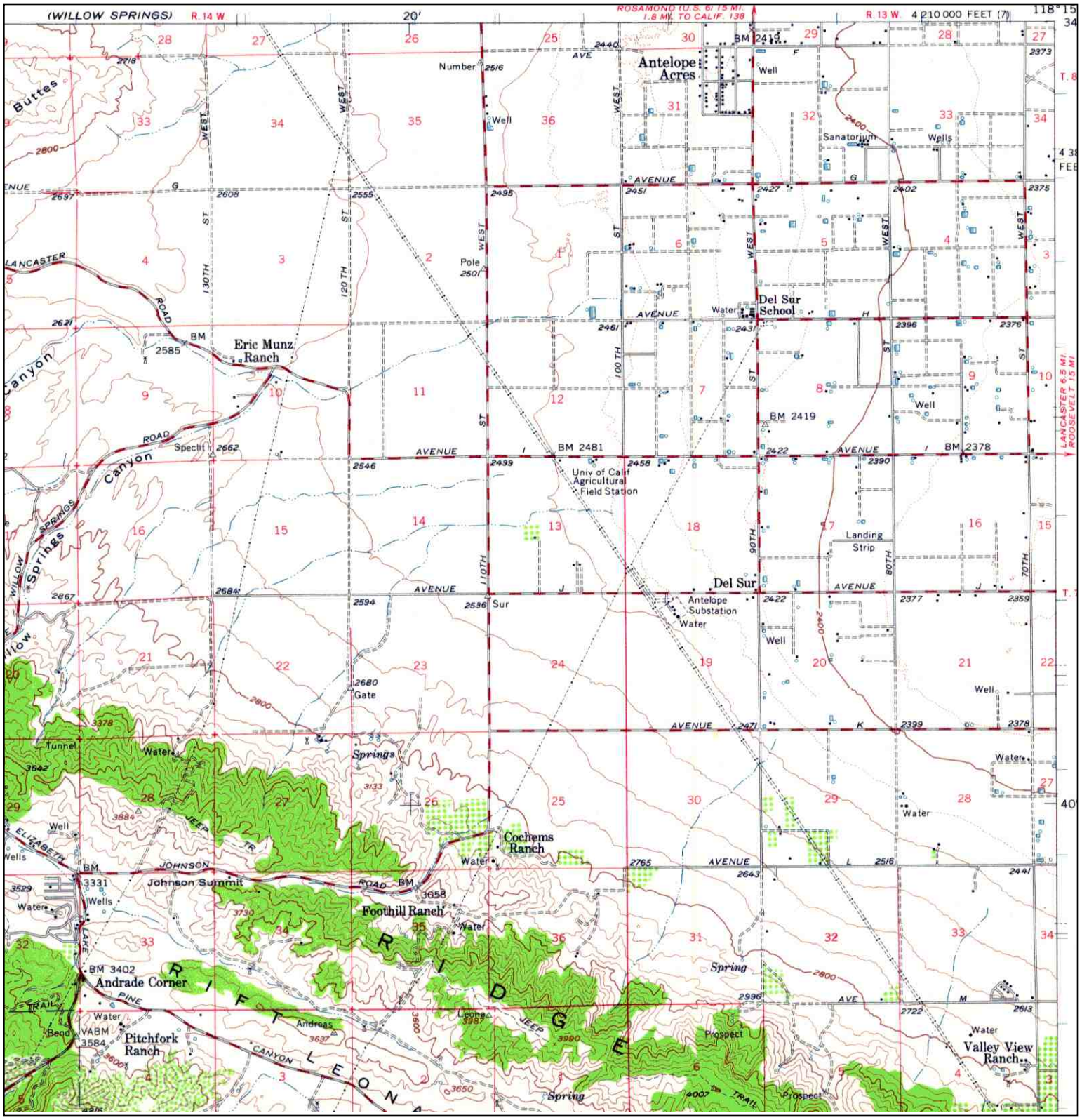

N	TARGET QUAD NAME: BOUQUET RESERVOIR MAP YEAR: 1958 SERIES: 15 SCALE: 1:62500	SITE NAME: Pinnacle Solar Ranch ADDRESS: 23 Lancaster, CA 93536 LAT/LONG: 34.7276 / -118.2592	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.123 RESEARCH DATE: 06/08/2011

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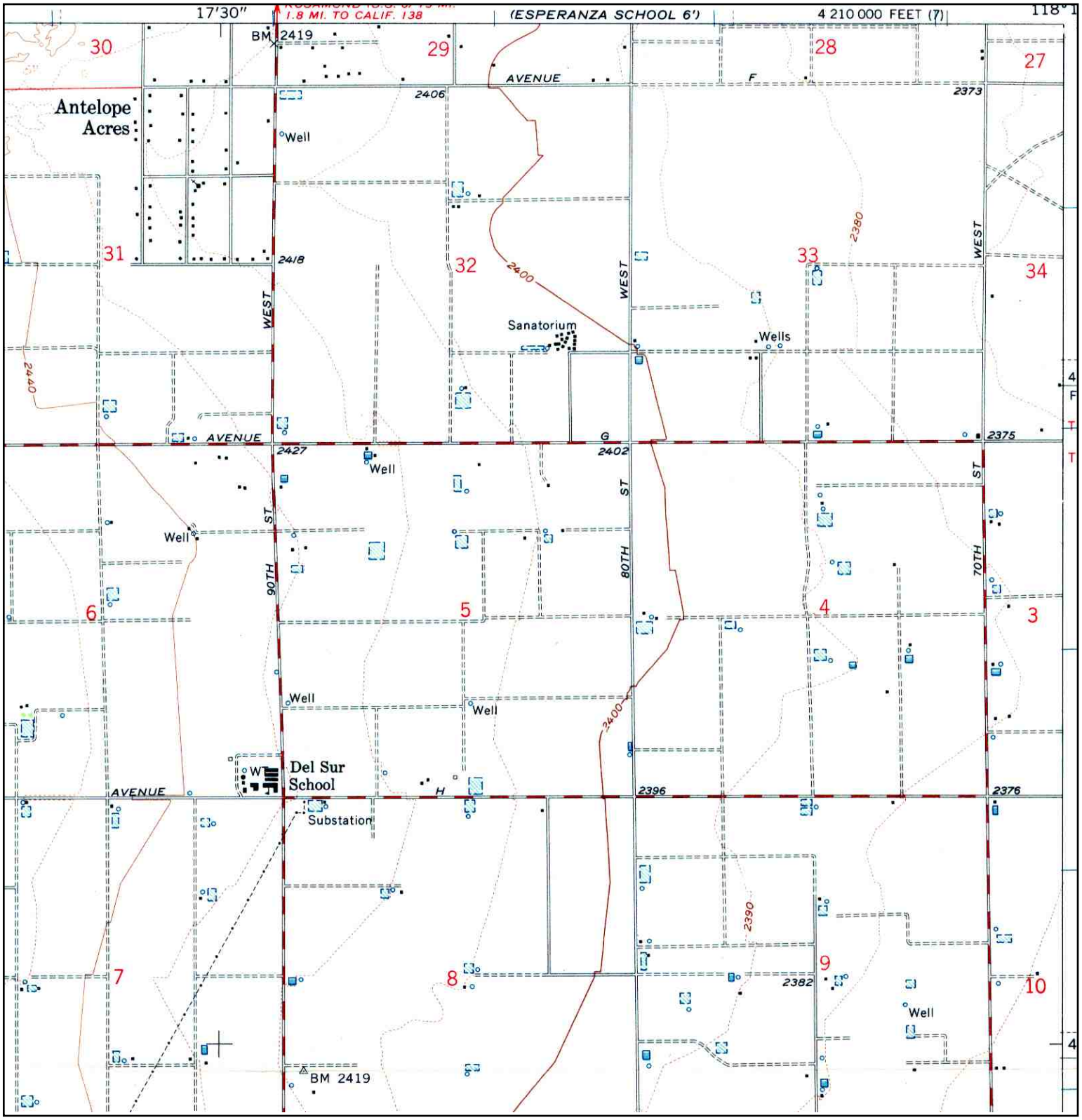

N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Pinnacle Solar Ranch ADDRESS: 23 Lancaster, CA 93536 LAT/LONG: 34.7276 / -118.2592	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.123 RESEARCH DATE: 06/08/2011

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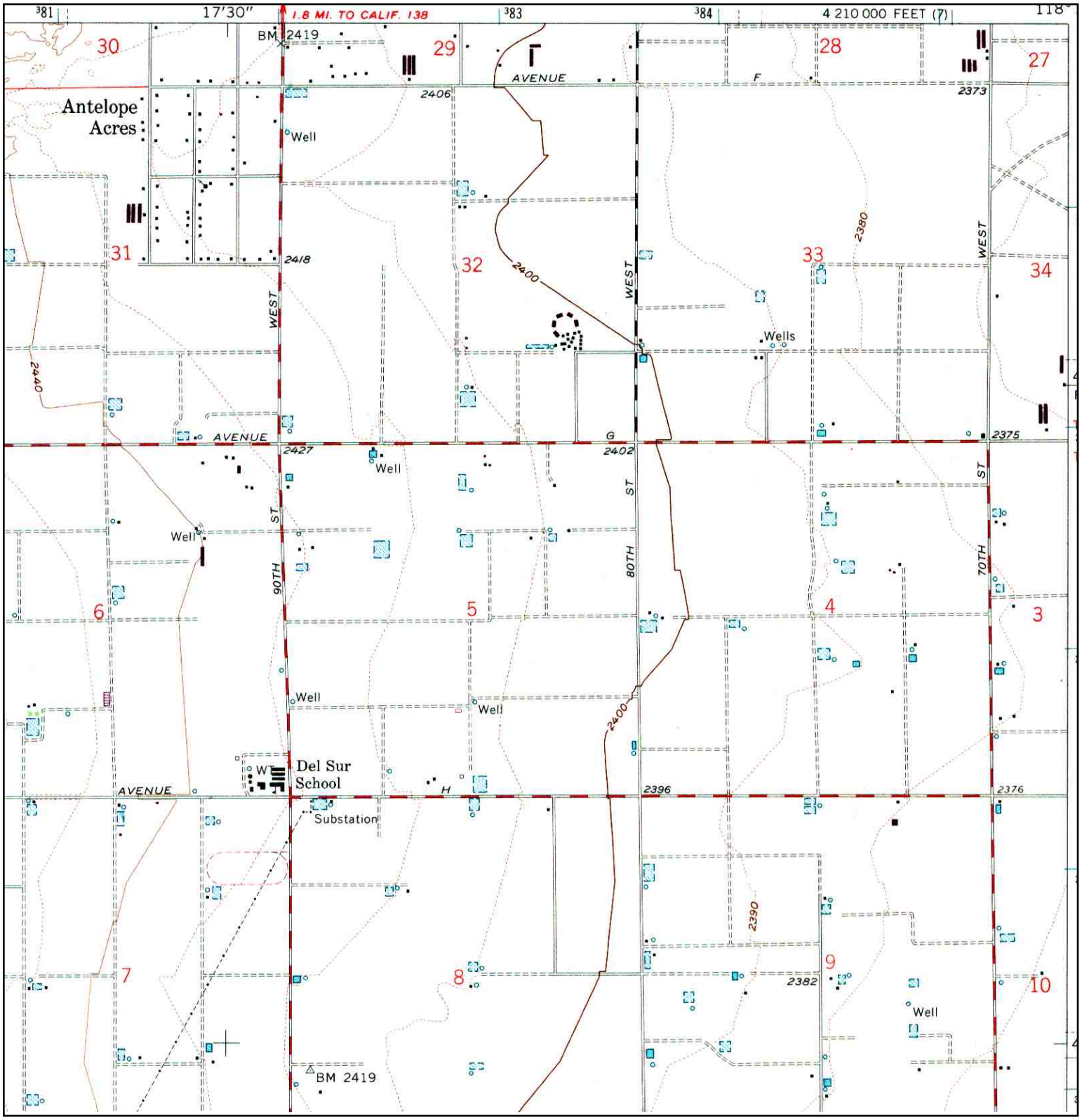

N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1974 PHOTOREVISED:1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Pinnacle Solar Ranch ADDRESS: 23 Lancaster, CA 93536 LAT/LONG: 34.7276 / -118.2592	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.123 RESEARCH DATE: 06/08/2011

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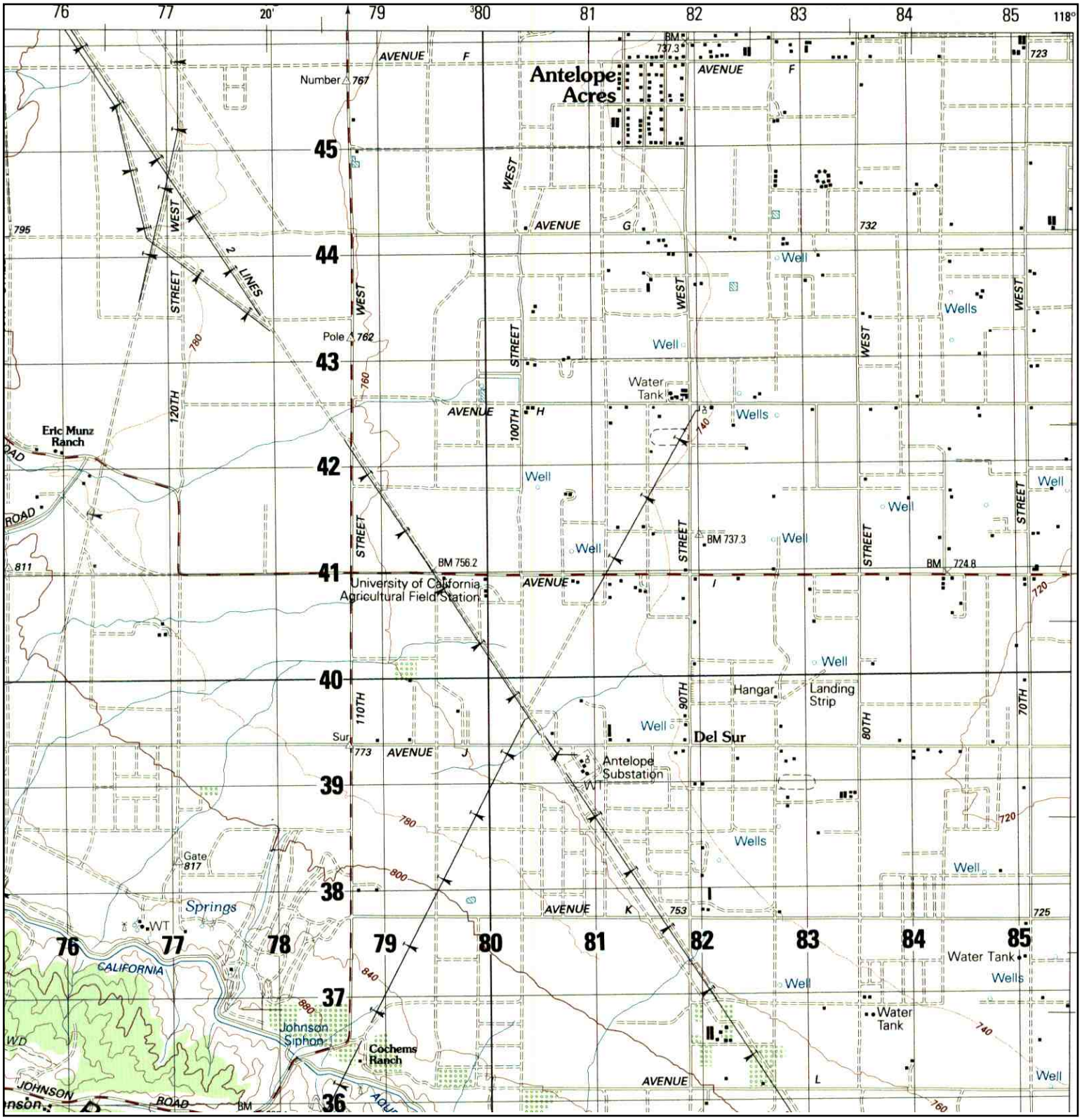

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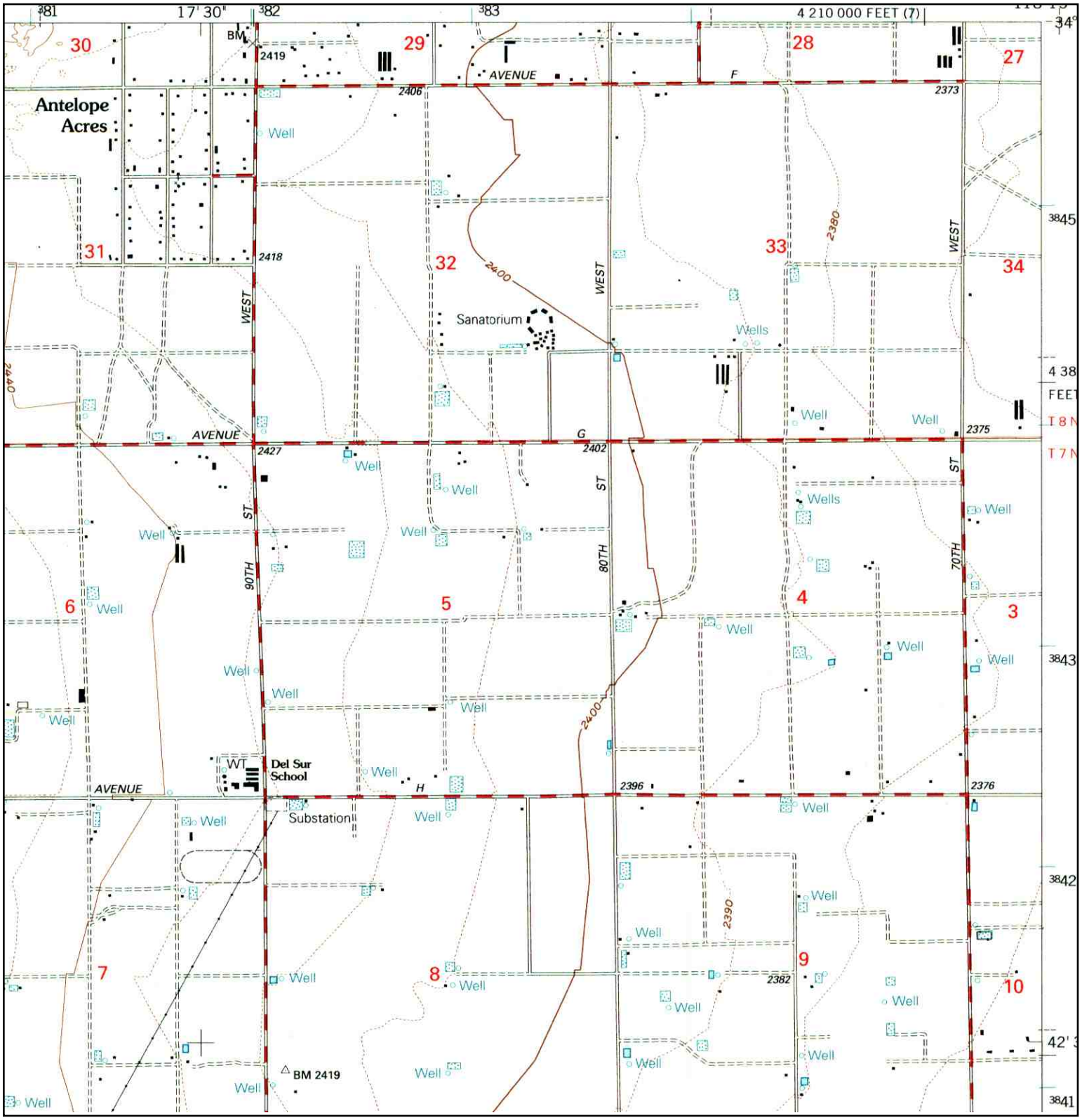

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West LA Greenworks
28
Lancaster, CA 93536

Inquiry Number: 3089735.130
June 08, 2011

EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

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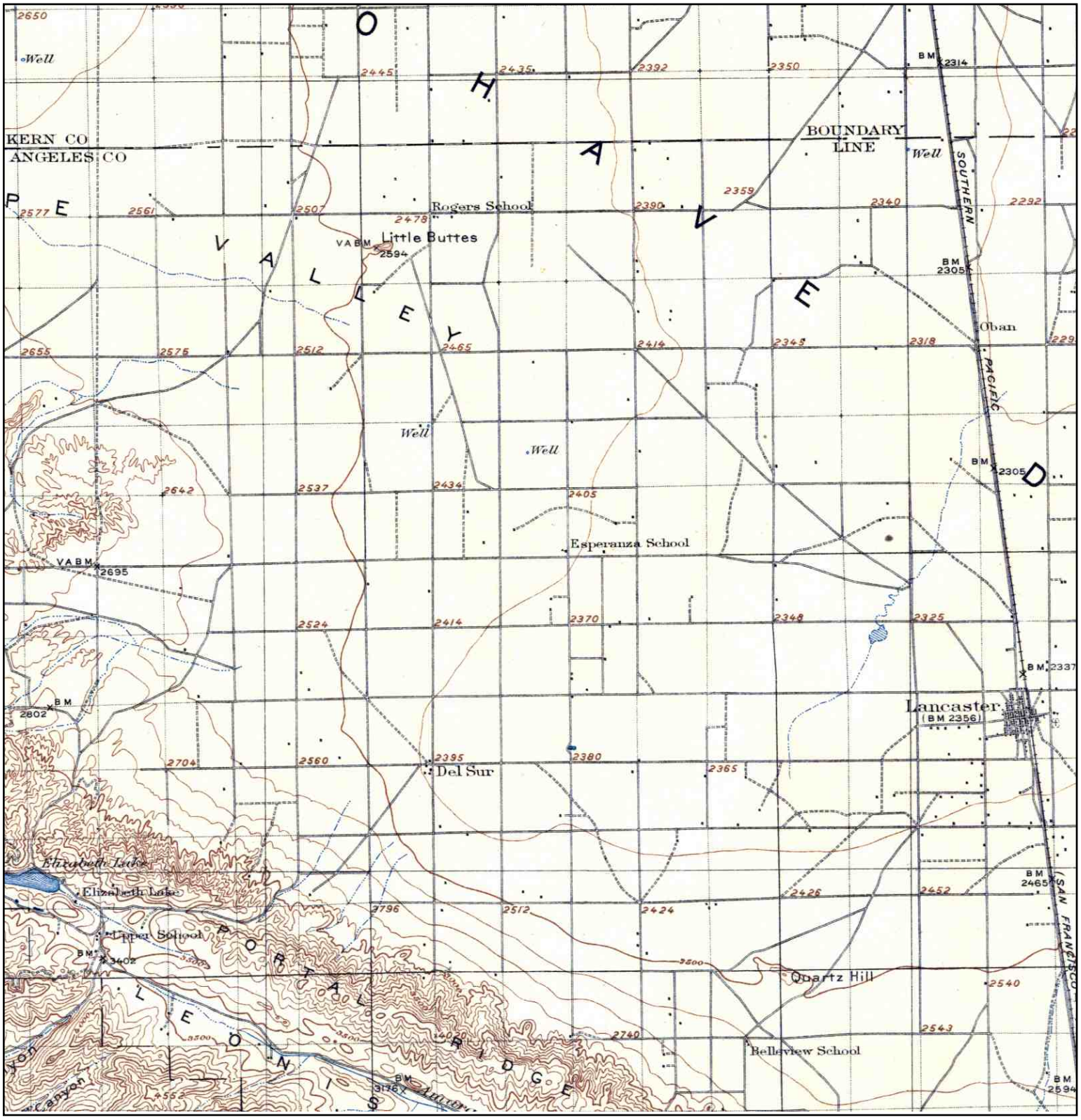
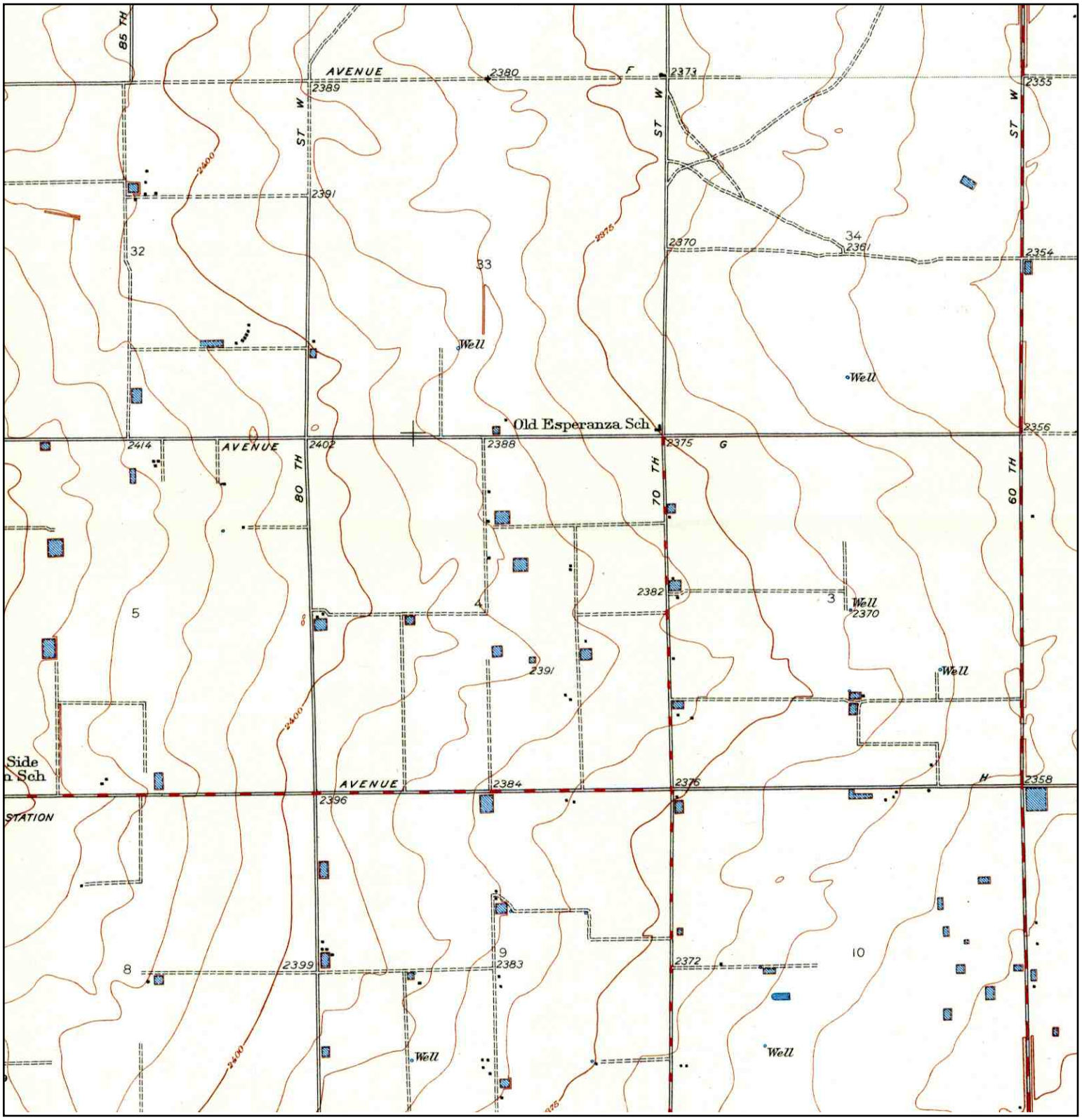


N	TARGET QUAD		SITE NAME:	West LA Greenworks	CLIENT:	Tetra Tech Inc.
	NAME:	ELIZABETH LAKE	ADDRESS:	28	CONTACT:	Garret Bean
	MAP YEAR:	1917		Lancaster, CA 93536	INQUIRY#:	3089735.130
			LAT/LONG:	34.7311 / -118.2603	RESEARCH DATE:	06/08/2011
	SERIES:	30				
	SCALE:	1:125000				

Historical Topographic Map



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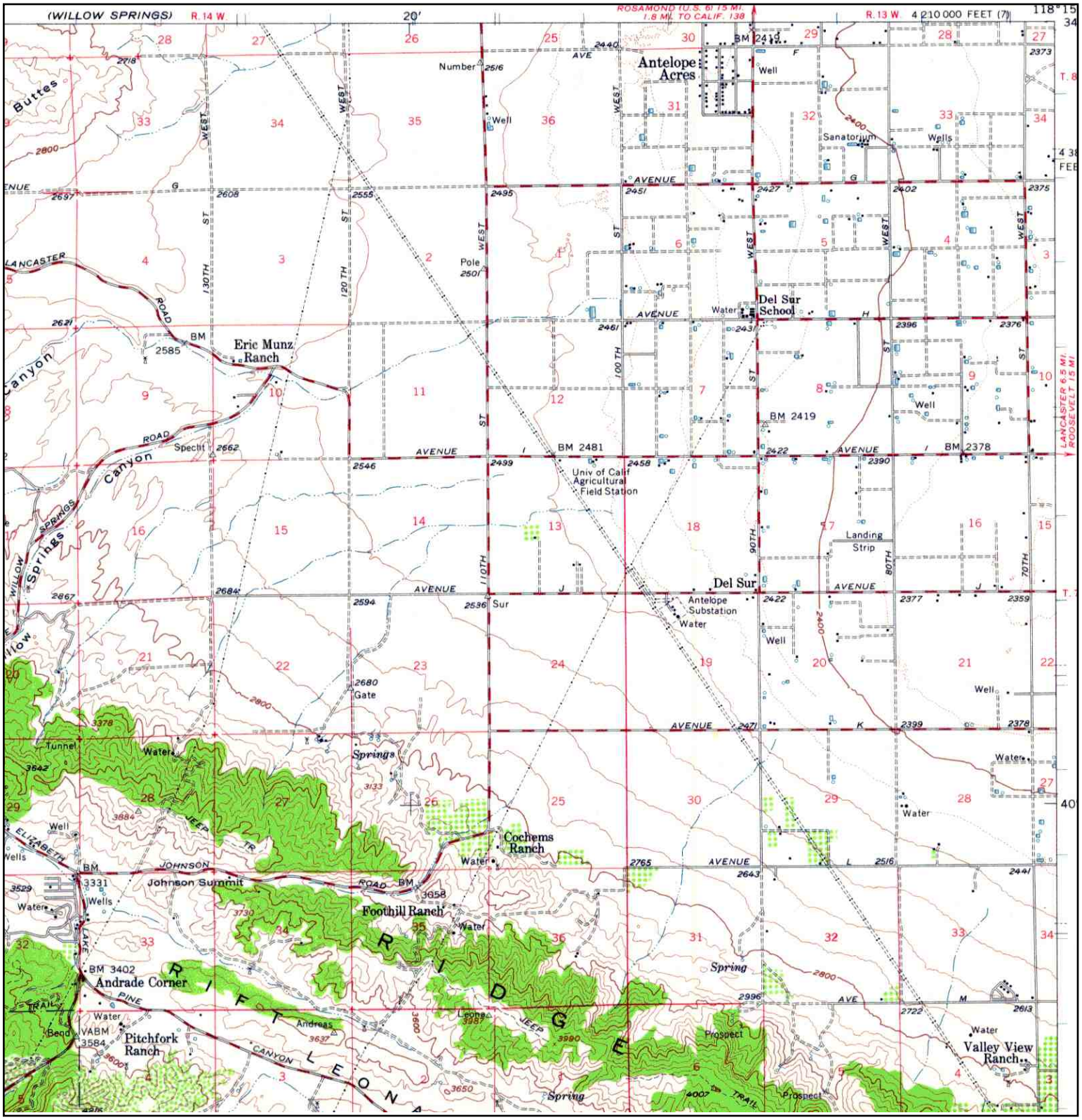

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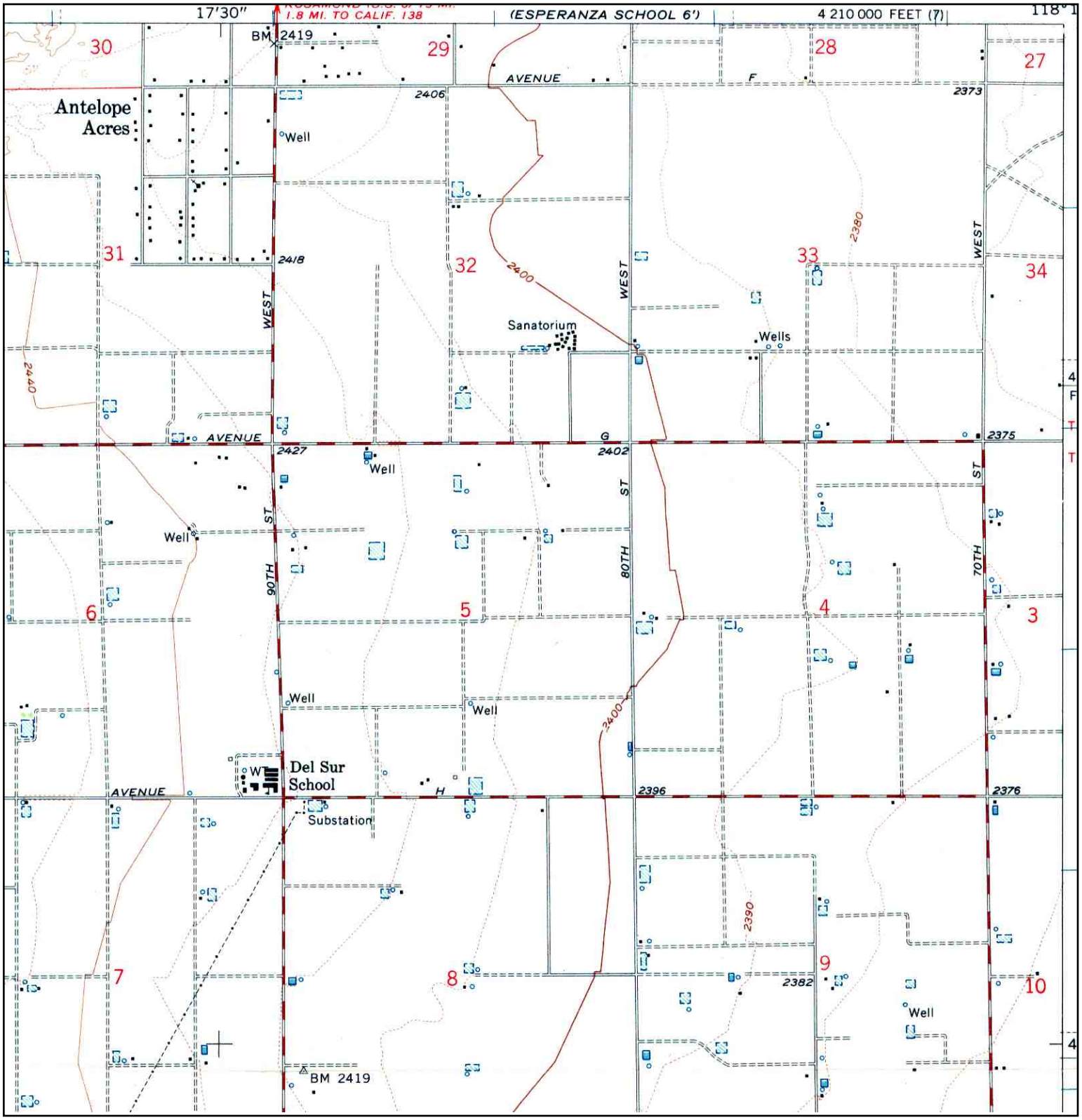

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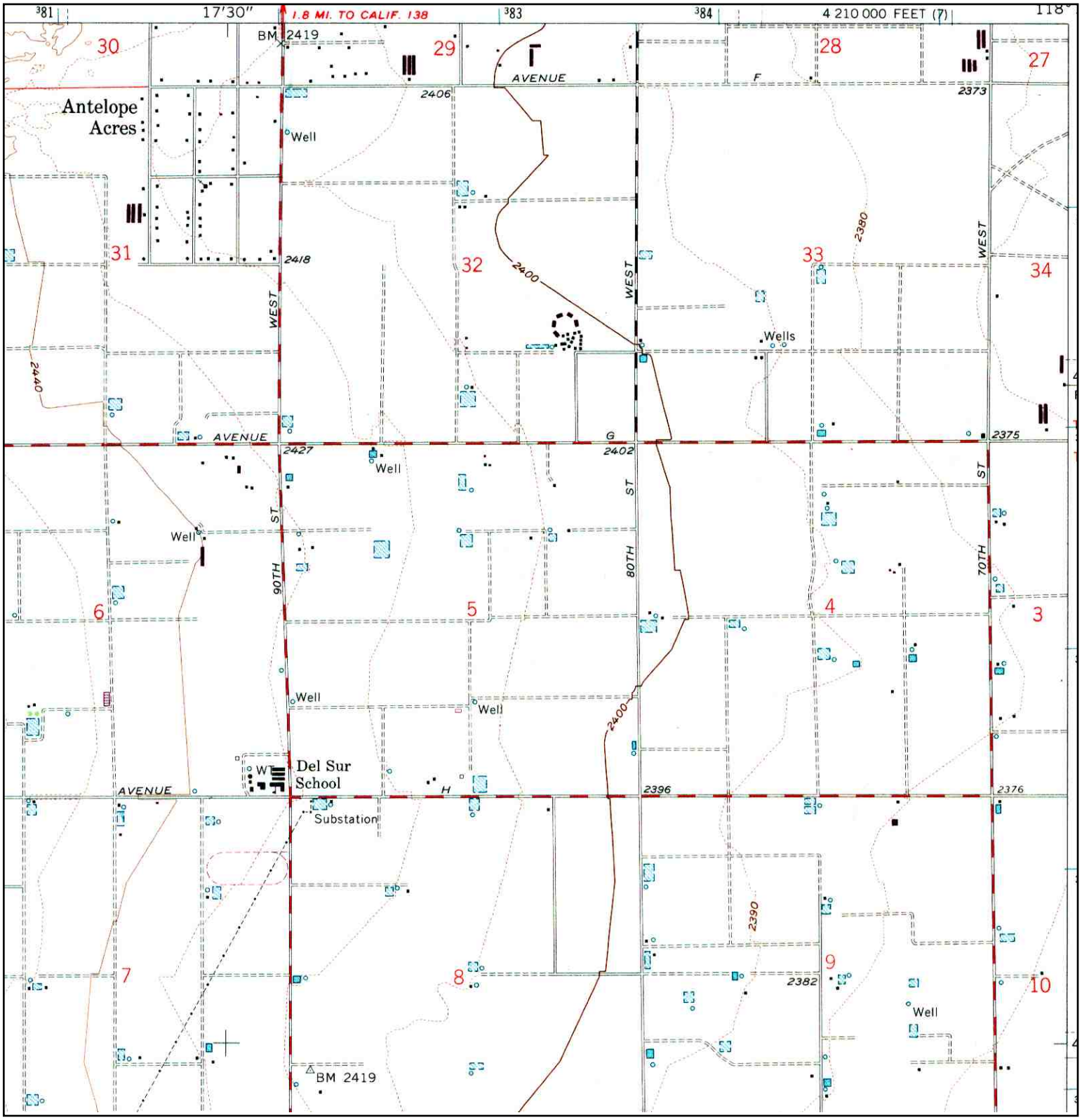

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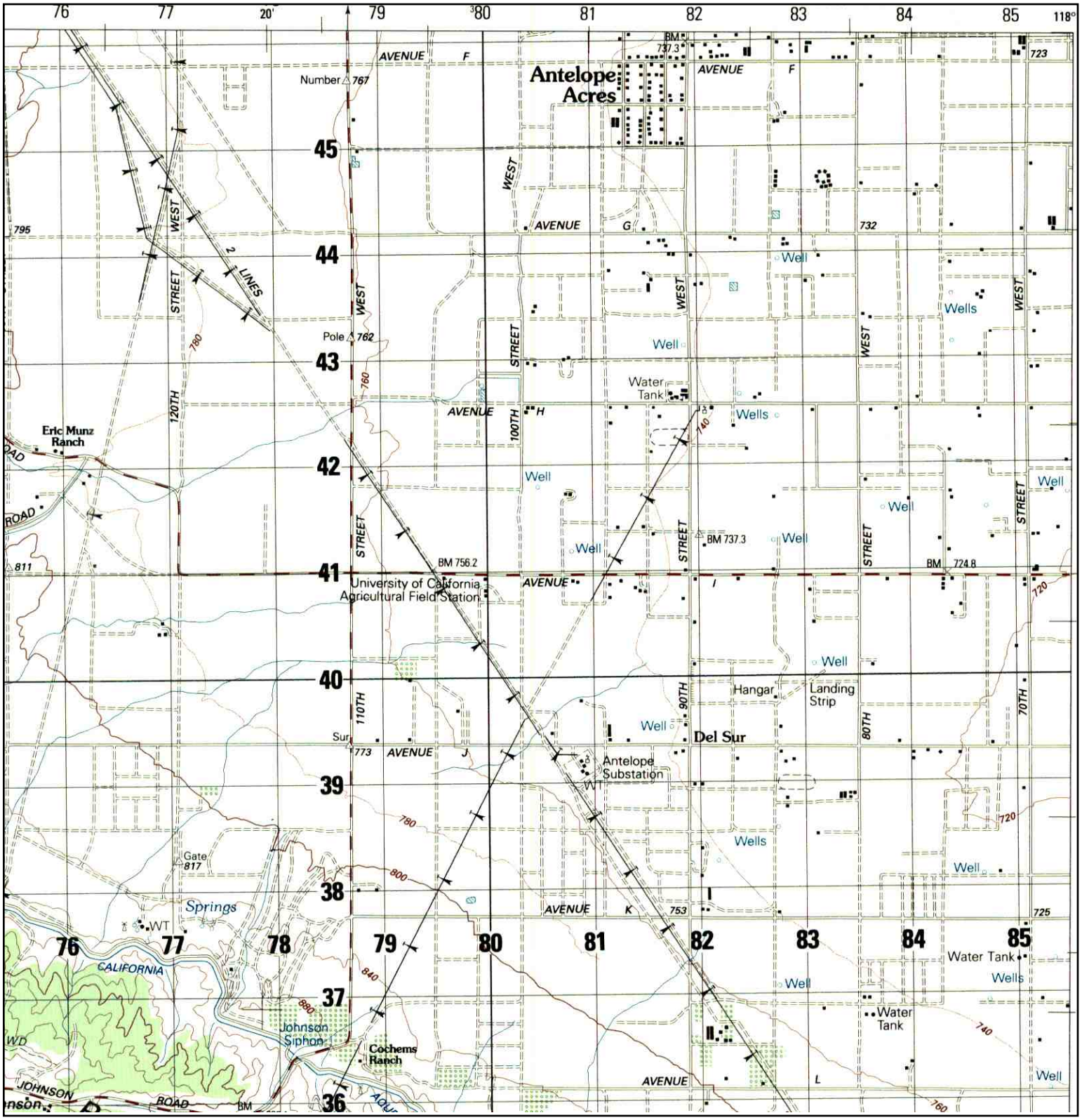

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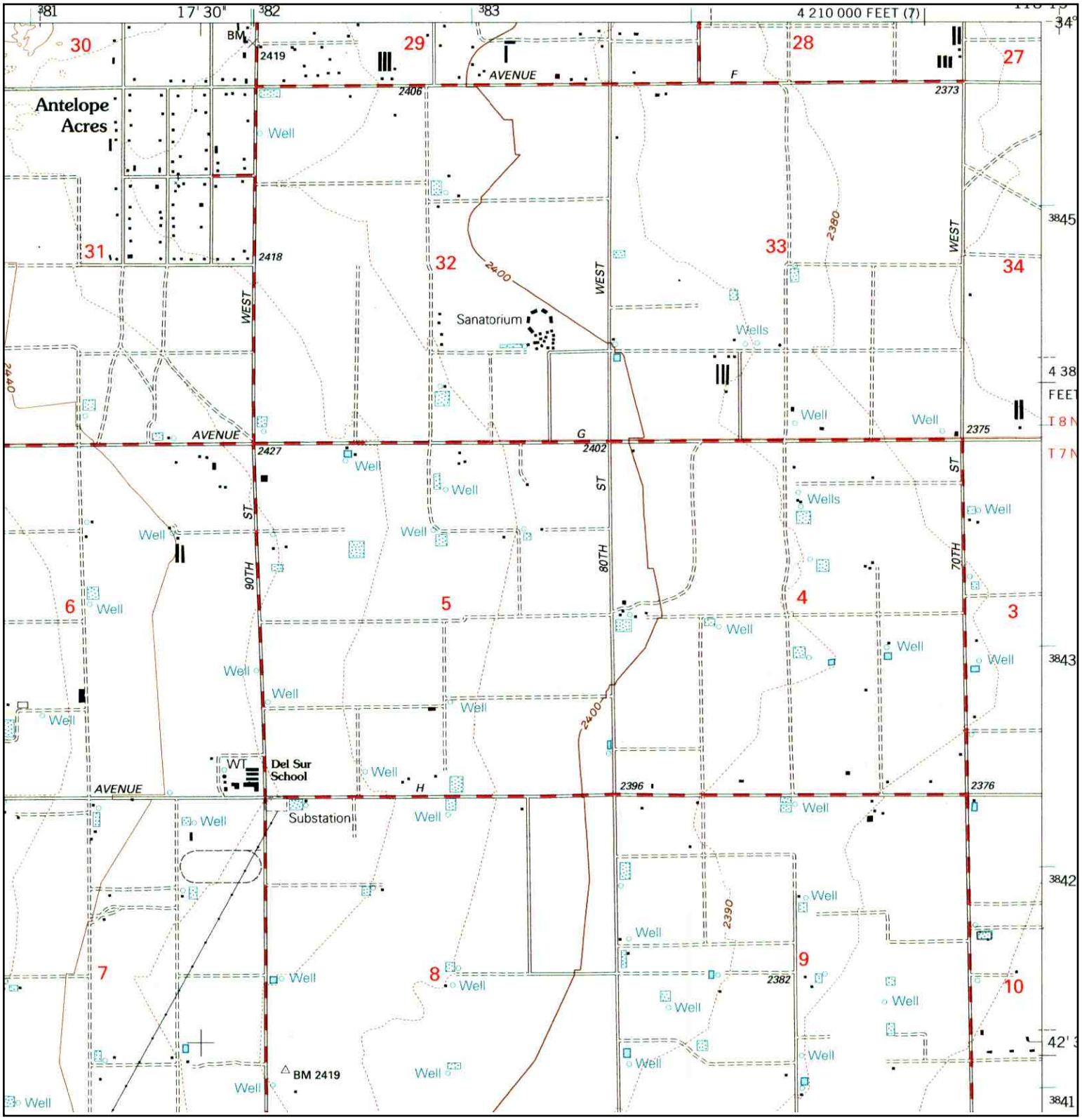

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West LA Greenworks
28
Lancaster, CA 93536

Inquiry Number: 3089735.128s
June 08, 2011

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

28
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.731100 - 34° 43' 52.0''
Longitude (West):	118.260300 - 118° 15' 37.1''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	384614.7
UTM Y (Meters):	3843750.0
Elevation:	2387 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974
East Map:	34118-F2 LANCASTER WEST, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	2006, 2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
SLIC ---------- Statewide SLIC Cases

INDIAN LUST - Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST - Active UST Facilities
AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - Underground Storage Tanks on Indian Land
FEMA UST - Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP - Voluntary Cleanup Program Properties
INDIAN VCP - Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI - Open Dump Inventory
DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT - Waste Management Unit Database
SWRCY - Recycler Database
HAULERS - Registered Waste Tire Haulers Listing
INDIAN ODI - Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL - Clandestine Drug Labs
HIST Cal-Sites - Historical Calsites Database
SCH - School Property Evaluation Program
Toxic Pits - Toxic Pits Cleanup Act Sites
AOCONCERN - San Gabriel Valley Areas of Concern
CDL - Clandestine Drug Labs
US HIST CDL - National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

HIST UST - Hazardous Substance Storage Container Database

Local Land Records

LIENS 2 - CERCLA Lien Information
LUCIS - Land Use Control Information System
LIENS - Environmental Liens Listing
DEED - Deed Restriction Listing

Records of Emergency Release Reports

HMIRS - Hazardous Materials Information Reporting System
CHMIRS - California Hazardous Material Incident Report System

LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen	RCRA - Non Generators
DOT OPS	Incident and Accident Data
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
CA BOND EXP. PLAN	Bond Expenditure Plan
NPDES	NPDES Permits Listing
WDS	Waste Discharge System
Cortese	"Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE	Hazardous Waste & Substance Site List
Notify 65	Proposition 65 Records
LA Co. Site Mitigation	Site Mitigation List
DRYCLEANERS	Cleaner Facilities
WIP	Well Investigation Program Case List
HAZNET	Facility and Manifest Data
EMI	Emissions Inventory Data
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
FINANCIAL ASSURANCE	Financial Assurance Information Listing
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
PROC	Certified Processors Database
MWMP	Medical Waste Management Program Listing
COAL ASH DOE	Sleam-Electric Plan Operation Data

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	EDR Proprietary Manufactured Gas Plants
EDR Historical Auto Stations	EDR Proprietary Historic Gas Stations
EDR Historical Cleaners	EDR Proprietary Historic Dry Cleaners

EXECUTIVE SUMMARY

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within approximately 0.375 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PERRY MORGAN	***7362 W AVENUE G***	***NNW 1/8 - 1/4 (0.138 mi.)***	***A2***	***8***

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.375 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PERRY MORGAN	***7362 W AVENUE G***	***NNW 1/8 - 1/4 (0.138 mi.)***	***A2***	***8***

Other Ascertainable Records

Los Angeles County Industrial Waste and Underground Storage Tank Sites.

A review of the LOS ANGELES CO. HMS list, as provided by EDR, and dated 12/30/2010 has revealed that there is 1 LOS ANGELES CO. HMS site within approximately 0.125 miles of the target property.

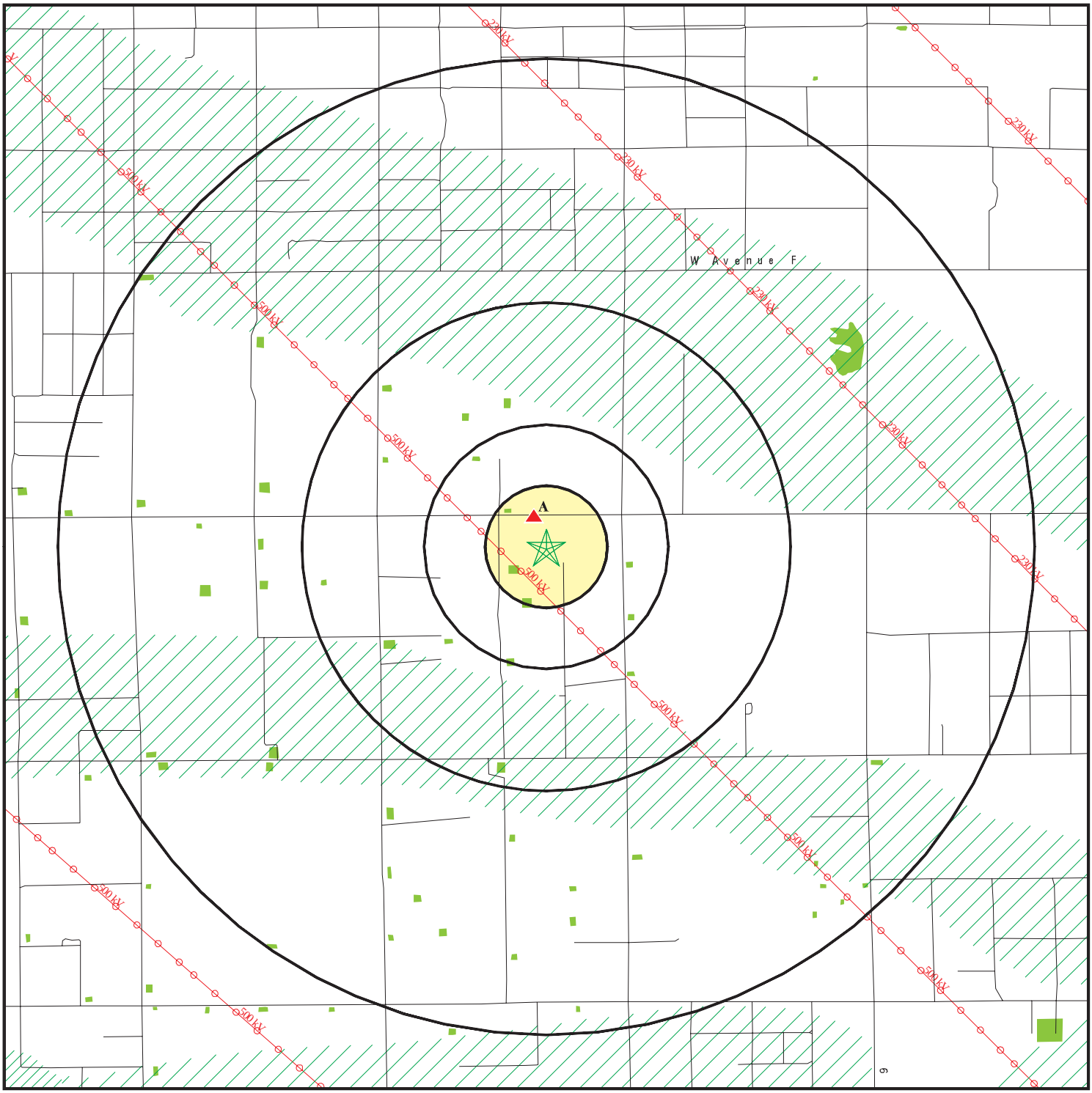
Lower Elevation	Address	Direction / Distance	Map ID	Page
PERRY MORGAN	7362 W AVE G	NNW 0 - 1/8 (0.124 mi.)	A1	8

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 20 records.

Site Name	Database(s)
TRACT 60209	NPDES
AVE E ETAL	NPDES
WILDFLOWER & CAPISTRANO	NPDES
CAL MAT	SWEEPS UST
28.15 MI.MARKER ON ANGELES CRE	CDL
5 MI NW OF HWY 138 & 300TH ST	AST
OSO PUMPING PLANT	HAZNET
55TH ST. WEST & AVE M6	ERNS
58TH ST WEST LOT NUMBER 138	ERNS
AVE H EAST OF 90TH WEST	ERNS
4215 WEST AVE. APT J13	ERNS
4656 WEST EVANUE K 10	ERNS
205 ST WEST NEAREST CROSS ST WAS	ERNS
LA DOCK 189	ERNS
EDISON SUBSTATION 55TH WEST AVE "L	ERNS
LA CITY DWP-FAIRMONT RESERVOIR	FINDS
3995 AVENUE H W	CDL
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
CASTA DWR- CHECK SITE 59	EMI

OVERVIEW MAP - 3089735.128s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: West LA Greenworks ADDRESS: 28 Lancaster CA 93536 LAT/LONG: 34.7311 / 118.2603	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.128s DATE: June 08, 2011 1:02 pm

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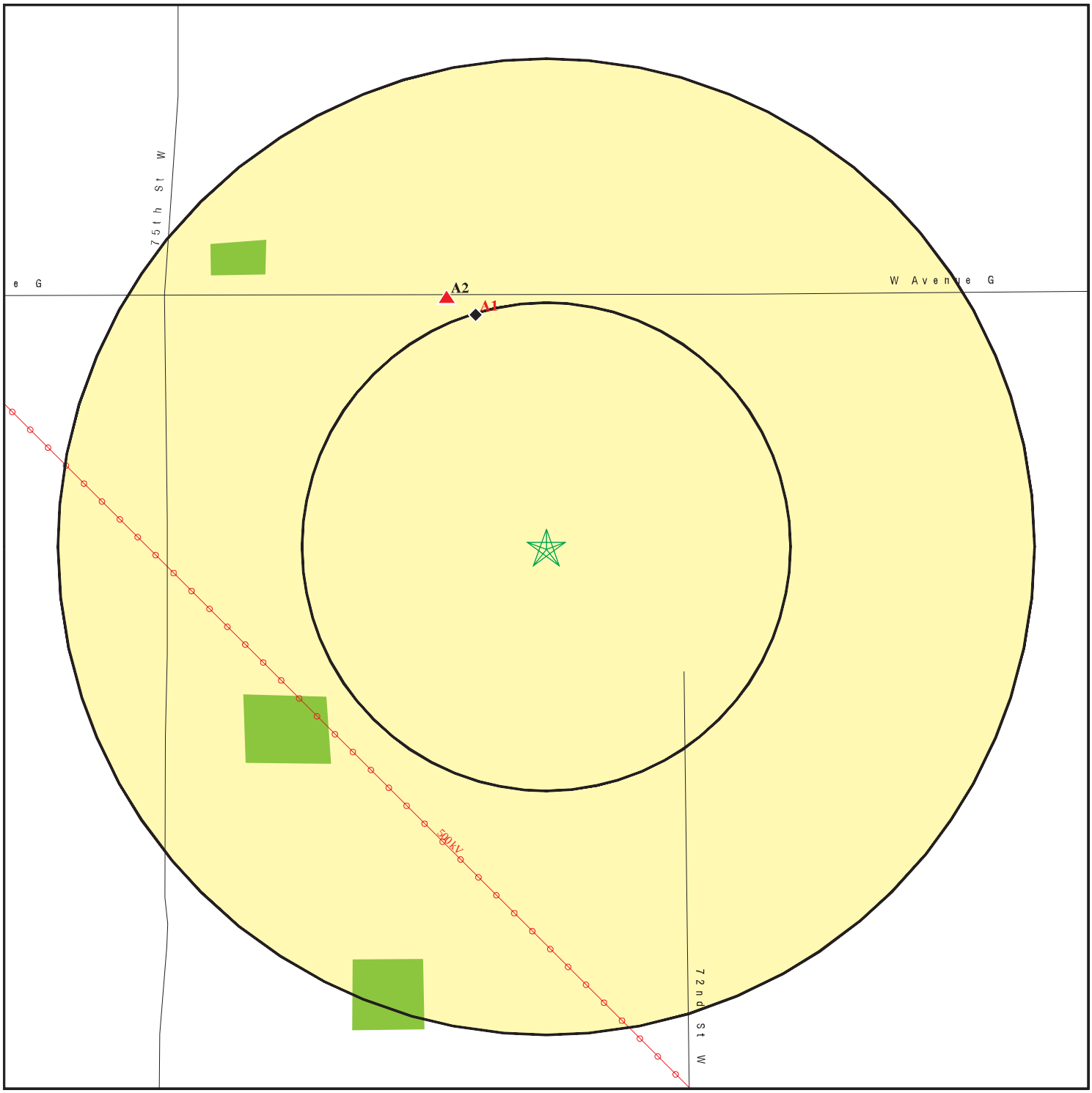
DETAIL MAP - 3089735.128s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: West LA Greenworks	CLIENT: Tetra Tech Inc.
ADDRESS: 28	CONTACT: Garret Bean
Lancaster CA 93536	INQUIRY #: 3089735.128s
LAT/LONG: 34.7311 / 118.2603	DATE: June 08, 2011 1:03 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.125	0	0	0	0	0	0
Proposed NPL		1.125	0	0	0	0	0	0
NPL LIENS		0.125	0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.125	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		0.625	0	0	0	0	NR	0
FEDERAL FACILITY		1.125	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.625	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.125	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.625	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.375	0	0	0	NR	NR	0
RCRA-SQG		0.375	0	0	0	NR	NR	0
RCRA-CESQG		0.375	0	0	0	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.625	0	0	0	0	NR	0
US INST CONTROL		0.625	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.125	0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.125	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.125	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.625	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		0.625	0	0	0	0	NR	0
SLIC		0.625	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST		0.625	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.375	0	0	0	NR	NR	0
AST		0.375	0	0	0	NR	NR	0
INDIAN UST		0.375	0	0	0	NR	NR	0
FEMA UST		0.375	0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.625	0	0	0	0	NR	0
INDIAN VCP		0.625	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.625	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		0.625	0	0	0	0	NR	0
DEBRIS REGION 9		0.625	0	0	0	0	NR	0
WMUDS/SWAT		0.625	0	0	0	0	NR	0
SWRCY		0.625	0	0	0	0	NR	0
HAULERS		0.125	0	NR	NR	NR	NR	0
INDIAN ODI		0.625	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.125	0	NR	NR	NR	NR	0
HIST Cal-Sites		1.125	0	0	0	0	0	0
SCH		0.375	0	0	0	NR	NR	0
Toxic Pits		1.125	0	0	0	0	0	0
AOCONCERN		1.125	0	0	0	0	0	0
CDL		0.125	0	NR	NR	NR	NR	0
US HIST CDL		0.125	0	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.375	0	1	0	NR	NR	1
HIST UST		0.375	0	0	0	NR	NR	0
SWEEPS UST		0.375	0	1	0	NR	NR	1
Local Land Records								
LIENS 2		0.125	0	NR	NR	NR	NR	0
LUCIS		0.625	0	0	0	0	NR	0
LIENS		0.125	0	NR	NR	NR	NR	0
DEED		0.625	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.125	0	NR	NR	NR	NR	0
CHMIRS		0.125	0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS		0.125	0	NR	NR	NR	NR	0
MCS		0.125	0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.375	0	0	0	NR	NR	0
DOT OPS		0.125	0	NR	NR	NR	NR	0
DOD		1.125	0	0	0	0	0	0
FUDS		1.125	0	0	0	0	0	0
CONSENT		1.125	0	0	0	0	0	0
ROD		1.125	0	0	0	0	0	0
UMTRA		0.625	0	0	0	0	NR	0
MINES		0.375	0	0	0	NR	NR	0
TRIS		0.125	0	NR	NR	NR	NR	0
TSCA		0.125	0	NR	NR	NR	NR	0
FTTS		0.125	0	NR	NR	NR	NR	0
HIST FTTS		0.125	0	NR	NR	NR	NR	0
SSTS		0.125	0	NR	NR	NR	NR	0
ICIS		0.125	0	NR	NR	NR	NR	0
PADS		0.125	0	NR	NR	NR	NR	0
MLTS		0.125	0	NR	NR	NR	NR	0
RADINFO		0.125	0	NR	NR	NR	NR	0
FINDS		0.125	0	NR	NR	NR	NR	0
RAATS		0.125	0	NR	NR	NR	NR	0
CA BOND EXP. PLAN		1.125	0	0	0	0	0	0
NPDES		0.125	0	NR	NR	NR	NR	0
WDS		0.125	0	NR	NR	NR	NR	0
Cortese		0.625	0	0	0	0	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.125	0	0	0	0	0	0
LA Co. Site Mitigation		0.125	0	NR	NR	NR	NR	0
DRYCLEANERS		0.375	0	0	0	NR	NR	0
WIP		0.375	0	0	0	NR	NR	0
LOS ANGELES CO. HMS		0.125	1	NR	NR	NR	NR	1
HAZNET		0.125	0	NR	NR	NR	NR	0
EMI		0.125	0	NR	NR	NR	NR	0
INDIAN RESERV		1.125	0	0	0	0	0	0
SCRD DRYCLEANERS		0.625	0	0	0	0	NR	0
FINANCIAL ASSURANCE		0.125	0	NR	NR	NR	NR	0
HWP		1.125	0	0	0	0	0	0
HWT		0.375	0	0	0	NR	NR	0
COAL ASH EPA		0.625	0	0	0	0	NR	0
PCB TRANSFORMER		0.125	0	NR	NR	NR	NR	0
PROC		0.625	0	0	0	0	NR	0
MWMP		0.375	0	0	0	NR	NR	0
COAL ASH DOE		0.125	0	NR	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.125	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.375	0	0	0	NR	NR	0
EDR Historical Cleaners		0.375	0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1
NNW
< 1/8
0.124 mi.
655 ft.

PERRY MORGAN
7362 W AVE G
UNINCORPORATED, CA

Site 1 of 2 in cluster A

LOS ANGELES CO. HMS | **S102060799** | **N/A**

Relative:
Lower

Actual:
2386 ft.

LOS ANGELES CO. HMS:

Region:	LA
Facility Id:	015513-016899
Facility Status:	Removed
Area:	4
Permit Number:	0000T6344
Permit Status:	Removed
Facility Type:	T0

A2
NNW
1/8-1/4
0.138 mi.
727 ft.

PERRY MORGAN
7362 W AVENUE G
LANCASTER, CA 93536

Site 2 of 2 in cluster A

CA FID UST | **S101585008**
SWEEPS UST | **N/A**

Relative:
Equal

Actual:
2387 ft.

CA FID UST:

Facility ID:	19018141
Regulated By:	UTNKA
Regulated ID:	Not reported
Cortese Code:	Not reported
SIC Code:	Not reported
Facility Phone:	Not reported
Mail To:	Not reported
Mailing Address:	7734 EL MANOR AVE
Mailing Address 2:	Not reported
Mailing City,St,Zip:	LANCASTER 93536
Contact:	Not reported
Contact Phone:	Not reported
DUNs Number:	Not reported
NPDES Number:	Not reported
EPA ID:	Not reported
Comments:	Not reported
Status:	Active

SWEEPS UST:

Status:	A
Comp Number:	16899
Number:	2
Board Of Equalization:	Not reported
Ref Date:	06-10-92
Act Date:	08-11-92
Created Date:	08-11-92
Tank Status:	A
Owner Tank Id:	1
Swrcb Tank Id:	19-000-016899-000001
Actv Date:	06-10-92
Capacity:	550
Tank Use:	M.V. FUEL
Stg:	P
Content:	LEADED
Number Of Tanks:	1

Count: 20 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LANCASTER	1011988381	LA CITY DWP-FAIRMONT RESERVOIR	45650 N. 170TH STREET WEST	93534	FINDS
LANCASTER	1012055833	3995 AVENUE H W	3995 AVENUE H W		CDL
LANCASTER	2002615302	AVE H EAST OF 90TH WEST	AVE H EAST OF 90TH WEST	0	ERNS
LANCASTER	2005623318	58TH ST WEST LOT NUMBER 138	58TH ST WEST LOT NUMBER 138		ERNS
LANCASTER	2005626025	4215 WEST AVE. APT J13	4215 WEST AVE. APT J13	93536	ERNS
	2007307088	LA DOCK 189	LA DOCK 189		ERNS
LANCASTER	2007315478	4656 WEST EVANUE K 10	4656 WEST EVANUE K 10		ERNS
LANCASTER	90171207	55TH ST. WEST & AVE M6	55TH ST. WEST & AVE M6	93536	ERNS
QUARTZ HILL	90186429	EDISON SUBSTATION 55TH WEST AVE "L	EDISON SUBSTATION 55TH WEST AV	93536	ERNS
LANCASTER	93326941	205 ST WEST NEAREST CROSS ST WAS	205 ST WEST NEAREST CROSS ST W		ERNS
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 & 300TH ST	93536	HAZNET
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
	S107532211		28.15 MI.MARKER ON ANGELES CRE		CDL
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HW	93536	EMI
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HW	93536	EMI
LOS ANGELES	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES
LOS ANGELES	S110736869	TRACT 60209	AVE M & 70TH ST W	93536	NPDES
LOS ANGELES	S110737467	WILDFLOWER & CAPISTRANO	SEC OF 72ND ST WEST & AVE L	93536	NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPAa??s Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/15/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 05/25/2010
Date Data Arrived at EDR: 06/02/2010
Date Made Active in Reports: 10/04/2010
Number of Days to Update: 124

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/07/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 11/04/2009
Date Data Arrived at EDR: 05/04/2010
Date Made Active in Reports: 07/07/2010
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 12/02/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 57

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/03/2011
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/01/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 12/29/2010
Date Data Arrived at EDR: 12/30/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 02/24/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 46

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/07/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 03/04/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 05/02/2011
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/18/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 51

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/21/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 30

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2011
Date Data Arrived at EDR: 02/11/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/15/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 10/29/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 5

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/21/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 99

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/02/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/08/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/17/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 94

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/07/2011
Date Data Arrived at EDR: 01/21/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/11/2011
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Biennially

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/04/2011
Number of Days to Update: 29

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/15/2010
Date Data Arrived at EDR: 09/16/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 13

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/07/2010
Date Made Active in Reports: 08/12/2010
Number of Days to Update: 36

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/01/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 02/28/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/04/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/09/2010
Date Data Arrived at EDR: 08/11/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 9
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 04/26/2011
Number of Days to Update: 41

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 33

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 03/29/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COLUSA COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 12/01/2010
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/06/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/31/2011
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/25/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2011
Date Data Arrived at EDR: 02/09/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 23
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/18/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/12/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 30
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/26/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 22
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 04/25/2011
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/20/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/07/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/15/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 16

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/17/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 31

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 20

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 11/16/2010
Date Made Active in Reports: 01/25/2011
Number of Days to Update: 70

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/21/2010
Next Scheduled EDR Contact: 03/28/2011
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/16/2011
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/30/2011
Date Data Arrived at EDR: 03/31/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 22
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/22/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 29
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 36
Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/14/2011
Date Data Arrived at EDR: 03/15/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 9
Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/25/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 25
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/07/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 35
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/07/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/08/2011
Number of Days to Update: 28

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 30

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 01/25/2011
Date Data Arrived at EDR: 02/03/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 29

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/26/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/22/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 05/12/2011
Date Made Active in Reports: 05/24/2011
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/12/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/06/2011
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/19/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 38

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/06/2010
Date Made Active in Reports: 07/26/2010
Number of Days to Update: 20

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

WEST LA GREENWORKS
28
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.73110 - 34° 43' 52.0''
Longitude (West):	118.2603 - 118° 15' 37.1''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	384614.7
UTM Y (Meters):	3843750.0
Elevation:	2387 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974
East Map:	34118-F2 LANCASTER WEST, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

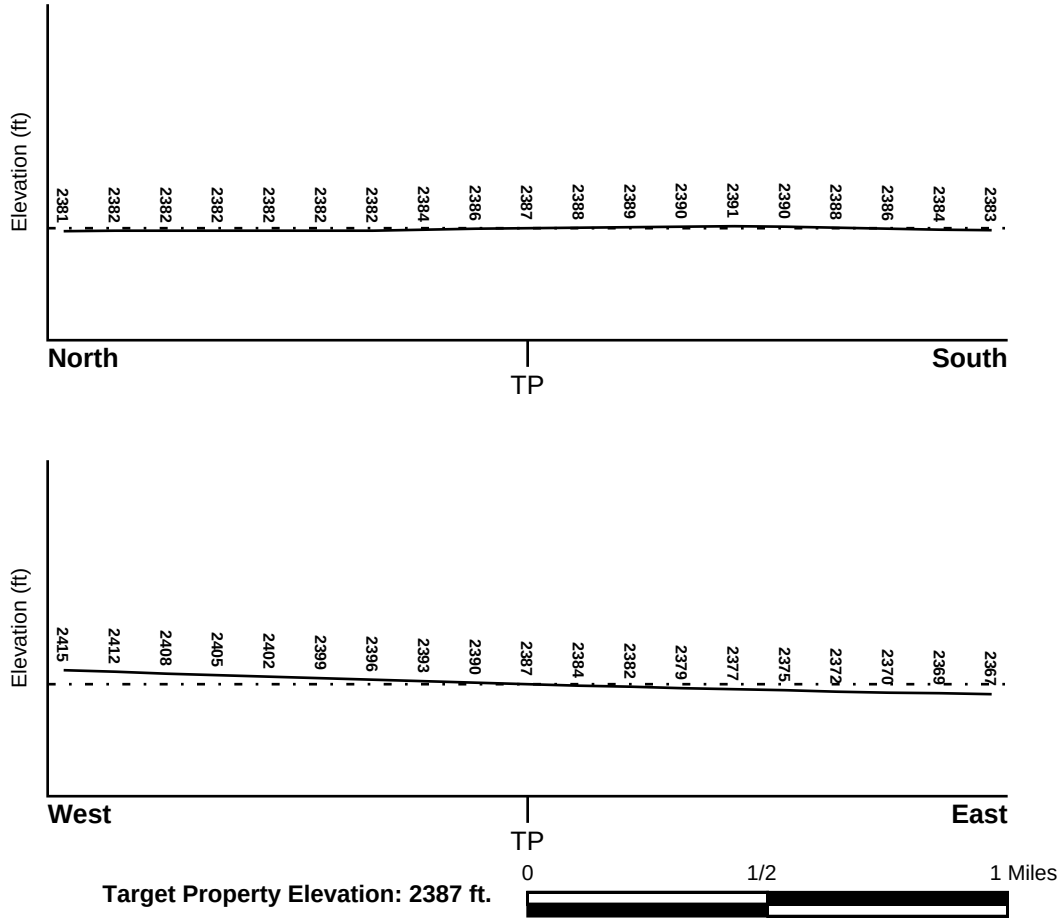
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
DEL SUR	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

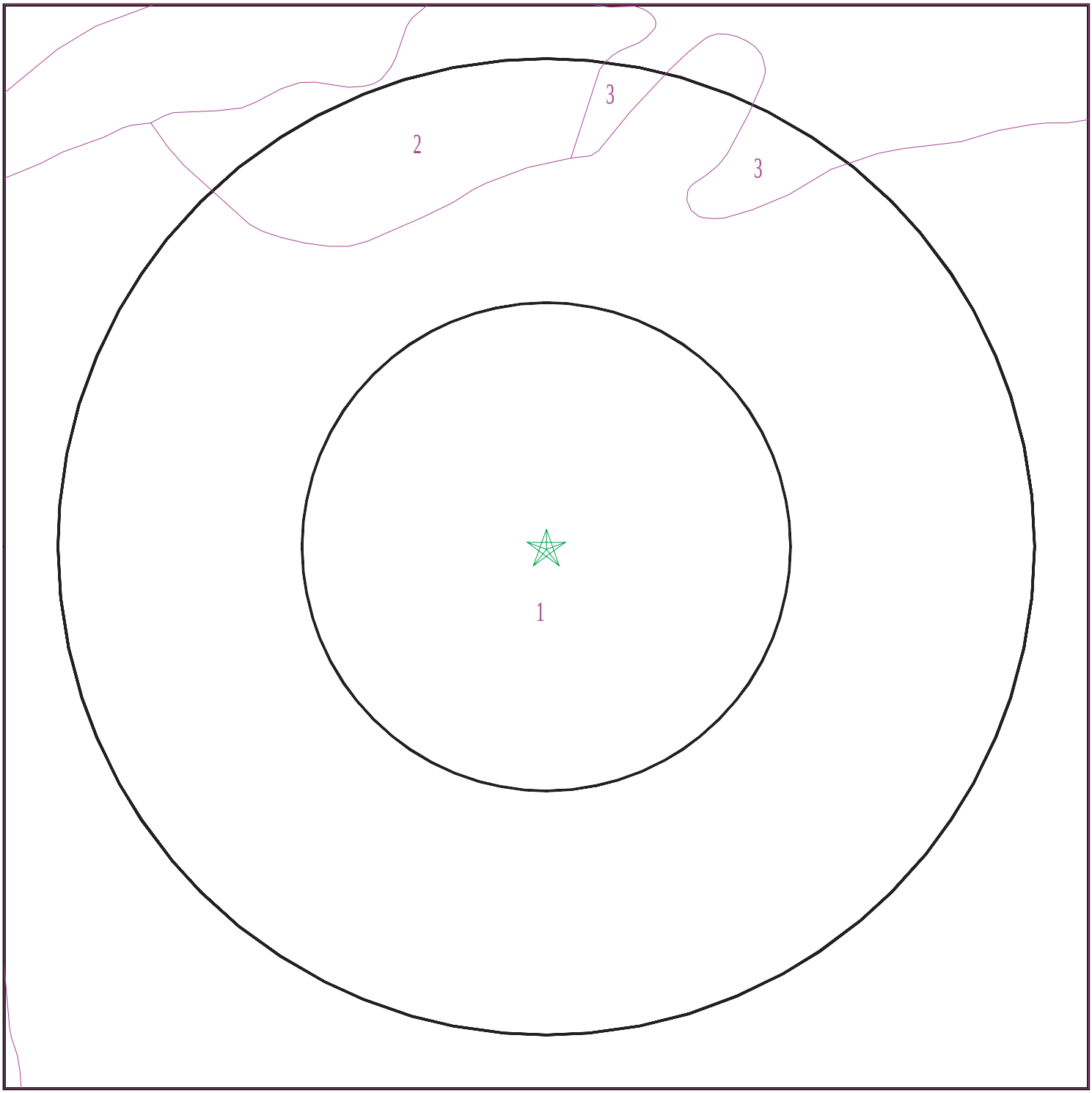
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3089735.128s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	West LA Greenworks	CLIENT:	Tetra Tech Inc.
ADDRESS:	28 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.7311 / 118.2603	INQUIRY #:	3089735.128s
		DATE:	June 08, 2011 1:04 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Hesperia

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	3 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4
2	3 inches	53 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4
3	53 inches	77 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4

Soil Map ID: 2

Soil Component Name: Sunrise

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	18 inches	31 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	31 inches	48 inches	cemented	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
4	48 inches	64 inches	stratified gravelly sandy loam to loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4

Soil Map ID: 3

Soil Component Name: Sunrise

Soil Surface Texture: loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	18 inches	31 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	31 inches	48 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
4	48 inches	64 inches	stratified gravelly sandy loam to loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS3158661	1/8 - 1/4 Mile WSW
B3	USGS3158506	1/8 - 1/4 Mile NW
B4	USGS3158505	1/8 - 1/4 Mile NW
B5	USGS3158507	1/8 - 1/4 Mile NW
6	USGS3158624	1/8 - 1/4 Mile SSE
C7	USGS3158625	1/8 - 1/4 Mile SSW
C12	USGS3158626	1/4 - 1/2 Mile SW
E16	USGS3158498	1/4 - 1/2 Mile ENE
D17	USGS3158649	1/4 - 1/2 Mile ESE
D18	USGS3158654	1/4 - 1/2 Mile East
F20	USGS3158606	1/4 - 1/2 Mile SE
G21	USGS3158779	1/4 - 1/2 Mile South
22	USGS3158552	1/4 - 1/2 Mile NW
G24	USGS3158777	1/4 - 1/2 Mile SSE
H25	USGS3158487	1/4 - 1/2 Mile ENE
H26	USGS3158486	1/4 - 1/2 Mile ENE
I27	USGS3158773	1/2 - 1 Mile SSW
28	USGS3158799	1/2 - 1 Mile SE
I29	USGS3158774	1/2 - 1 Mile SSW
J30	USGS3158782	1/2 - 1 Mile SW
J31	USGS3158783	1/2 - 1 Mile SW
I32	USGS3158769	1/2 - 1 Mile SSW
37	USGS3158580	1/2 - 1 Mile NNE
K38	USGS3158546	1/2 - 1 Mile ENE
L39	USGS3158772	1/2 - 1 Mile SE
M40	USGS3158504	1/2 - 1 Mile ENE
41	USGS3158379	1/2 - 1 Mile NNW
42	USGS3158539	1/2 - 1 Mile ENE
N44	USGS3158788	1/2 - 1 Mile WSW
45	USGS3158399	1/2 - 1 Mile NNW
O46	USGS3158497	1/2 - 1 Mile ENE
N47	USGS3158789	1/2 - 1 Mile WSW
P49	USGS3158553	1/2 - 1 Mile WNW
51	USGS3158721	1/2 - 1 Mile SSE
O53	USGS3158503	1/2 - 1 Mile ENE
Q55	USGS3158694	1/2 - 1 Mile East

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
Q57	USGS3158485	1/2 - 1 Mile East
R58	USGS3158798	1/2 - 1 Mile ESE
T60	USGS3158680	1/2 - 1 Mile West
61	USGS3158846	1/2 - 1 Mile South
U62	USGS3158847	1/2 - 1 Mile South
T63	USGS3158681	1/2 - 1 Mile West
S65	USGS3158565	1/2 - 1 Mile ENE
67	USGS3158839	1/2 - 1 Mile SSE
V68	USGS3158739	1/2 - 1 Mile SW
69	USGS3158555	1/2 - 1 Mile ENE
70	USGS3158863	1/2 - 1 Mile SSE
V71	USGS3158747	1/2 - 1 Mile SW
72	USGS3158554	1/2 - 1 Mile WNW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

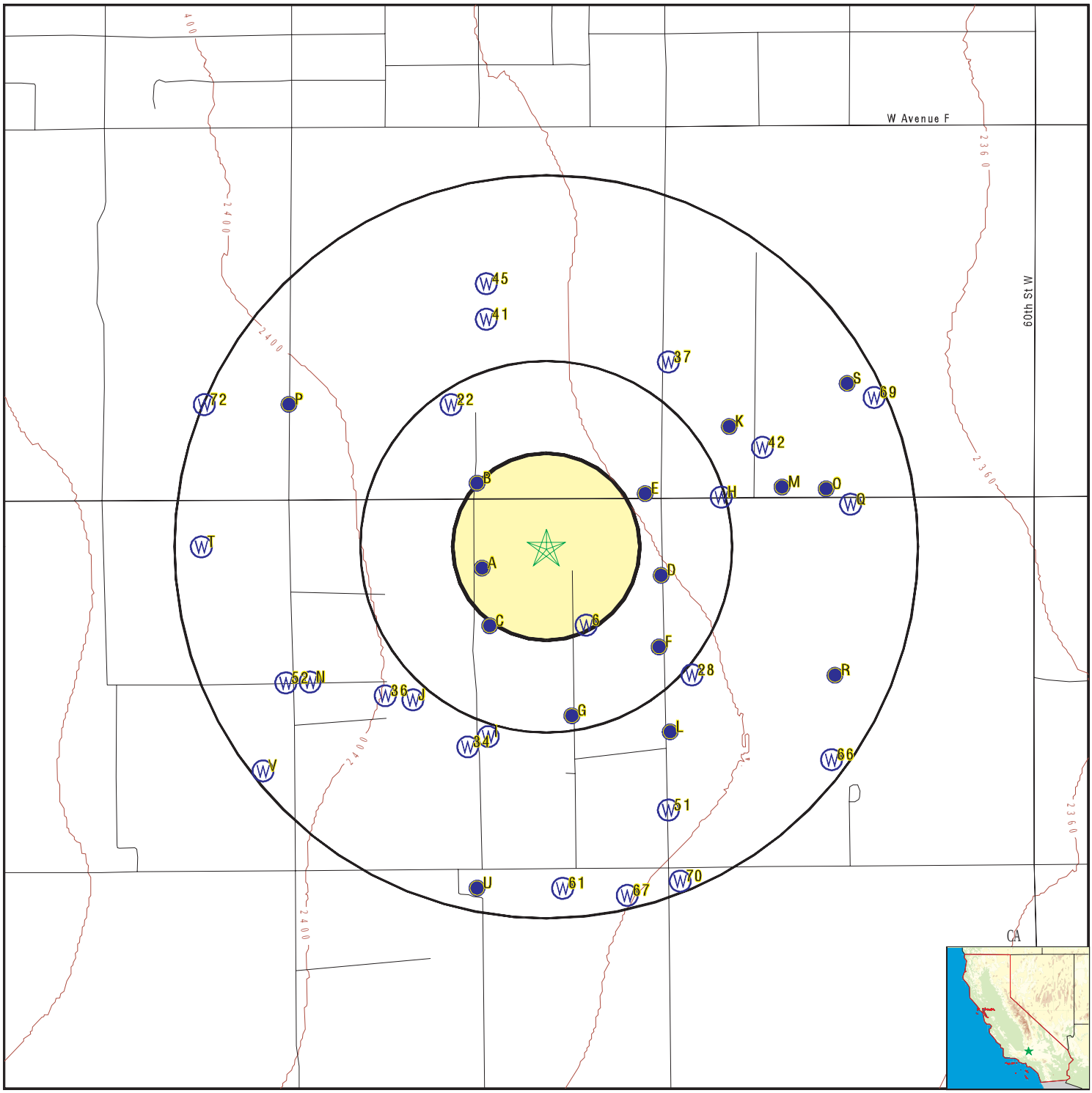
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	CADW40000014487	1/8 - 1/4 Mile WSW
C8	CADW40000014450	1/4 - 1/2 Mile SW
B9	CADW40000014537	1/4 - 1/2 Mile NW
B10	CADW40000014538	1/4 - 1/2 Mile NW
B11	CADW40000014539	1/4 - 1/2 Mile NW
D13	CADW40000014469	1/4 - 1/2 Mile ESE
D14	CADW40000014488	1/4 - 1/2 Mile East
E15	8483	1/4 - 1/2 Mile ENE
F19	CADW40000014427	1/4 - 1/2 Mile SE
G23	CADW40000014371	1/4 - 1/2 Mile South
K33	CADW40000014579	1/2 - 1 Mile NE
34	CADW40000014351	1/2 - 1 Mile SSW
L35	CADW40000014365	1/2 - 1 Mile SSE
36	CADW40000014378	1/2 - 1 Mile SW
M43	CADW40000014529	1/2 - 1 Mile ENE
O48	CADW40000014540	1/2 - 1 Mile ENE
O50	CADW40000014526	1/2 - 1 Mile East
52	CADW40000014387	1/2 - 1 Mile WSW
P54	CADW40000014582	1/2 - 1 Mile WNW
R56	CADW40000014397	1/2 - 1 Mile ESE
S59	CADW40000014590	1/2 - 1 Mile ENE
U64	CADW40000014251	1/2 - 1 Mile SSW
66	CADW40000014339	1/2 - 1 Mile SE

PHYSICAL SETTING SOURCE MAP - 3089735.128s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

SITE NAME:	West LA Greenworks	CLIENT:	Tetra Tech Inc.
ADDRESS:	28 Lancaster CA 93536	CONTACT:	Garret Bean
		INQUIRY #:	3089735.128s
LAT/LONG:	34.7311 / 118.2603	DATE:	June 08, 2011 1:04 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
WSW
1/8 - 1/4 Mile
Higher

FED USGS **USGS3158661**

Agency cd:	USGS	Site no:	344349118154301
Site name:	007N013W04B001S		
Latitude:	344349	EDR Site id:	USGS3158661
Longitude:	1181543	Dec lat:	34.73026089
Dec lon:	-118.26285376	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2389.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	550	Hole depth:	550
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-02-21	Ground water data end date:	1957-02-21
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1957-02-21	135.00	

A2
WSW
1/8 - 1/4 Mile
Higher

CA WELLS **CADW40000014487**

Longitude:	-118.2629
Latiude:	34.7303
Stwellno:	07N13W04B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014487

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

B3
NW
1/8 - 1/4 Mile
Higher

FED USGS **USGS3158506**

Agency cd:	USGS	Site no:	344401118154402
Site name:	008N013W33Q002S		
Latitude:	344401	EDR Site id:	USGS3158506
Longitude:	1181544	Dec lat:	34.73359408
Dec lon:	-118.26313152	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-12-10	Ground water data end date:	1951-12-05
Ground water data count:	6		

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1951-12-05					
Note: The well was destroyed (no water level is recorded).					
1950-11-28	70.90		1949-11-29	85.50	
1948-12-08	81.60		1947-12-09	69.30	
1946-12-10	65.40				

B4
NW
1/8 - 1/4 Mile
Higher

FED USGS **USGS3158505**

Agency cd:	USGS	Site no:	344401118154401
Site name:	008N013W33Q001S		
Latitude:	344401	EDR Site id:	USGS3158505
Longitude:	1181544	Dec lat:	34.73359408
Dec lon:	-118.26313152	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1943-01-10	Ground water data end date:	1946-12-10
Ground water data count:	7		

Ground-water levels, Number of Measurements: 7

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1946-12-10					
Note: The well was destroyed (no water level is recorded).					
1945-11-08	19.05		1945-03-27	21.10	
1945-03-05	20.05		1944-05-04	20.00	
1943-12-06	20.10		1943-01-10	20.70	

B5
NW
1/8 - 1/4 Mile
Higher

FED USGS **USGS3158507**

Agency cd:	USGS	Site no:	344401118154403
Site name:	008N013W33Q003S		
Latitude:	344401	EDR Site id:	USGS3158507
Longitude:	1181544	Dec lat:	34.73359408
Dec lon:	-118.26313152	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1956-03-08
Water quality data end date:	1956-03-08	Water quality data count:	1
Ground water data begin date:	1950-11-28	Ground water data end date:	1963-05-08
Ground water data count:	18		

Ground-water levels, Number of Measurements: 18

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-08	169.45		1962-11-14	174.20	
1961-10-19	171.00		1961-04-03	171.50	
1960-10-28	189.10		1959-11-12	164.30	
1958-11-28	149.00		1958-03-13	132.30	
1957-11-13	158.50		1957-03-06	143.70	
1956-11-20	149.70		1955-11-01	157.20	
1955-03-16	113.40		1954-11-11	139.30	
1954-03-24	109.90		1953-11-23	119.40	
1951-12-07	102.70		1950-11-28	69.90	

6
SSE **FED USGS** **USGS3158624**
1/8 - 1/4 Mile Higher

Agency cd:	USGS	Site no:	344341118152701
Site name:	007N013W04H001S		
Latitude:	344341	EDR Site id:	USGS3158624
Longitude:	1181527	Dec lat:	34.72803877
Dec lon:	-118.25840918	Coor meth:	M
Coor accr:	U	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2381.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	11.0	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

C7
SSW **FED USGS** **USGS3158625**
1/8 - 1/4 Mile
Higher

Agency cd:	USGS	Site no:	344341118154101
Site name:	007N013W04G001S		
Latitude:	344341	EDR Site id:	USGS3158625
Longitude:	1181541	Dec lat:	34.72803876
Dec lon:	-118.2622982	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2389.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-22	Ground water data end date:	1963-05-22
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-22	257.65	

C8
SW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014450**

Longitude:	-118.2623
Latiude:	34.728
Stwellno:	07N13W04G001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014450

B9
NW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014537**

Longitude:	-118.2631
Latiude:	34.7336
Stwellno:	08N13W33Q001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014537

B10
NW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014538**

Longitude:	-118.2631
Latiude:	34.7336
Stwellno:	08N13W33Q002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014538

B11
NW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014539**

Longitude:	-118.2631
Latiude:	34.7336
Stwellno:	08N13W33Q003S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014539

C12
SW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158626**

Agency cd:	USGS	Site no:	344341118154501
Site name:	007N013W04G002S		
Latitude:	344341	EDR Site id:	USGS3158626
Longitude:	1181545	Dec lat:	34.72803875
Dec lon:	-118.26340935	Coor meth:	M
Coor accr:	U	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2391.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	9.0	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

D13
ESE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000014469**

Longitude:	-118.2545
Latiude:	34.7297
Stwellno:	07N13W03D002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014469

D14
East
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000014488**

Longitude:	-118.2543
Latiude:	34.7303
Stwellno:	07N13W03D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014488

E15
ENE
1/4 - 1/2 Mile
Lower

CA WELLS **8483**

Water System Information:

Prime Station Code:	08N/13W-33R01 S	User ID:	19C
FRDS Number:	1900116001	County:	Los Angeles
District Number:	49	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Raw
Source Lat/Long:	344359.0 1181517.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 01		
System Number:	1900116		
System Name:	WESTSIDE UNION SCHOOL HDQT		
Organization That Operates System:	46809 W. 70TH ST. LANCASTER, CA 93534		
Pop Served:	25	Connections:	1
Area Served:	Not Reported		
Sample Collected:	04/01/2009	Findings:	1000. US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	04/01/2009	Findings:	7.8
Chemical:	PH, LABORATORY		
Sample Collected:	04/01/2009	Findings:	210. MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	04/01/2009	Findings:	260. MG/L
Chemical:	BICARBONATE ALKALINITY		

Sample Collected:	04/01/2009	Findings:	350. MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	04/01/2009	Findings:	110. MG/L
Chemical:	CALCIUM		
Sample Collected:	04/01/2009	Findings:	21. MG/L
Chemical:	MAGNESIUM		
Sample Collected:	04/01/2009	Findings:	78. MG/L
Chemical:	SODIUM		
Sample Collected:	04/01/2009	Findings:	1.6 MG/L
Chemical:	POTASSIUM		
Sample Collected:	04/01/2009	Findings:	130. MG/L
Chemical:	CHLORIDE		
Sample Collected:	04/01/2009	Findings:	0.38 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04/01/2009	Findings:	130. UG/L
Chemical:	BARIUM		
Sample Collected:	04/01/2009	Findings:	390. UG/L
Chemical:	BORON		
Sample Collected:	04/01/2009	Findings:	7. UG/L
Chemical:	VANADIUM		
Sample Collected:	04/01/2009	Findings:	82. UG/L
Chemical:	ZINC		
Sample Collected:	04/01/2009	Findings:	670. MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	04/01/2009	Findings:	21. MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	04/01/2009	Findings:	4700. UG/L
Chemical:	NITRATE + NITRITE (AS N)		

E16
ENE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3158498**

Agency cd:	USGS	Site no:	344400118151701
Site name:	008N013W33R001S		
Latitude:	344400	EDR Site id:	USGS3158498
Longitude:	1181517	Dec lat:	34.73331633
Dec lon:	-118.25563128	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2376.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	180	Hole depth:	180
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

D17
ESE **FED USGS** **USGS3158649**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	344347118151301
Site name:	007N013W03D002S		
Latitude:	344347	EDR Site id:	USGS3158649
Longitude:	1181513	Dec lat:	34.72970537
Dec lon:	-118.25452016	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2378.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1945-03-27	Ground water data end date:	1963-05-28
Ground water data count:	10		

Ground-water levels, Number of Measurements: 10

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-28	77.65		1952-11-13	64.50	
1951-12-05	62.35		1950-11-28	60.00	
1949-12-02	57.15		1948-12-08	54.55	
1947-12-09	51.55		1946-12-12	48.70	
1945-11-08	48.35		1945-03-27	43.50	

D18
East
1/4 - 1/2 Mile
Lower

FED USGS **USGS3158654**

Agency cd:	USGS	Site no:	344348118151101
Site name:	007N013W03D001S		
Latitude:	344349.0	EDR Site id:	USGS3158654
Longitude:	1181515.6	Dec lat:	34.73027778
Dec lon:	-118.25433333	Coor meth:	G
Coor accr:	1	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2378.		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19370301
Date inventoried:	19630528	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	Not Reported
Source of depth data:	reporting agency (generally USGS)		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-29	Ground water data end date:	2004-09-14
Ground water data count:	7		

Ground-water levels, Number of Measurements: 7

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-09-14	167.91		2004-03-30	167.45	
2003-09-15	168.32		2002-09-19	168.69	
2002-03-26	158.29		2001-05-02	157.92	
1963-05-29	169.00				

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
F19 **SE** **1/4 - 1/2 Mile** **Lower**	**CA WELLS**	**CADW40000014427**

Longitude:	-118.2545
Latiude:	34.7272
Stwellno:	07N13W03E001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014427

	Database	EDR ID Number
F20 **SE** **1/4 - 1/2 Mile** **Lower**	**FED USGS**	**USGS3158606**

Agency cd:	USGS	Site no:	344338118151301
Site name:	007N013W03E001S		
Latitude:	344338	EDR Site id:	USGS3158606
Longitude:	1181513	Dec lat:	34.72720548
Dec lon:	-118.25452018	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2381.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19180801
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	other government (other than USGS)		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1920-01-16	Ground water data end date:	1998-03-16
Ground water data count:	62		

Ground-water levels, Number of Measurements: 62

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1998-03-16					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1997-11-18					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1997-03-03	156.41		1996-11-13	159.48	
1996-04-16	157.6		1995-12-05	157.12	
1995-04-19	155.87		1994-10-24	158.45	
1994-04-13	156.38		1993-12-13	156.31	
1993-04-20	156.54		1992-11-04	159.13	
1992-04-14	155.60		1991-10-24	159.69	
1991-03-18	157.72		1990-10-16	160.57	
1990-03-13	158.04		1989-10-18	161.84	
1989-03-22	158.80		1988-03-29	159.49	
1987-11-03	160.80		1987-02-25	159.96	
1986-10-22	162.09		1986-03-18	160.74	
1985-10-30	163.89		1985-03-26	162.89	
1984-10-30	165.74		1984-03-06	163.43	
1983-10-26	166.69		1983-04-15	164.23	
1982-10-06	169.98		1982-02-09	167.47	
1981-11-18	169.96		1981-04-15	172.88	
1980-10-14	176.83		1980-03-24	169.38	
1979-10-23	176.36		1979-02-13	171.39	
1978-10-18	181.70		1978-03-29	189.79	
1977-10-13	193.57		1977-03-09	183.40	
1976-11-04	182.90		1976-03-08	173.06	
1975-10-15	190.13		1975-02-12	175.15	
1974-10-22	196.40		1974-02-11	175.40	
1973-10-03	201.00		1973-02-15	176.30	
1972-10-11	190.90		1972-03-15	189.93	
1971-10-28	190.01		1971-03-16	188.15	
1970-10-22	200.50		1970-03-17	188.40	
1969-04-15	204.64		1968-03-15	201.15	
1967-11-03	200.00		1967-03-17	198.89	
1963-05-29	219.10		1920-01-16	32.00	

G21
South
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158779**

Agency cd:	USGS	Site no:	344329118152901
Site name:	007N013W04J002S		
Latitude:	344329	EDR Site id:	USGS3158779
Longitude:	1181529	Dec lat:	34.72470557
Dec lon:	-118.25896478	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19200618
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	384	Hole depth:	460
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

22
NW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158552**

Agency cd:	USGS	Site no:	344412118155001
Site name:	008N013W33L001S		
Latitude:	344412	EDR Site id:	USGS3158552
Longitude:	1181550	Dec lat:	34.73664951
Dec lon:	-118.26479822	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2390.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19620718
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
G23 **South** **1/4 - 1/2 Mile** **Higher**	**CA WELLS**	**CADW40000014371**

Longitude:	-118.2587
Latiude:	34.7244
Stwellno:	07N13W04J001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014371

G24
SSE
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158777**

Agency cd:	USGS	Site no:	344328118152801
Site name:	007N013W04J001S		
Latitude:	344328	EDR Site id:	USGS3158777
Longitude:	1181528	Dec lat:	34.7244278
Dec lon:	-118.258687	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2387.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19530201
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	568	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1953-04-00	Ground water data end date:	1963-06-12
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel
1963-06-12	223.50	
Note: The site was being pumped.		
1963-05-22	238.12	
Note: The site was being pumped.		
1962-07-23	261.50	
Note: The site was being pumped.		
1959-06-16	119.50	
Note: The site was being pumped.		
1953-04	124.50	

H25
ENE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3158487**

Agency cd:	USGS	Site no:	344359118150402
Site name:	008N013W34N002S		
Latitude:	344359	EDR Site id:	USGS3158487
Longitude:	1181504	Dec lat:	34.73303858
Dec lon:	-118.25202005	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2372.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

H26
ENE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3158486**

Agency cd:	USGS	Site no:	344359118150401
Site name:	008N013W34N001S		
Latitude:	344359	EDR Site id:	USGS3158486
Longitude:	1181504	Dec lat:	34.73303858
Dec lon:	-118.25202005	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2372.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19610101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	208	Hole depth:	208
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

I27
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS3158773**

Agency cd:	USGS	Site no:	344326118154201
Site name:	007N013W04K001S		
Latitude:	344326	EDR Site id:	USGS3158773
Longitude:	1181542	Dec lat:	34.72387226
Dec lon:	-118.26257601	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2392.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19500401
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	496	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

28
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3158799**

Agency cd:	USGS	Site no:	344334118150901
Site name:	007N013W03E002S		
Latitude:	344334	EDR Site id:	USGS3158799
Longitude:	1181509	Dec lat:	34.72609441
Dec lon:	-118.25340904	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2380.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

I29
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS3158774**

Agency cd:	USGS	Site no:	344326118154501
Site name:	007N013W04K003S		
Latitude:	344326	EDR Site id:	USGS3158774
Longitude:	1181545	Dec lat:	34.72387226
Dec lon:	-118.26340937	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	124000
Altitude:	2392.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	98.0	Hole depth:	98.0
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

J30
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3158782**

Agency cd:	USGS	Site no:	344330118155501
Site name:	007N013W04L002S		
Latitude:	344330	EDR Site id:	USGS3158782
Longitude:	1181555	Dec lat:	34.72498332
Dec lon:	-118.26618723	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000

Altitude:	2396.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

J31
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3158783**

Agency cd:	USGS	Site no:	344331118155801
Site name:	007N013W04L001S		
Latitude:	344331	EDR Site id:	USGS3158783
Longitude:	1181558	Dec lat:	34.72526108
Dec lon:	-118.26702059	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2396.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	481	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-21	Ground water data end date:	1963-05-21
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-21	227.30	

Note: A nearby site that taps the same aquifer was being pumped.

I32
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS3158769**

Agency cd:	USGS	Site no:	344324118154401
Site name:	007N013W04K002S		
Latitude:	344324	EDR Site id:	USGS3158769
Longitude:	1181544	Dec lat:	34.72331673
Dec lon:	-118.26313159	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2392.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19200817
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	502	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1920-08-17	Ground water data end date:	1920-08-17
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1920-08-17	40.00	

Map ID Direction Distance Elevation		Database	EDR ID Number
K33 **NE** **1/2 - 1 Mile** **Lower**		**CA WELLS**	**CADW40000014579**
Longitude:	-118.2512		
Latiude:	34.7358		
Stwellno:	08N13W34N003S		
Districtco:	3		
Welluseco:	Z		
Countyco:	19		
Gwcode:	604400		
Site id:	CADW40000014579		
34 **SSW** **1/2 - 1 Mile** **Higher**		**CA WELLS**	**CADW40000014351**
Longitude:	-118.2631		
Latiude:	34.7233		
Stwellno:	07N13W04K002S		
Districtco:	3		
Welluseco:	Z		
Countyco:	19		
Gwcode:	604400		
Site id:	CADW40000014351		
L35 **SSE** **1/2 - 1 Mile** **Lower**		**CA WELLS**	**CADW40000014365**
Longitude:	-118.254		
Latiude:	34.7239		
Stwellno:	07N13W03M001S		
Districtco:	3		
Welluseco:	Z		
Countyco:	19		
Gwcode:	604400		
Site id:	CADW40000014365		
36 **SW** **1/2 - 1 Mile** **Higher**		**CA WELLS**	**CADW40000014378**
Longitude:	-118.267		
Latiude:	34.7253		
Stwellno:	07N13W04L001S		
Districtco:	3		
Welluseco:	Z		
Countyco:	19		
Gwcode:	604400		
Site id:	CADW40000014378		

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

37
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3158580**

Agency cd:	USGS	Site no:	344418118151301
Site name:	008N013W34M001S		
Latitude:	344418	EDR Site id:	USGS3158580
Longitude:	1181513	Dec lat:	34.73831613
Dec lon:	-118.2545201	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2369.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

K38
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158546**

Agency cd:	USGS	Site no:	344409118150101
Site name:	008N013W34N003S		
Latitude:	344409	EDR Site id:	USGS3158546
Longitude:	1181501	Dec lat:	34.73581624
Dec lon:	-118.25118667	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2367.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19550101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	235	Hole depth:	235
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-28	Ground water data end date:	1963-05-28
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-28	71.95	

L39
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3158772**

Agency cd:	USGS	Site no:	344326118151101
Site name:	007N013W03M001S		
Latitude:	344326	EDR Site id:	USGS3158772
Longitude:	1181511	Dec lat:	34.72387228
Dec lon:	-118.25396463	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2383.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19300101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	620	Hole depth:	620
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-29	Ground water data end date:	1963-05-29
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-29	173.60	

M40
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158504**

Agency cd:	USGS	Site no:	344401118145601
Site name:	008N013W34P002S		
Latitude:	344401	EDR Site id:	USGS3158504
Longitude:	1181456	Dec lat:	34.73359412
Dec lon:	-118.24979776	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2369.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	160
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

41
NNW
1/2 - 1 Mile
Lower

FED USGS **USGS3158379**

Agency cd:	USGS	Site no:	344424118154401
Site name:	008N013W33K001S		
Latitude:	344424	EDR Site id:	USGS3158379
Longitude:	1181544	Dec lat:	34.73998271
Dec lon:	-118.26313148	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2383.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

42
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158539**

Agency cd:	USGS	Site no:	344406118145701
Site name:	008N013W34P001S		
Latitude:	344406	EDR Site id:	USGS3158539
Longitude:	1181457	Dec lat:	34.73498295
Dec lon:	-118.25007554	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2367.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19510101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	174
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

M43
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014529**

Longitude:	-118.2476
Latiude:	34.7333
Stwellno:	08N13W34P003S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014529

N44
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3158788**

Agency cd:	USGS	Site no:	344333118161301
Site name:	007N013W04M001S		
Latitude:	344333	EDR Site id:	USGS3158788
Longitude:	1181613	Dec lat:	34.72581661
Dec lon:	-118.27118739	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2403.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19520702
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	908	Hole depth:	908
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

45
NNW
1/2 - 1 Mile
Lower

FED USGS **USGS3158399**

Agency cd:	USGS	Site no:	344429118154401
Site name:	008N013W33G001S		
Latitude:	344429	EDR Site id:	USGS3158399
Longitude:	1181544	Dec lat:	34.74137154
Dec lon:	-118.26313147	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2385.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19161124
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	401	Hole depth:	401
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

O46
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158497**

Agency cd:	USGS	Site no:	344400118144801
Site name:	008N013W34P003S		
Latitude:	344400	EDR Site id:	USGS3158497
Longitude:	1181448	Dec lat:	34.73331636
Dec lon:	-118.24757549	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	LANCASTER WEST	Map scale:	24000
Altitude:	2365.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19510101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	200
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-08-01	Ground water data end date:	1987-03-04
Ground water data count:	31		

Ground-water levels, Number of Measurements: 31

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1987-03-04					
Note: The measurement was discontinued.					
1985-03-26	94.64		1984-10-30	93.89	
1984-03-05	93.90		1983-10-26	93.32	
1983-04-12	92.62		1982-10-06	92.00	
1982-02-08	91.05		1981-11-18	90.97	
1981-04-13	90.20		1980-10-14	89.44	
1980-04-08	88.84		1979-10-23	87.98	
1979-02-12	86.82		1978-10-18	86.37	
1978-03-27	84.92		1976-02-09	84.64	
1975-10-15	81.32		1975-02-18	80.21	
1974-02-11	78.62		1973-10-03	78.42	
1973-02-15	77.79		1972-10-11	77.66	
1972-03-15	76.98		1971-10-28	76.73	
1970-10-23	76.42		1970-03-17	75.90	
1967-11-02	75.10		1967-03-17	74.75	
1963-08-09	72.83		1963-08-01	73.00	

N47
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3158789**

Agency cd:	USGS	Site no:	344333118161501
Site name:	007N013W04M002S		
Latitude:	344333	EDR Site id:	USGS3158789
Longitude:	1181615	Dec lat:	34.72581661
Dec lon:	-118.27174296	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S4T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2403.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19290101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	820	Hole depth:	820
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-14	Ground water data end date:	1963-05-14
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-14	190.00	

Note: A nearby site that taps the same aquifer was being pumped.

O48
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014540**

Longitude:	-118.2465
Latiude:	34.7336
Stwellno:	08N13W34P004S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014540

P49
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS3158553**

Agency cd:	USGS	Site no:	344412118161601
Site name:	008N013W33M001S		
Latitude:	344412	EDR Site id:	USGS3158553
Longitude:	1181616	Dec lat:	34.73664949
Dec lon:	-118.27202068	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2400.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19260306
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1962-07-01	Ground water data end date:	1962-07-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1962-07-01	278.50	

O50
East
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014526**

Longitude:	-118.2459
Latiude:	34.733
Stwellno:	08N13W34Q001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014526

51
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS3158721**

Agency cd:	USGS	Site no:	344315118151301
Site name:	007N013W03N001S		
Latitude:	344315	EDR Site id:	USGS3158721
Longitude:	1181513	Dec lat:	34.72081685
Dec lon:	-118.25452022	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	SWSWS3T7NR13WS
Location map:	DEL SUR	Map scale:	24000
Altitude:	2380.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19490711
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	550	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

52
WSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014387**

Longitude:	-118.2717
Latiude:	34.7258
Stwellno:	07N13W04M002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014387

O53
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158503**

Agency cd:	USGS	Site no:	344401118144401
Site name:	008N013W34P004S		
Latitude:	344401	EDR Site id:	USGS3158503
Longitude:	1181444	Dec lat:	34.73359413
Dec lon:	-118.24646434	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2364.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19600101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	200
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-08-01	Ground water data end date:	1963-08-09
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-08-09	70.35		1963-08-01	70.00	

P54
WNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014582**

Longitude:	-118.272
Latiude:	34.7367
Stwellno:	08N13W33M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014582

Q55
East
1/2 - 1 Mile
Lower

FED USGS **USGS3158694**

Agency cd:	USGS	Site no:	344357118144201
Site name:	007N013W03B001S		
Latitude:	344357	EDR Site id:	USGS3158694
Longitude:	1181442	Dec lat:	34.73248307
Dec lon:	-118.24590878	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2366.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

R56
ESE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014397**

Longitude:	-118.2462
Latiude:	34.7261
Stwellno:	07N13W03G001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014397

Q57
East
1/2 - 1 Mile
Lower

FED USGS **USGS3158485**

Agency cd:	USGS	Site no:	344359118144201
Site name:	008N013W34Q001S		
Latitude:	344359	EDR Site id:	USGS3158485
Longitude:	1181442	Dec lat:	34.7330386
Dec lon:	-118.24590878	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2365.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-08-01	Ground water data end date:	1963-08-09
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-08-09	77.86		1963-08-01	78.00	

R58
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS3158798**

Agency cd:	USGS	Site no:	344334118144301
Site name:	007N013W03G001S		
Latitude:	344334	EDR Site id:	USGS3158798
Longitude:	1181443	Dec lat:	34.72609444
Dec lon:	-118.24618661	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2370.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19280101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1928-03-21	Ground water data end date:	1928-03-21
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1928-03-21	56.00	

S59
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014590**

Longitude:	-118.2456
Latiude:	34.7375
Stwellno:	08N13W34L001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014590

T60
West
1/2 - 1 Mile
Higher

FED USGS **USGS3158680**

Agency cd:	USGS	Site no:	344352118163201
Site name:	007N013W05A001S		
Latitude:	344352	EDR Site id:	USGS3158680
Longitude:	1181632	Dec lat:	34.73109416
Dec lon:	-118.2764653	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S5T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2410.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	1957
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

61
South
1/2 - 1 Mile
Lower

FED USGS **USGS3158846**

Agency cd:	USGS	Site no:	344304118153101
Site name:	007N013W09Z001S		
Latitude:	344304	EDR Site id:	USGS3158846
Longitude:	1181531	Dec lat:	34.71776141
Dec lon:	-118.2595204	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2380.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1944-09-12
Water quality data end date:	1944-09-12	Water quality data count:	1
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

U62
South
1/2 - 1 Mile
Higher | **FED USGS** | **USGS3158847**

Agency cd:	USGS	Site no:	344304118154401
Site name:	007N013W09B002S		
Latitude:	344304	EDR Site id:	USGS3158847
Longitude:	1181544	Dec lat:	34.7177614
Dec lon:	-118.26313163	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2383.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19181212
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	502	Hole depth:	502
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1944-09-12
Water quality data end date:	1944-09-12	Water quality data count:	1
Ground water data begin date:	1918-12-12	Ground water data end date:	1918-12-12
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1918-12-12	33.00	

T63
West
1/2 - 1 Mile
Higher | **FED USGS** | **USGS3158681**

Agency cd:	USGS	Site no:	344352118163301
Site name:	007N013W05A002S		
Latitude:	344352	EDR Site id:	USGS3158681
Longitude:	1181633	Dec lat:	34.73109416
Dec lon:	-118.27674309	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S5T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2410.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

U64
SSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014251**

Longitude:	-118.2631
Latiude:	34.7178
Stwellno:	07N13W09B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014251

S65
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158565**

Agency cd:	USGS	Site no:	344415118144101
Site name:	008N013W34L001S		
Latitude:	344415	EDR Site id:	USGS3158565
Longitude:	1181441	Dec lat:	34.73748287
Dec lon:	-118.24563096	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2364.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	109
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-08-01	Ground water data end date:	1963-08-08
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-08-08	82		1963-08-01	82.00	

66
SE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014339**

Longitude:	-118.2459
Latiude:	34.7228
Stwellno:	07N13W03K001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014339

67
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS3158839**

Agency cd:	USGS	Site no:	344303118153201
Site name:	007N013W09B001S		
Latitude:	344303	EDR Site id:	USGS3158839
Longitude:	1181520	Dec lat:	34.71748364
Dec lon:	-118.25646475	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2379.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

V68
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3158739**

Agency cd:	USGS	Site no:	344320118162101
Site name:	007N013W05H002S		
Latitude:	344320	EDR Site id:	USGS3158739
Longitude:	1181621	Dec lat:	34.72220564
Dec lon:	-118.27340971	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S5T7NR13WS
Location map:	DEL SUR	Map scale:	124000
Altitude:	2408.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	504	Hole depth:	504
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

69
ENE **FED USGS** **USGS3158555**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344413118143801
Site name:	008N013W34K001S		
Latitude:	344413	EDR Site id:	USGS3158555
Longitude:	1181438	Dec lat:	34.73692734
Dec lon:	-118.24479761	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2360.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	5.		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

70
SSE
1/2 - 1 Mile
Lower | **FED USGS** | **USGS3158863**

Agency cd:	USGS	Site no:	344305118151101
Site name:	007N013W10D001S		
Latitude:	344305	EDR Site id:	USGS3158863
Longitude:	1181511	Dec lat:	34.71803918
Dec lon:	-118.25396467	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2375.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19200630
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	445	Hole depth:	445
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

V71
SW
1/2 - 1 Mile
Higher | **FED USGS** | **USGS3158747**

Agency cd:	USGS	Site no:	344321118162301
Site name:	007N013W05H001S		
Latitude:	344321	EDR Site id:	USGS3158747
Longitude:	1181623	Dec lat:	34.7224834
Dec lon:	-118.27396528	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	S5T7NR13WS
Location map:	DEL SUR	Map scale:	124000

Altitude:	2408.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19240801
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	370	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1924-08-01	Ground water data end date:	1924-08-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1924-08-01	40.00	

72
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS3158554**

Agency cd:	USGS	Site no:	344412118163201
Site name:	008N013W32J001S		
Latitude:	344412	EDR Site id:	USGS3158554
Longitude:	1181632	Dec lat:	34.73664948
Dec lon:	-118.27646526	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2404.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Peak flow data count: Not Reported
Water quality data end date: Not Reported
Ground water data begin date: Not Reported
Ground water data count: Not Reported

Water quality data begin date: Not Reported
Water quality data count: Not Reported
Ground water data end date: Not Reported

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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West LA Greenworks
28
Lancaster, CA 93536

Inquiry Number: 3089735.129
June 08, 2011

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
West LA Greenworks
28
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089735.129

Contact: Garret Bean

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Tetra Tech Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: West LA Greenworks
Address: 28
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 9
Certification # D8D1-42EE-9458

Sanborn® Library search results
Certification # D8D1-42EE-9458

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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APPENDIX B-6.4

PROJECT 4 ANTELOPE SOLAR GREENWORKS ENVIRONMENTAL DATA RESOURCES

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Antelope Solar Greenworks
8
Lancaster, CA 93536

Inquiry Number: 3089700.46
June 08, 2011

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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Date EDR Searched Historical Sources:

Aerial Photography June 08, 2011

Target Property:

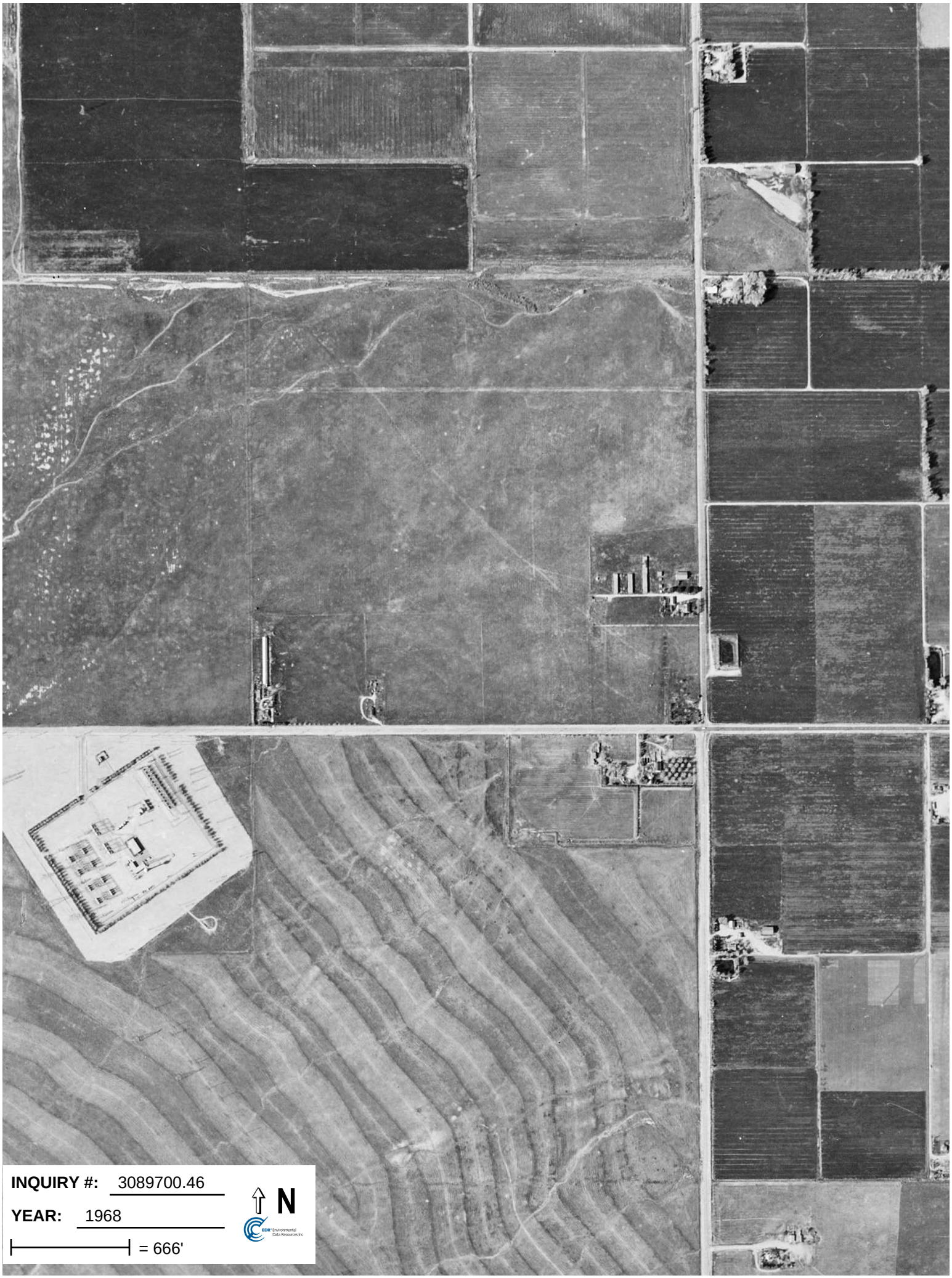
8

Lancaster, CA 93536

Year	Scale	Details	Source
1948	Aerial Photograph. Scale: 1"=555'	Flight Year: 1948	USGS
1954	Aerial Photograph. Scale: 1"=555'	Flight Year: 1954	Pacific Air
1968	Aerial Photograph. Scale: 1"=666'	Flight Year: 1968	Teledyne
1974	Aerial Photograph. Scale: 1"=500'	Flight Year: 1974	USGS
1989	Aerial Photograph. Scale: 1"=666'	Flight Year: 1989	USGS
1994	Aerial Photograph. Scale: 1"=666'	Flight Year: 1994	USGS
2002	Aerial Photograph. Scale: 1"=666'	Flight Year: 2002	USGS
2005	Aerial Photograph. Scale: 1"=604'	Flight Year: 2005	EDR

INQUIRY #: 3089700.46
YEAR: 1948
= 555'
N
EDR Environmental Data Resources Inc

INQUIRY #: 3089700.46
YEAR: 1954
= 555'
N
EDR Environmental Data Resources Inc



INQUIRY #: 3089700.46

YEAR: 1968

= 666'

N

EDR Environmental Data Resources Inc

INQUIRY #: 3089700.46
YEAR: 1974
= 500'
N
EDR Environmental Data Resources Inc

INQUIRY #: 3089700.46
YEAR: 1989
= 666'
N

INQUIRY #: 3089700.46
YEAR: 1994
= 666'
N
EDR Environmental Data Resources Inc

INQUIRY #: 3089700.46
YEAR: 2002
= 666'
N
EDR Environmental Data Resources Inc

INQUIRY #: 3089700.46
YEAR: 2005
= 604'
N

Antelope Solar Greenworks
8
Lancaster, CA 93536

Inquiry Number: 3089700.44s
June 08, 2011

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

8
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.695600 - 34° 41' 44.2''
Longitude (West):	118.295900 - 118° 17' 45.2''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	381304.4
UTM Y (Meters):	3839854.5
Elevation:	2435 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
SLIC ---------- Statewide SLIC Cases

INDIAN LUST - Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST - Active UST Facilities
AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - Underground Storage Tanks on Indian Land
FEMA UST - Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP - Voluntary Cleanup Program Properties
INDIAN VCP - Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI - Open Dump Inventory
DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT - Waste Management Unit Database
SWRCY - Recycler Database
HAULERS - Registered Waste Tire Haulers Listing
INDIAN ODI - Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL - Clandestine Drug Labs
HIST Cal-Sites - Historical Calsites Database
SCH - School Property Evaluation Program
Toxic Pits - Toxic Pits Cleanup Act Sites
AOCONCERN - San Gabriel Valley Areas of Concern
CDL - Clandestine Drug Labs
US HIST CDL - National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST - Facility Inventory Database

Local Land Records

LIENS 2 - CERCLA Lien Information
LUCIS - Land Use Control Information System
LIENS - Environmental Liens Listing
DEED - Deed Restriction Listing

Records of Emergency Release Reports

HMIRS - Hazardous Materials Information Reporting System
CHMIRS - California Hazardous Material Incident Report System

LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen	RCRA - Non Generators
DOT OPS	Incident and Accident Data
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
CA BOND EXP. PLAN	Bond Expenditure Plan
NPDES	NPDES Permits Listing
WDS	Waste Discharge System
Cortese	"Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE	Hazardous Waste & Substance Site List
Notify 65	Proposition 65 Records
LA Co. Site Mitigation	Site Mitigation List
DRYCLEANERS	Cleaner Facilities
WIP	Well Investigation Program Case List
HAZNET	Facility and Manifest Data
EMI	Emissions Inventory Data
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
FINANCIAL ASSURANCE	Financial Assurance Information Listing
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
PROC	Certified Processors Database
MWMP	Medical Waste Management Program Listing
COAL ASH DOE	Sleam-Electric Plan Operation Data

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	EDR Proprietary Manufactured Gas Plants
EDR Historical Auto Stations	EDR Proprietary Historic Gas Stations
EDR Historical Cleaners	EDR Proprietary Historic Dry Cleaners

EXECUTIVE SUMMARY

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1 HIST UST site within approximately 0.75 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ANTELOPE SUBSTATION	9364 W AVENUE J	S 1/4 - 1/2 (0.438 mi.)	A1	8

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.75 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SOUTHERN CALIFORNIA EDISON CO	***9364 W AVE J***	***S 1/4 - 1/2 (0.439 mi.)***	***A2***	***8***

Other Ascertainable Records

Los Angeles County Industrial Waste and Underground Storage Tank Sites.

A review of the LOS ANGELES CO. HMS list, as provided by EDR, and dated 12/30/2010 has revealed that there is 1 LOS ANGELES CO. HMS site within approximately 0.5 miles of the target property.

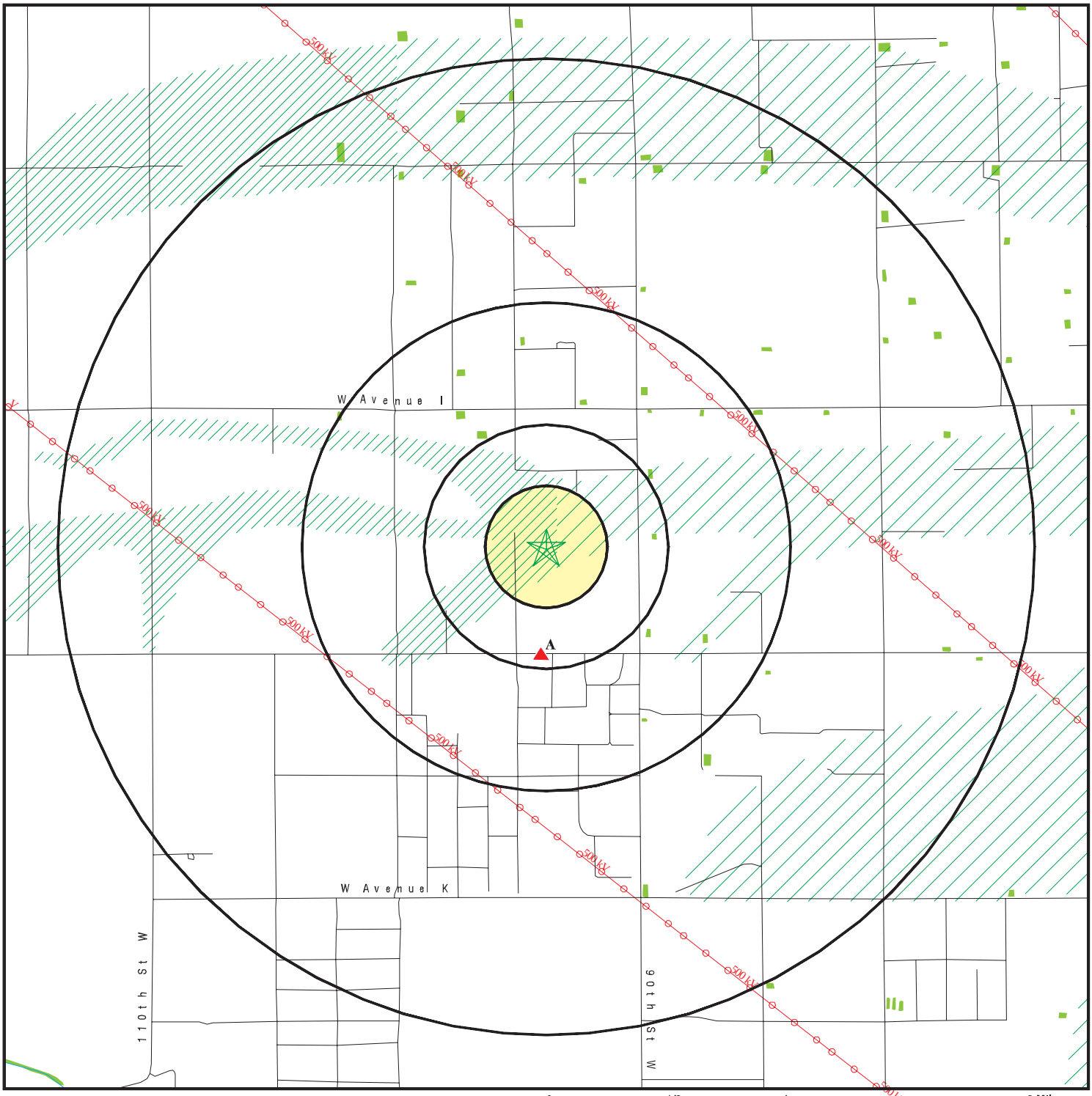
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SOUTHERN CALIFORNIA EDISON CO	***9364 W AVE J***	***S 1/4 - 1/2 (0.439 mi.)***	***A2***	***8***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 20 records.

Site Name	Database(s)
AVE E ETAL	NPDES
TEHACHAPI RENEWABLE TRANSMISSION P	HAZNET,NPDES
CAL MAT	SWEEPS UST
STEVEN KOSTECKY	FID,SWEEPS UST
28.15 MI.MARKER ON ANGELES CRE	CDL
90TH E / AVE J	AST
5 MI NW OF HWY 138 & 300TH ST	AST
SOUTHERN CAL EDISON /DEL SUR SUB S	HAZNET
OSO PUMPING PLANT	HAZNET
ILLEGAL DRUG LAB/OPERATOR UNKNOWN	HAZNET
LOS ANGELES COUNTY DEPT OF PUBLIC	HAZNET
CNTY LOS ANGELES/RD 551	HAZNET
INVESTIGATIONS-AREA4	HMS LOS ANGELES
ANTELOPE VALLEY AGGREGATE, INC.	MINES
3995 AVENUE H W	CDL
ANTELOPE VALLEY COLLEGE	EMI
VALUE CLEANERS, STUART MATROS	EMI
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
CASTA DWR- CHECK SITE 59	EMI

OVERVIEW MAP - 3089700.44s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Antelope Solar Greenworks ADDRESS: 8 Lancaster CA 93536 LAT/LONG: 34.6956 / 118.2959	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089700.44s DATE: June 08, 2011 12:47 pm

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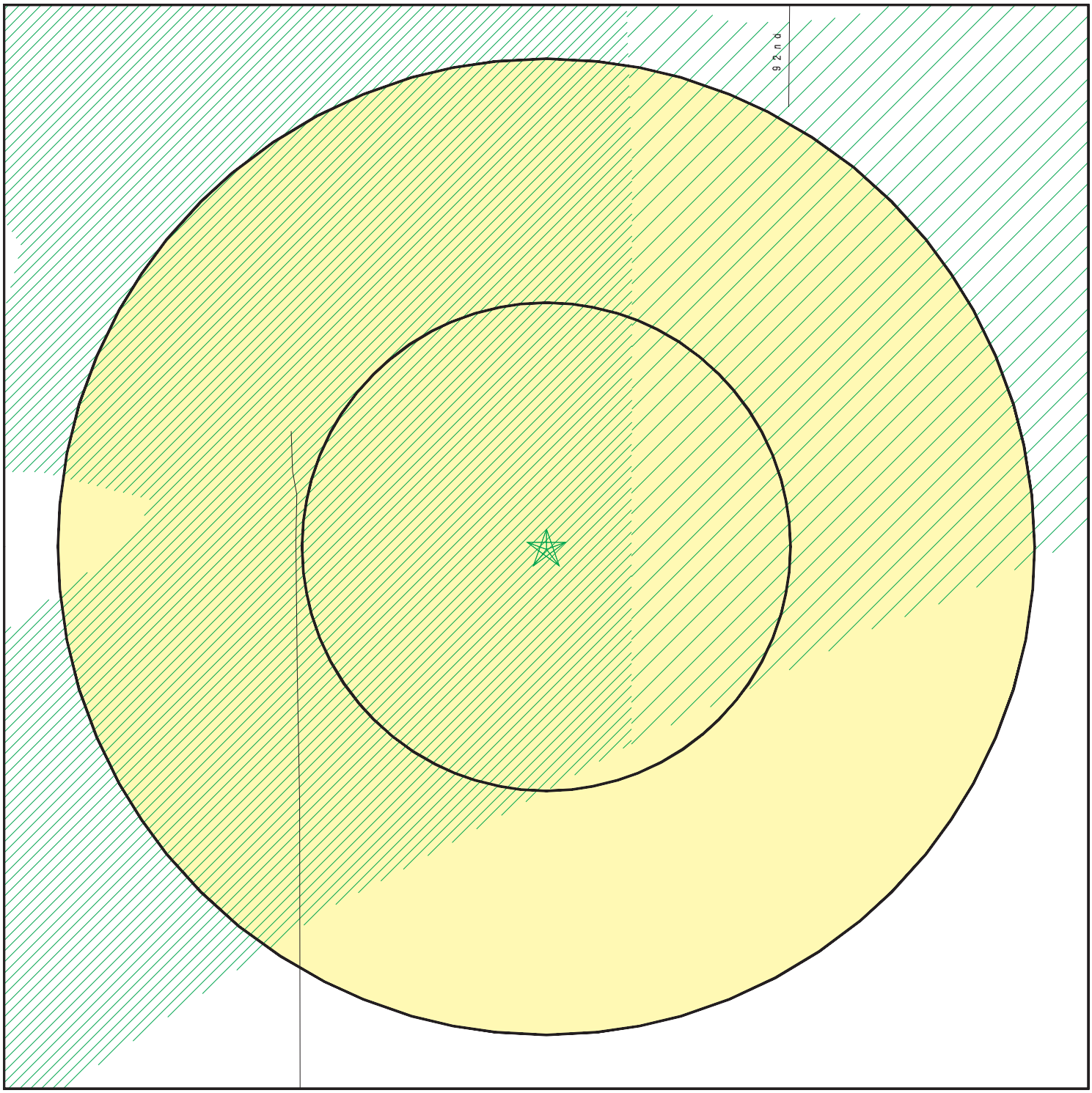
DETAIL MAP - 3089700.44s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

0 1/16 1/8 1/4 Miles

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Antelope Solar Greenworks ADDRESS: 8 Lancaster CA 93536 LAT/LONG: 34.6956 / 118.2959	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089700.44s DATE: June 08, 2011 12:48 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.500	0	0	0	0	0	0
Proposed NPL		1.500	0	0	0	0	0	0
NPL LIENS		0.500	0	0	0	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.500	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		1.000	0	0	0	0	NR	0
FEDERAL FACILITY		1.500	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		1.000	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.500	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		1.000	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.750	0	0	0	0	NR	0
RCRA-SQG		0.750	0	0	0	0	NR	0
RCRA-CESQG		0.750	0	0	0	0	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		1.000	0	0	0	0	NR	0
US INST CONTROL		1.000	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.500	0	0	0	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.500	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.500	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		1.000	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		1.000	0	0	0	0	NR	0
SLIC		1.000	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST		1.000	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.750	0	0	0	0	NR	0
AST		0.750	0	0	0	0	NR	0
INDIAN UST		0.750	0	0	0	0	NR	0
FEMA UST		0.750	0	0	0	0	NR	0
State and tribal voluntary cleanup sites								
VCP		1.000	0	0	0	0	NR	0
INDIAN VCP		1.000	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		1.000	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		1.000	0	0	0	0	NR	0
DEBRIS REGION 9		1.000	0	0	0	0	NR	0
WMUDS/SWAT		1.000	0	0	0	0	NR	0
SWRCY		1.000	0	0	0	0	NR	0
HAULERS		0.500	0	0	0	NR	NR	0
INDIAN ODI		1.000	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.500	0	0	0	NR	NR	0
HIST Cal-Sites		1.500	0	0	0	0	0	0
SCH		0.750	0	0	0	0	NR	0
Toxic Pits		1.500	0	0	0	0	0	0
AOCONCERN		1.500	0	0	0	0	0	0
CDL		0.500	0	0	0	NR	NR	0
US HIST CDL		0.500	0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.750	0	0	0	0	NR	0
HIST UST		0.750	0	0	1	0	NR	1
SWEEPS UST		0.750	0	0	1	0	NR	1
Local Land Records								
LIENS 2		0.500	0	0	0	NR	NR	0
LUCIS		1.000	0	0	0	0	NR	0
LIENS		0.500	0	0	0	NR	NR	0
DEED		1.000	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.500	0	0	0	NR	NR	0
CHMIRS		0.500	0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS		0.500	0	0	0	NR	NR	0
MCS		0.500	0	0	0	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.750	0	0	0	0	NR	0
DOT OPS		0.500	0	0	0	NR	NR	0
DOD		1.500	0	0	0	0	0	0
FUDS		1.500	0	0	0	0	0	0
CONSENT		1.500	0	0	0	0	0	0
ROD		1.500	0	0	0	0	0	0
UMTRA		1.000	0	0	0	0	NR	0
MINES		0.750	0	0	0	0	NR	0
TRIS		0.500	0	0	0	NR	NR	0
TSCA		0.500	0	0	0	NR	NR	0
FTTS		0.500	0	0	0	NR	NR	0
HIST FTTS		0.500	0	0	0	NR	NR	0
SSTS		0.500	0	0	0	NR	NR	0
ICIS		0.500	0	0	0	NR	NR	0
PADS		0.500	0	0	0	NR	NR	0
MLTS		0.500	0	0	0	NR	NR	0
RADINFO		0.500	0	0	0	NR	NR	0
FINDS		0.500	0	0	0	NR	NR	0
RAATS		0.500	0	0	0	NR	NR	0
CA BOND EXP. PLAN		1.500	0	0	0	0	0	0
NPDES		0.500	0	0	0	NR	NR	0
WDS		0.500	0	0	0	NR	NR	0
Cortese		1.000	0	0	0	0	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.500	0	0	0	0	0	0
LA Co. Site Mitigation		0.500	0	0	0	NR	NR	0
DRYCLEANERS		0.750	0	0	0	0	NR	0
WIP		0.750	0	0	0	0	NR	0
LOS ANGELES CO. HMS		0.500	0	0	1	NR	NR	1
HAZNET		0.500	0	0	0	NR	NR	0
EMI		0.500	0	0	0	NR	NR	0
INDIAN RESERV		1.500	0	0	0	0	0	0
SCRD DRYCLEANERS		1.000	0	0	0	0	NR	0
FINANCIAL ASSURANCE		0.500	0	0	0	NR	NR	0
HWP		1.500	0	0	0	0	0	0
HWT		0.750	0	0	0	0	NR	0
COAL ASH EPA		1.000	0	0	0	0	NR	0
PCB TRANSFORMER		0.500	0	0	0	NR	NR	0
PROC		1.000	0	0	0	0	NR	0
MWMP		0.750	0	0	0	0	NR	0
COAL ASH DOE		0.500	0	0	0	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.500	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.750	0	0	0	0	NR	0
EDR Historical Cleaners		0.750	0	0	0	0	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 **ANTELOPE SUBSTATION** **HIST UST** **U001586653**
South **9364 W AVENUE J** **N/A**
1/4-1/2 **LANCASTER, CA 93534**
0.438 mi.
2313 ft. **Site 1 of 2 in cluster A**

Relative:
Higher

Actual:
2447 ft.

HIST UST:

Region:	STATE
Facility ID:	00000022220
Facility Type:	Other
Other Type:	ELECTRIC UTILITY
Total Tanks:	0001
Contact Name:	R E BROWN
Telephone:	8185721801
Owner Name:	SOUTHERN CALIFORNIA EDISON CO.
Owner Address:	2244 WALNUT GROVE AVENUE
Owner City,St,Zip:	ROSEMEAD, CA 91770
Tank Num:	001
Container Num:	279
Year Installed:	1972
Tank Capacity:	00002000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Tank Construction:	Not reported
Leak Detection:	Visual, None

A2 **SOUTHERN CALIFORNIA EDISON CO** **SWEEPS UST** **S104733161**
South **9364 W AVE J** **LOS ANGELES CO. HMS** **N/A**
1/4-1/2 **LANCASTER, CA**
0.439 mi.
2318 ft. **Site 2 of 2 in cluster A**

Relative:
Higher

Actual:
2447 ft.

SWEEPS UST:

Status:	A
Comp Number:	11553
Number:	9
Board Of Equalization:	44-009353
Ref Date:	06-30-89
Act Date:	Not reported
Created Date:	06-30-89
Tank Status:	A
Owner Tank Id:	Not reported
Swrcb Tank Id:	19-000-011553-000001
Actv Date:	06-30-89
Capacity:	Not reported
Tank Use:	UNKNOWN
Stg:	W
Content:	Not reported
Number Of Tanks:	1

LOS ANGELES CO. HMS:

Region:	LA
Facility Id:	011508-011553
Facility Status:	Removed
Area:	4B
Permit Number:	00003108T
Permit Status:	Removed
Facility Type:	T0

Count: 20 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LANCASTER	1012055833	3995 AVENUE H W	3995 AVENUE H W		CDL
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
LANCASTER	A100345406		90TH E / AVE J	93536	AST
	M300003094	ANTELOPE VALLEY AGGREGATE, INC.	LITTLE ROCK PIT		MINES
LANCASTER	S101620945	STEVEN KOSTECKY	44000 E N 100TH ST		FID,SWEEPS UST
LANCASTER	S102056126	INVESTIGATIONS-AREA4	46204 W 97TH ST		HMS LOS ANGELES
PALMDALE	S103678194	ILLEGAL DRUG LAB/OPERATOR UNKNOWN	AVENUE T, 175TH ST EAST	93536	HAZNET
QUARTZ HILL	S103957875	CNTY LOS ANGELES/RD 551	4859 W AVE L-12	93534	HAZNET
QUARTZ HILL	S103975334	LOS ANGELES COUNTY DEPT OF PUBLIC	4859 W AVE L-12	93534	HAZNET
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 & 300TH ST	93536	HAZNET
LOS ANGELES	S104568573	TEHACHAPI RENEWABLE TRANSMISSION P	9634 W AVE J	93536	HAZNET,NPDES
LANCASTER	S105086048	SOUTHERN CAL EDISON /DEL SUR SUB S	90TH STREET WEST & AVE H	93534	HAZNET
LANCASTER	S106826009	ANTELOPE VALLEY COLLEGE	3041 W AV K	93534	EMI
LANCASTER	S106842034	VALUE CLEANERS, STUART MATROS	2849 WEST AV L	93534	EMI
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
	S107532211		28.15 MI.MARKER ON ANGELES CRE		CDL
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HW	93536	EMI
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HW	93536	EMI
LOS ANGELES	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPAa??s Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/15/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 05/25/2010
Date Data Arrived at EDR: 06/02/2010
Date Made Active in Reports: 10/04/2010
Number of Days to Update: 124

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/07/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 11/04/2009
Date Data Arrived at EDR: 05/04/2010
Date Made Active in Reports: 07/07/2010
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

State and tribal registered storage tank lists

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 19
Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21
Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48
Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45
Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 12/02/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 57
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/03/2011
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/01/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 12/29/2010
Date Data Arrived at EDR: 12/30/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 02/24/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 46

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/07/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 03/04/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 05/02/2011
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/18/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 51

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/21/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 30

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2011
Date Data Arrived at EDR: 02/11/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/15/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 10/29/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 5

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/21/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 99

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/02/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/08/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/17/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 94

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/07/2011
Date Data Arrived at EDR: 01/21/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/11/2011
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/04/2011
Number of Days to Update: 29

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/15/2010
Date Data Arrived at EDR: 09/16/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 13

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/07/2010
Date Made Active in Reports: 08/12/2010
Number of Days to Update: 36

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/01/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 02/28/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/04/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/09/2010
Date Data Arrived at EDR: 08/11/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 9
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 04/26/2011
Number of Days to Update: 41

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 33

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 03/29/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COLUSA COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 12/01/2010
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/06/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/31/2011
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/25/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2011
Date Data Arrived at EDR: 02/09/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 23
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/18/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/12/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 30
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/26/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 22
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 04/25/2011
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/20/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/07/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/15/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 16

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/17/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 31

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 20

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 11/16/2010
Date Made Active in Reports: 01/25/2011
Number of Days to Update: 70

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/21/2010
Next Scheduled EDR Contact: 03/28/2011
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/16/2011
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/30/2011
Date Data Arrived at EDR: 03/31/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 22
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/22/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 29
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 36
Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/14/2011
Date Data Arrived at EDR: 03/15/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 9
Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/25/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 25
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/07/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 35
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/07/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/08/2011
Number of Days to Update: 28

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 30

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 01/25/2011
Date Data Arrived at EDR: 02/03/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 29

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/26/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/22/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 05/12/2011
Date Made Active in Reports: 05/24/2011
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/12/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/06/2011
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/19/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 38

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/06/2010
Date Made Active in Reports: 07/26/2010
Number of Days to Update: 20

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

ANTELOPE SOLAR GREENWORKS
8
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.69560 - 34° 41' 44.2''
Longitude (West):	118.2959 - 118° 17' 45.2''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	381304.4
UTM Y (Meters):	3839854.5
Elevation:	2435 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

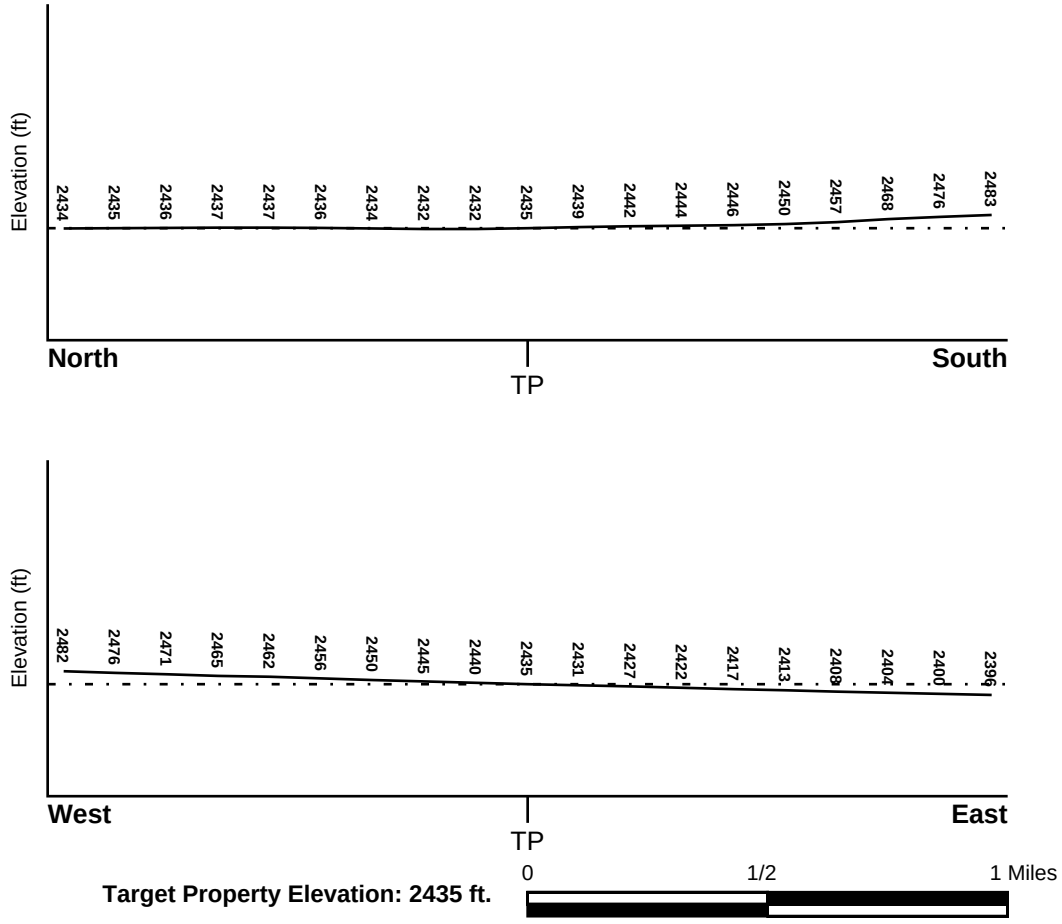
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
DEL SUR	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

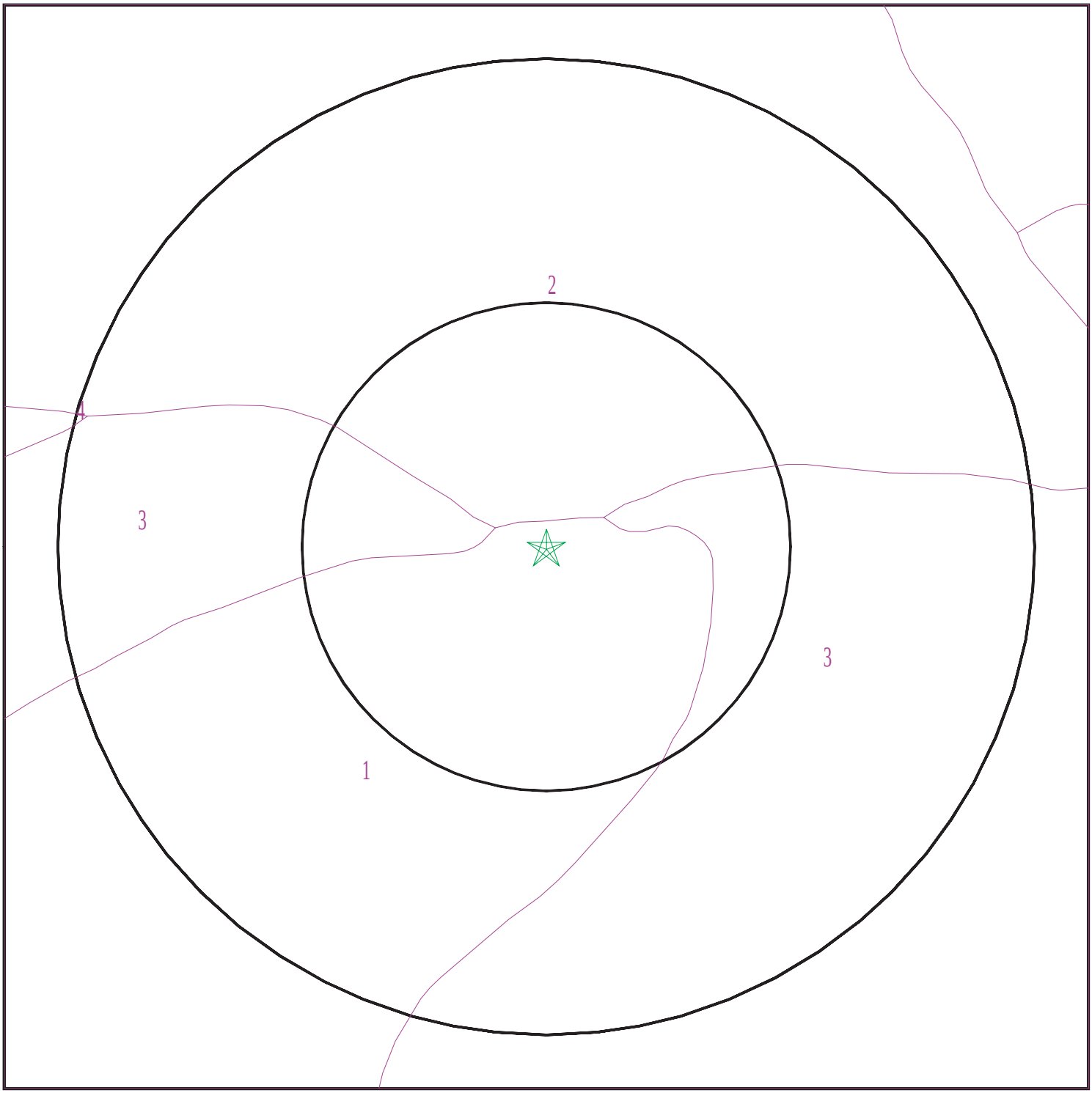
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3089700.44s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Antelope Solar Greenworks	CLIENT:	Tetra Tech Inc.
ADDRESS:	8	CONTACT:	Garret Bean
	Lancaster CA 93536	INQUIRY #:	3089700.44s
LAT/LONG:	34.6956 / 118.2959	DATE:	June 08, 2011 12:49 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 2

Soil Component Name: Sunrise

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	18 inches	31 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	31 inches	48 inches	cemented	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
4	48 inches	64 inches	stratified gravelly sandy loam to loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4

Soil Map ID: 3

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 4

Soil Component Name: Ramona

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
2	20 inches	31 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	31 inches	90 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A3	USGS3159281	1/4 - 1/2 Mile East
A4	USGS3159289	1/4 - 1/2 Mile East
5	USGS3159417	1/4 - 1/2 Mile South
B6	USGS3159448	1/4 - 1/2 Mile SE
C7	USGS3159403	1/4 - 1/2 Mile SSW
C10	USGS3159396	1/4 - 1/2 Mile SSW
11	USGS3159429	1/4 - 1/2 Mile SE
D12	USGS3159372	1/4 - 1/2 Mile NE
D13	USGS3159371	1/4 - 1/2 Mile NE
E15	USGS3159205	1/2 - 1 Mile North
F16	USGS3159206	1/2 - 1 Mile NNW
19	USGS3159402	1/2 - 1 Mile SE
H21	USGS3159212	1/2 - 1 Mile NNE
G22	USGS3159598	1/2 - 1 Mile SSE
H23	USGS3159211	1/2 - 1 Mile NNE
G26	USGS3159589	1/2 - 1 Mile SSE
G27	USGS3159593	1/2 - 1 Mile SSE
J29	USGS3159207	1/2 - 1 Mile NNW
J30	USGS3159208	1/2 - 1 Mile NNW
I31	USGS3159192	1/2 - 1 Mile NE
I32	USGS3159197	1/2 - 1 Mile NE
33	USGS3159603	1/2 - 1 Mile SE
K36	USGS3159581	1/2 - 1 Mile SSW
38	USGS3159401	1/2 - 1 Mile SE
L39	USGS3159083	1/2 - 1 Mile NNW
M41	USGS3159191	1/2 - 1 Mile NE
N43	USGS3159552	1/2 - 1 Mile SSE
O44	USGS3159115	1/2 - 1 Mile North
46	USGS3159094	1/2 - 1 Mile NNE
P47	USGS3159114	1/2 - 1 Mile NNE
M48	USGS3159196	1/2 - 1 Mile NE
N49	USGS3159551	1/2 - 1 Mile SSE
50	USGS3159592	1/2 - 1 Mile SE
P51	USGS3159132	1/2 - 1 Mile North
Q54	USGS3159376	1/2 - 1 Mile ENE
Q55	USGS3159375	1/2 - 1 Mile ENE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
S57	USGS3159457	1/2 - 1 Mile WSW
58	USGS3159569	1/2 - 1 Mile SW
S59	USGS3159460	1/2 - 1 Mile WSW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

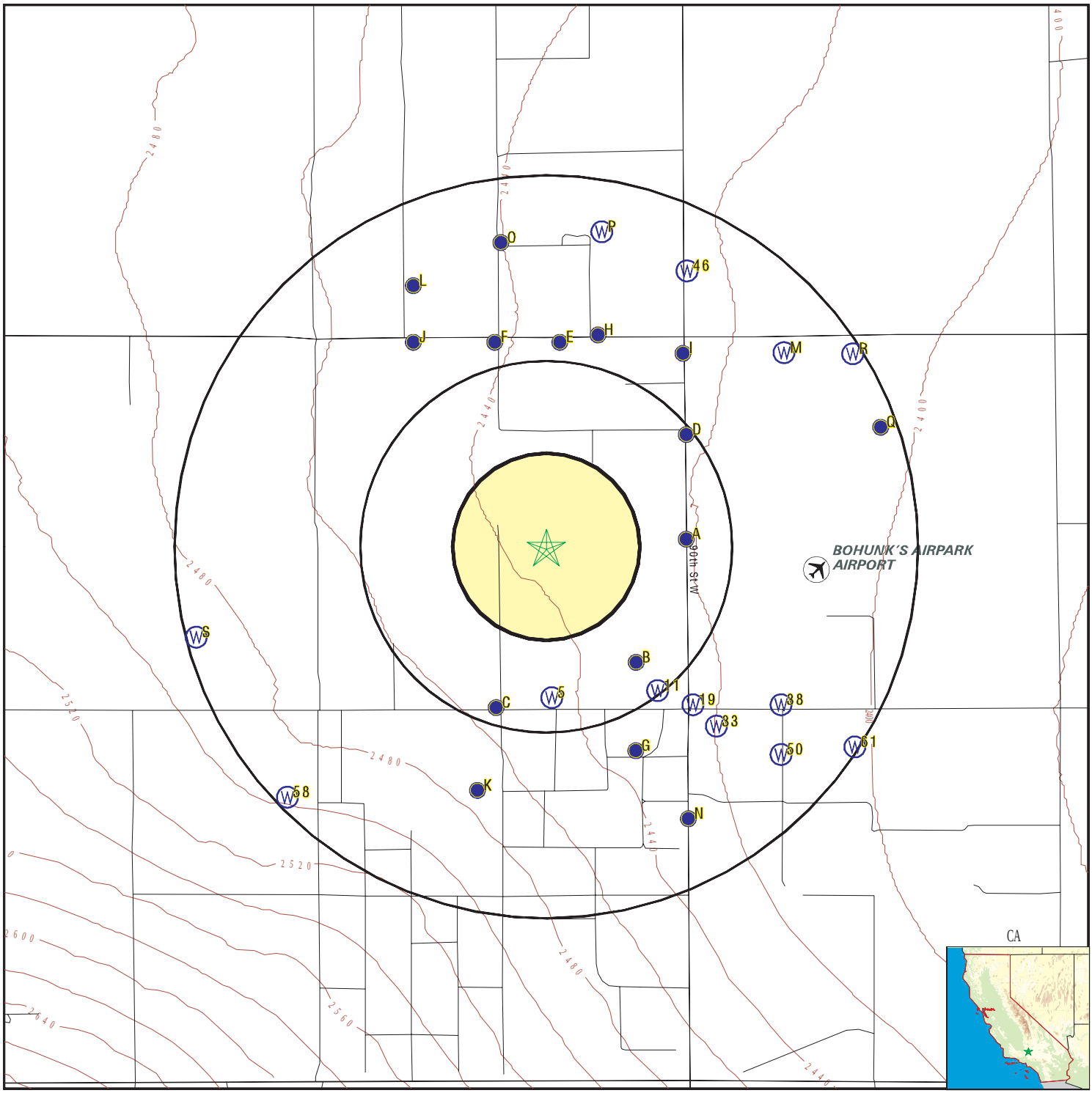
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	CADW40000013964	1/4 - 1/2 Mile East
B2	CADW40000013914	1/4 - 1/2 Mile SE
D8	CADW40000014007	1/4 - 1/2 Mile NE
C9	CADW40000013869	1/4 - 1/2 Mile SSW
E14	CADW40000014051	1/2 - 1 Mile North
G17	CADW40000013852	1/2 - 1 Mile SSE
F18	CADW40000014050	1/2 - 1 Mile NNW
H20	CADW40000014058	1/2 - 1 Mile NNE
G24	CADW40000013835	1/2 - 1 Mile SSE
I25	CADW40000014042	1/2 - 1 Mile NE
I28	CADW40000014046	1/2 - 1 Mile NNE
J34	CADW40000014048	1/2 - 1 Mile NW
J35	CADW40000014049	1/2 - 1 Mile NW
K37	CADW40000013802	1/2 - 1 Mile SSW
L40	CADW40000014105	1/2 - 1 Mile NNW
N42	CADW40000013784	1/2 - 1 Mile SSE
O45	CADW40000014117	1/2 - 1 Mile North
Q52	CADW40000014011	1/2 - 1 Mile ENE
Q53	CADW40000014012	1/2 - 1 Mile ENE
R56	CADW40000014043	1/2 - 1 Mile ENE
R60	CADW40000014047	1/2 - 1 Mile ENE
61	CADW40000013849	1/2 - 1 Mile ESE

PHYSICAL SETTING SOURCE MAP - 3089700.44s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Antelope Solar Greenworks	CLIENT:	Tetra Tech Inc.
ADDRESS:	8 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.6956 / 118.2959	INQUIRY #:	3089700.44s
		DATE:	June 08, 2011 12:49 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
East
1/4 - 1/2 Mile
Lower | **CA WELLS** | **CADW40000013964**

Longitude:	-118.289
Latiude:	34.6958
Stwellno:	07N13W17M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013964

B2
SE
1/4 - 1/2 Mile
Higher | **CA WELLS** | **CADW40000013914**

Longitude:	-118.2912
Latiude:	34.6911
Stwellno:	07N13W18R001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013914

A3
East
1/4 - 1/2 Mile
Lower | **FED USGS** | **USGS3159281**

Agency cd:	USGS	Site no:	344145118171701
Site name:	007N013W17M001S		
Latitude:	344145	EDR Site id:	USGS3159281
Longitude:	1181717	Dec lat:	34.69581781
Dec lon:	-118.28896593	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19550125
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	601	Hole depth:	601
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data end date: 0000-00-00
Ground water data begin date: 1955-08-30
Ground water data count: 5
Water quality data begin date: 0000-00-00
Water quality data count: 0
Ground water data end date: 1961-10-24

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel
1961-10-24	223.20	
1959-10-25	244.40	
1955-08-30	229.00	
1960-09-16	258.00	
1956-10-10	227.40	

Note: The site was being pumped.

A4
East
1/4 - 1/2 Mile
Lower

FED USGS **USGS3159289**

Agency cd: USGS
Site no: 344146118171701
Site name: 007N013W17M002S
Latitude: 344146
EDR Site id: USGS3159289
Longitude: 1181717
Dec lat: 34.69609557
Dec lon: -118.28896593
Coor meth: M
Coor accr: S
Latlong datum: NAD27
Dec latlong datum: NAD83
District: 06
State: 06
County: 037
Country: US
Land net: Not Reported
Location map: DEL SUR
Map scale: 24000
Altitude: 2418.00
Altitude method: Interpolated from topographic map
Altitude accuracy: 010
Altitude datum: National Geodetic Vertical Datum of 1929
Hydrologic: AntelopeFremont Valleys. California. Area = 3310 sq.mi.
Topographic: Flat surface
Site type: Ground-water other than Spring
Date construction: 19270101
Date inventoried: Not Reported
Mean greenwich time offset: PST
Local standard time flag: Y
Type of ground water site: Single well, other than collector or Ranney type
Aquifer Type: Not Reported
Aquifer: Not Reported
Well depth: 450
Hole depth: 450
Source of depth data: Not Reported
Project number: 479381106
Real time data flag: Not Reported
Daily flow data begin date: Not Reported
Daily flow data end date: Not Reported
Daily flow data count: Not Reported
Peak flow data begin date: Not Reported
Peak flow data end date: Not Reported
Peak flow data count: Not Reported
Water quality data begin date: Not Reported
Water quality data end date: Not Reported
Water quality data count: Not Reported
Ground water data begin date: Not Reported
Ground water data end date: Not Reported
Ground water data count: Not Reported

Ground-water levels, Number of Measurements: 0

5
South
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159417**

Agency cd:	USGS	Site no:	344123118174101
Site name:	007N013W18Q003S		
Latitude:	344123	EDR Site id:	USGS3159417
Longitude:	1181741	Dec lat:	34.68970694
Dec lon:	-118.29563284	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2441.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

B6
SE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3159448**

Agency cd:	USGS	Site no:	344128118172501
Site name:	007N013W18R001S		
Latitude:	344128	EDR Site id:	USGS3159448
Longitude:	1181725	Dec lat:	34.69109578
Dec lon:	-118.29118825	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-28	Ground water data end date:	1963-05-28
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-28	266.18	

Note: The site had been pumped recently.

C7
SSW **FED USGS** **USGS3159403**
1/4 - 1/2 Mile
Higher

Agency cd:	USGS	Site no:	344122118174901
Site name:	007N013W18Q001S		
Latitude:	344122	EDR Site id:	USGS3159403
Longitude:	1181749	Dec lat:	34.68942917
Dec lon:	-118.29785514	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2450.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-28	Ground water data end date:	1963-05-28
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-28	235.58	

D8
NE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000014007**

Longitude:	-118.289
Latiude:	34.7
Stwellno:	07N13W17E001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014007

C9
SSW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000013869**

Longitude:	-118.2979
Latiude:	34.6894
Stwellno:	07N13W18Q001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013869

C10
SSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159396**

Agency cd:	USGS	Site no:	344121118175001
Site name:	007N013W18Q002S		
Latitude:	344121	EDR Site id:	USGS3159396
Longitude:	1181750	Dec lat:	34.6891514
Dec lon:	-118.29813293	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2450.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	200	Hole depth:	200
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

11
SE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3159429**

Agency cd:	USGS	Site no:	344124118172301
Site name:	007N013W18R003S		
Latitude:	344124	EDR Site id:	USGS3159429
Longitude:	1181723	Dec lat:	34.68998471
Dec lon:	-118.29063268	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2426.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

D12
NE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3159372**

Agency cd:	USGS	Site no:	344200118171702
Site name:	007N013W17E002S		
Latitude:	344200	EDR Site id:	USGS3159372
Longitude:	1181717	Dec lat:	34.6999843
Dec lon:	-118.2889659	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19620101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	540	Hole depth:	540
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

D13
NE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3159371**

Agency cd:	USGS	Site no:	344200118171701
Site name:	007N013W17E001S		
Latitude:	344200	EDR Site id:	USGS3159371
Longitude:	1181717	Dec lat:	34.6999843
Dec lon:	-118.2889659	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1949-00-00	Ground water data end date:	1956-00-00
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956	260.00				
Note: The site was being pumped.					
1955	248.00				
Note: The site was being pumped.					
1953	228.00				
Note: The site was being pumped.					
1950	200.00				
Note: The site was being pumped.					
1949	190.00				
Note: The site was being pumped.					

E14
North
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014051**

Longitude:	-118.2948
Latiude:	34.7036
Stwellno:	07N13W18B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014051

E15
North
1/2 - 1 Mile
Higher

FED USGS **USGS3159205**

Agency cd:	USGS	Site no:	344213118173801
Site name:	007N013W18B001S		
Latitude:	344213	EDR Site id:	USGS3159205
Longitude:	1181738	Dec lat:	34.70359525
Dec lon:	-118.2947994	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2434.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	700	Hole depth:	700
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-10-00	Ground water data end date:	1956-10-00
Ground water data count:	6		

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956-10	205.00		1953-10	185.00	
1951-10	175.00		1950-10	170.00	
1948-10	165.00		1946-10	160.00	

F16
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159206**

Agency cd:	USGS	Site no:	344213118174901
Site name:	007N013W18B002S		
Latitude:	344213	EDR Site id:	USGS3159206
Longitude:	1181749	Dec lat:	34.70359525
Dec lon:	-118.29785505	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2439.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	700	Hole depth:	700
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-10-00	Ground water data end date:	1956-10-00
Ground water data count:	6		

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956-10	210.00		1953-10	190.00	
1951-10	180.00		1950-10	175.00	
1948-10	165.00		1946-10	163.00	

G17
SSE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000013852**

Longitude:	-118.2909
Latiude:	34.688
Stwellno:	07N13W19A001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013852

F18
NNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014050**

Longitude:	-118.2979
Latiude:	34.7036
Stwellno:	07N13W18B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014050

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

19
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159402**

Agency cd:	USGS	Site no:	344122118171701
Site name:	007N013W17N001S		
Latitude:	344122	EDR Site id:	USGS3159402
Longitude:	1181717	Dec lat:	34.68942918
Dec lon:	-118.28896597	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2422.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19521210
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	602	Hole depth:	602
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

H20
NNE
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014058**

Longitude:	-118.2929
Latiude:	34.7039
Stwellno:	07N13W07R001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014058

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

H21
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3159212**

Agency cd:	USGS	Site no:	344214118173401
Site name:	007N013W07R002S		
Latitude:	344214	EDR Site id:	USGS3159212
Longitude:	1181734	Dec lat:	34.70387302
Dec lon:	-118.29368825	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2431.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

G22
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS3159598**

Agency cd:	USGS	Site no:	344117118172401
Site name:	007N013W19A001S		
Latitude:	344117	EDR Site id:	USGS3159598
Longitude:	1181724	Dec lat:	34.68804035
Dec lon:	-118.29091048	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2424.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19300101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-10-23	Ground water data end date:	1963-05-28
Ground water data count:	13		

Ground-water levels, Number of Measurements: 13

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-28	223.45		1963-04-01	219.20	
1962-11-07	210.70		1962-04-06	217.50	
1961-10-17	213.10		1960-10-24	204.90	
1960-03-07	193.50		1959-11-10	204.00	
1959-03-19	206.70		1958-11-28	194.70	
1958-03-12	184.70		1957-11-12	198.70	
1957-10-23	201.00				

H23
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3159211**

Agency cd:	USGS	Site no:	344214118173101
Site name:	007N013W07R001S		
Latitude:	344214	EDR Site id:	USGS3159211
Longitude:	1181731	Dec lat:	34.70387302
Dec lon:	-118.29285489	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19460606
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-09-15	Ground water data end date:	1957-06-10
Ground water data count:	3		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1957-06-10	232.00		1952-04-12	210.00	
1946-09-15	163.00				

G24
SSE
1/2 - 1 Mile
Higher

CA WELLS **CADW40000013835**

Longitude:	-118.2912
Latiude:	34.6875
Stwellno:	07N13W19A004S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013835

I25
NE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014042**

Longitude:	-118.289
Latiude:	34.703
Stwellno:	07N13W17D002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014042

G26
SSE
1/2 - 1 Mile
Higher

FED USGS **USGS3159589**

Agency cd:	USGS	Site no:	344114118172901
Site name:	007N013W19A002S		
Latitude:	344114	EDR Site id:	USGS3159589
Longitude:	1181729	Dec lat:	34.68720705
Dec lon:	-118.29229942	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19510101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

G27
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS3159593**

Agency cd:	USGS	Site no:	344115118172501
Site name:	007N013W19A004S		
Latitude:	344115	EDR Site id:	USGS3159593
Longitude:	1181725	Dec lat:	34.68748481
Dec lon:	-118.29118827	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2427.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18900101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	75.0	Hole depth:	75.0
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1908-01-01	Ground water data end date:	1908-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1908-01-01	59.00	

I28
NNE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014046**

Longitude:	-118.289
Latiude:	34.7033
Stwellno:	07N13W17D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014046

J29
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159207**

Agency cd:	USGS	Site no:	344213118180301
Site name:	007N013W18C001S		
Latitude:	344213	EDR Site id:	USGS3159207
Longitude:	1181803	Dec lat:	34.70359524
Dec lon:	-118.30174406	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2445.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	479	Hole depth:	512
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-09-12	Ground water data end date:	1963-09-12
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-09-12	140.00	

J30
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159208**

Agency cd:	USGS	Site no:	344213118180302
Site name:	007N013W18C002S		
Latitude:	344213	EDR Site id:	USGS3159208
Longitude:	1181803	Dec lat:	34.70359524
Dec lon:	-118.30174406	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2445.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19610628
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	600	Hole depth:	600
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-27	Ground water data end date:	1963-05-27
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-27	298.00	

Note: The site was being pumped.

I31
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159192**

Agency cd:	USGS	Site no:	344211118171701
Site name:	007N013W17D002S		
Latitude:	344211	EDR Site id:	USGS3159192
Longitude:	1181717	Dec lat:	34.70303973
Dec lon:	-118.28896588	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2421.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	19450806
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	505	Hole depth:	505
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1945-08-06	Ground water data end date:	1965-11-09
Ground water data count:	26		

Ground-water levels, Number of Measurements: 26

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1965-11-09	225.24				
1963-04-04	247.20				
Note: The site had been pumped recently.					
1963-04-01	247.70		1962-11-07	216.30	
1962-08-02	228.50				
Note: The site had been pumped recently.					
1962-04-09	228.50		1961-10-19	204.10	
1961-04-05	217.40		1960-11-21	207.00	
1960-10-24	223.60		1960-04-12	216.50	
1959-10-21	214.00		1959-03-19	197.20	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1958-11-28	193.70	
1958-06	285.00	
Note: The site was being pumped.		
1958-03-12	177.00	
1957-03-08	183.60	
1956	284.00	
Note: The site was being pumped.		
1954	271.00	
Note: The site was being pumped.		
1952	255.00	
Note: The site was being pumped.		
1948	197.00	
Note: The site was being pumped.		
1947	179.00	
Note: The site was being pumped.		
1945-08-06	144.00	
1958-11-13	196.70	
1957-11-12	190.70	
1956-11-28	184.70	

I32
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159197**

Agency cd:	USGS	Site no:	344212118171701
Site name:	007N013W17D001S		
Latitude:	344212	EDR Site id:	USGS3159197
Longitude:	1181717	Dec lat:	34.7033175
Dec lon:	-118.28896588	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2420.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	162	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1927-00-00	Ground water data end date:	1957-10-29
Ground water data count:	24		

Ground-water levels, Number of Measurements: 24

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1957-10-29	156.5		1956-11-21	157.90	
1955-10-24	161.55		1955-05-18	153.89	
1954-11-15	155.30		1954-03-26	146.90	
1953-12-01	152.20		1952-11-20	147.10	
1951-12-07	144.00		1950-11-28	138.50	
1950-01-04	135.40		1948-11-30	124.10	
1947-12-09	113.50		1945-11-13	107.10	
1945-03-05	93.40		1944-12-06	99.60	
1941-12-02	95.80		1941-04-25	99.50	
1940-12-05	95.90		1940-03-13	91.50	
1939-11-17	98.70		1939-03-08	84.40	
1937-11-09	91.50		1927	55.00	

33
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159603**

Agency cd:	USGS	Site no:	344119118171301
Site name:	007N013W20Z002S		
Latitude:	344119	EDR Site id:	USGS3159603
Longitude:	1181713	Dec lat:	34.68859589
Dec lon:	-118.28785483	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2415.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18900101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	560	Hole depth:	560
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
J34 **NW** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CADW40000014048**

Longitude:	-118.3017
Latiude:	34.7036
Stwellno:	07N13W18C001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014048

	Database	EDR ID Number
J35 **NW** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CADW40000014049**

Longitude:	-118.3017
Latiude:	34.7036
Stwellno:	07N13W18C002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014049

	Database	EDR ID Number
K36 **SSW** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS3159581**

Agency cd:	USGS	Site no:	344111118175701
Site name:	007N013W19D001S		
Latitude:	344110	EDR Site id:	USGS3159581
Longitude:	1181752	Dec lat:	34.68609597
Dec lon:	-118.29868852	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2470.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19520815
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	driller		
Project number:	9479335800		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 1973-05-15
Water quality data end date: 1992-08-04
Water quality data count: 17
Ground water data begin date: 1952-08-13
Ground water data end date: 1963-05-13
Ground water data count: 20

Ground-water levels, Number of Measurements: 20

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-13	278.00		1963-04-01	269.00	
1963-03-05	262.00		1963-02-01	257.00	
1963-01-02	258.00		1962-12-03	268.00	
1962-11-02	272.00		1962-10-01	278.00	
1962-09-04	276.00		1962-08-06	277.00	
1962-05-17	269.00		1962-04-02	244.00	
1962-03-01	244.00		1962-02-02	248.00	
1962-01-03	249.60		1961-10-06	272.00	
1961-09-13	272.00		1961-08-03	272.00	
1956-09	237.00		1952-08-13	160.00	

K37
SSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000013802**

Longitude: -118.2987
Latiude: 34.6861
Stwellno: 07N13W19D001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000013802

38
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159401**

Agency cd: USGS
Site no: 344122118170201
Site name: 007N013W17P001S
Latitude: 344122
EDR Site id: USGS3159401
Longitude: 1181702
Dec lat: 34.68942919
Dec lon: -118.28479917
Coor meth: M
Coor accr: S
Latlong datum: NAD27
Dec latlong datum: NAD83
District: 06
State: 06
County: 037
Country: US
Land net: Not Reported
Location map: DEL SUR
Map scale: 24000
Altitude: 2408.00
Altitude method: Interpolated from topographic map
Altitude accuracy: 010
Altitude datum: National Geodetic Vertical Datum of 1929
Hydrologic: AntelopeFremont Valleys. California. Area = 3310 sq.mi.
Topographic: Pediment
Site type: Ground-water other than Spring
Date construction: 19280101
Date inventoried: Not Reported
Mean greenwich time offset: PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

L39
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159083**

Agency cd:	USGS	Site no:	344221118180301
Site name:	007N013W07P001S		
Latitude:	344221	EDR Site id:	USGS3159083
Longitude:	1181803	Dec lat:	34.70581737
Dec lon:	-118.30174405	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2447.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19471030
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	600	Hole depth:	600
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-23	Ground water data end date:	1967-03-15
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1967-03-15	282.75		1963-05-23	269.45	

L40
NNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014105**

Longitude:	-118.3017
Latiude:	34.7058
Stwellno:	07N13W07P001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014105

M41
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159191**

Agency cd:	USGS	Site no:	344211118170201
Site name:	007N013W17C001S		
Latitude:	344211	EDR Site id:	USGS3159191
Longitude:	1181702	Dec lat:	34.70303974
Dec lon:	-118.28479908	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2412.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19000101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database	EDR ID Number
CA WELLS	**CADW40000013784**

N42
SSE
1/2 - 1 Mile
Lower

Longitude:	-118.2887
Latiude:	34.685
Stwellno:	07N13W20E002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013784

N43
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS3159552**

Agency cd:	USGS	Site no:	344106118171801
Site name:	007N013W20E001S		
Latitude:	344106	EDR Site id:	USGS3159552
Longitude:	1181718	Dec lat:	34.68498492
Dec lon:	-118.28924378	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2425.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19320101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

O44
North
1/2 - 1 Mile
Higher

FED USGS **USGS3159115**

Agency cd:	USGS	Site no:	344227118174801
Site name:	007N013W07K001S		
Latitude:	344227	EDR Site id:	USGS3159115
Longitude:	1181748	Dec lat:	34.70748398
Dec lon:	-118.29757724	Coor meth:	M
Coor accr:	M	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2437.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19550701
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	603	Hole depth:	603
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-23	Ground water data end date:	1963-05-23
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-23	287.96	

O45
North
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014117**

Longitude:	-118.2976
Latiude:	34.7075
Stwellno:	07N13W07K001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014117

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

46
NNE
1/2 - 1 Mile
Lower | **FED USGS** | **USGS3159094**

Agency cd:	USGS	Site no:	344223118171801
Site name:	007N013W08N001S		
Latitude:	344223	EDR Site id:	USGS3159094
Longitude:	1181718	Dec lat:	34.70637293
Dec lon:	-118.28924365	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19380101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

P47
NNE
1/2 - 1 Mile
Lower | **FED USGS** | **USGS3159114**

Agency cd:	USGS	Site no:	344227118173101
Site name:	007N013W07J001S		
Latitude:	344227	EDR Site id:	USGS3159114
Longitude:	1181731	Dec lat:	34.70748398
Dec lon:	-118.29285487	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2426.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19620312
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	451	Hole depth:	451
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1963-05-27
Water quality data end date:	1963-05-27	Water quality data count:	1
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

M48
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159196**

Agency cd:	USGS	Site no:	344212118170101
Site name:	007N013W17C002S		
Latitude:	344212	EDR Site id:	USGS3159196
Longitude:	1181701	Dec lat:	34.70331751
Dec lon:	-118.28452129	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2412.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19000101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	414	Hole depth:	414
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

N49
SSE **FED USGS** **USGS3159551**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344106118171601
Site name:	007N013W20E002S		
Latitude:	344106	EDR Site id:	USGS3159551
Longitude:	1181716	Dec lat:	34.68498492
Dec lon:	-118.28868821	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2424.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19560201
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	605	Hole depth:	605
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-06-13	Ground water data end date:	1956-06-13
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1956-06-13	274.35	

50
SE **FED USGS** **USGS3159592**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344115118170201
Site name:	007N013W20C001S		
Latitude:	344115	EDR Site id:	USGS3159592
Longitude:	1181702	Dec lat:	34.68748482
Dec lon:	-118.28479918	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2409.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19350101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

P51
North
1/2 - 1 Mile
Lower

FED USGS **USGS3159132**

Agency cd:	USGS	Site no:	344230118173401
Site name:	007N013W07J002S		
Latitude:	344230	EDR Site id:	USGS3159132
Longitude:	1181734	Dec lat:	34.70831728
Dec lon:	-118.29368822	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2428.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19470101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

Q52
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014011**

Longitude:	-118.2792
Latiude:	34.7003
Stwellno:	07N13W17Z003S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014011

Q53
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014012**

Longitude:	-118.2792
Latiude:	34.7003
Stwellno:	07N13W17Z004S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014012

Q54
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3159376**

Agency cd:	USGS	Site no:	344201118164502
Site name:	007N013W17Z004S		
Latitude:	344201	EDR Site id:	USGS3159376
Longitude:	1181645	Dec lat:	34.70026208
Dec lon:	-118.28007673	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2401.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	600	Hole depth:	600
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1920-01-01	Ground water data end date:	1920-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1920-01-01	23.00	

Q55
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3159375**

Agency cd:	USGS	Site no:	344201118164501
Site name:	007N013W17Z003S		
Latitude:	344201	EDR Site id:	USGS3159375
Longitude:	1181645	Dec lat:	34.70026208
Dec lon:	-118.28007673	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2401.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	270	Hole depth:	270
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1920-01-01	Ground water data end date:	1920-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1920-01-01	27.00	

R56
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014043**

Longitude:	-118.2806
Latiude:	34.703
Stwellno:	07N13W17B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014043

S57
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3159457**

Agency cd:	USGS	Site no:	344131118184101
Site name:	007N014W13Q002S		
Latitude:	344131	EDR Site id:	USGS3159457
Longitude:	1181841	Dec lat:	34.69192904
Dec lon:	-118.31230002	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2490.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18850101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	287
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1908-01-01
Water quality data end date:	1908-01-01	Water quality data count:	1
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

58
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3159569**

Agency cd:	USGS	Site no:	344109118182601
Site name:	007N014W24A001S		
Latitude:	344109	EDR Site id:	USGS3159569
Longitude:	1181826	Dec lat:	34.68581819
Dec lon:	-118.30813326	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2490.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	128	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

S59
WSW
1/2 - 1 Mile
Higher | **FED USGS** | **USGS3159460**

Agency cd:	USGS	Site no:	344132118184201
Site name:	007N014W13Q001S		
Latitude:	344132	EDR Site id:	USGS3159460
Longitude:	1181842	Dec lat:	34.69220681
Dec lon:	-118.31257781	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2490.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-10-23	Ground water data end date:	1963-05-13
Ground water data count:	14		

Ground-water levels, Number of Measurements: 14

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-13	288.91		1963-04-04	276.50	
1962-11-07	268.40		1962-04-06	271.80	
1961-10-17	270.40		1961-04-06	274.60	
1960-10-24	258.20		1960-03-07	257.00	
1959-11-10	253.00		1959-03-19	244.50	
1958-11-28	241.20		1958-03-13	232.70	
1957-11-12	240.00		1957-10-23	241.00	

R60
ENE
1/2 - 1 Mile
Lower | **CA WELLS** | **CADW40000014047**

Longitude:	-118.2804
Latiude:	34.7033
Stwellno:	07N13W17B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014047

61
ESE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000013849**

Longitude:	-118.2804
Latiude:	34.6878
Stwellno:	07N13W20B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013849

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Antelope Solar Greenworks
8
Lancaster, CA 93536

Inquiry Number: 3089700.45
June 08, 2011

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
Antelope Solar Greenworks
8
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089700.45

Contact: Garret Bean

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Tetra Tech Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Antelope Solar Greenworks
Address: 8
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 10
Certification # F710-413F-918B

Sanborn® Library search results
Certification # F710-413F-918B

UNMAPPED PROPERTY

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Apex Greenworks
10
Lancaster, CA 93536

Inquiry Number: 3089735.137
June 08, 2011

EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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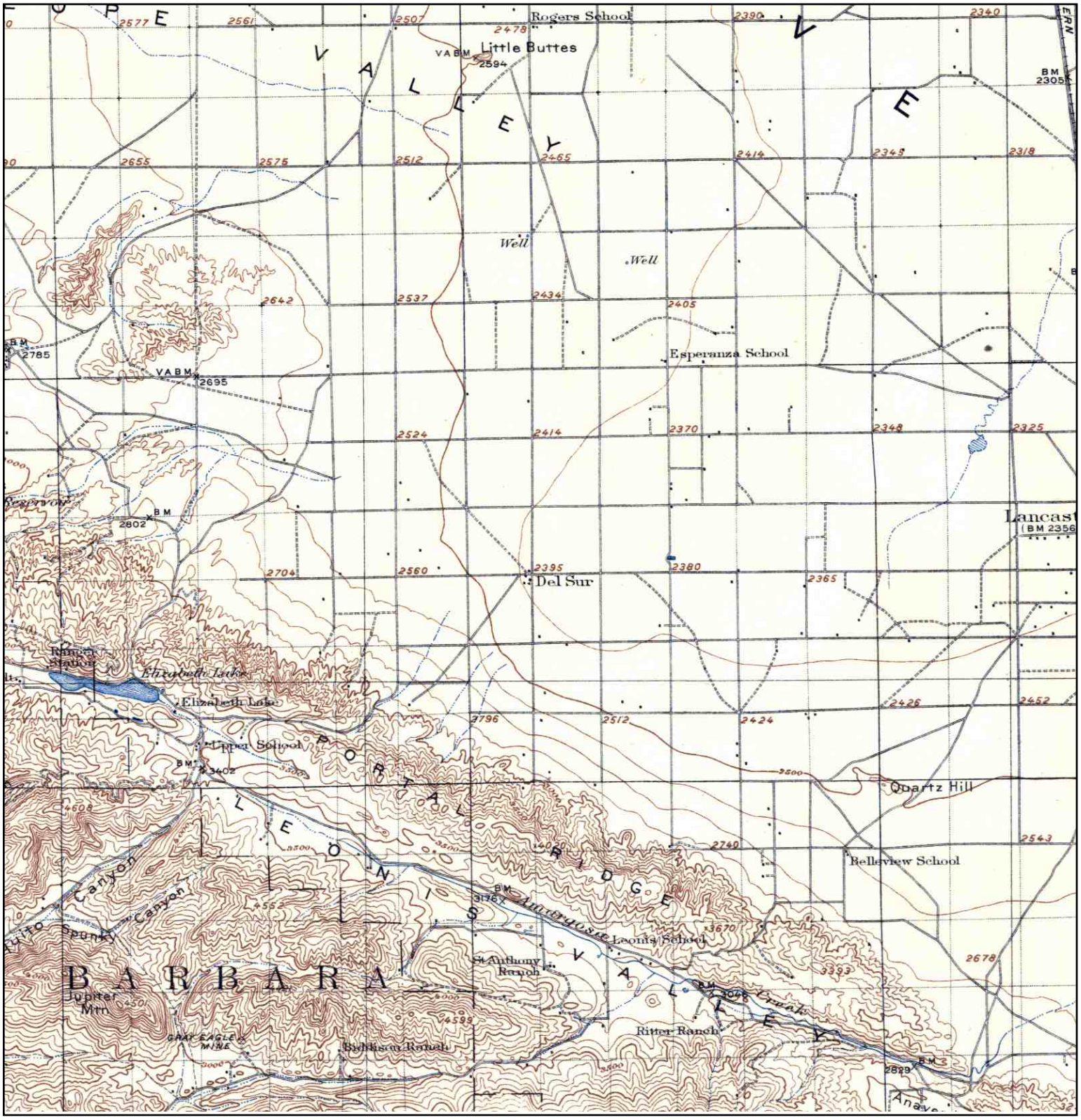
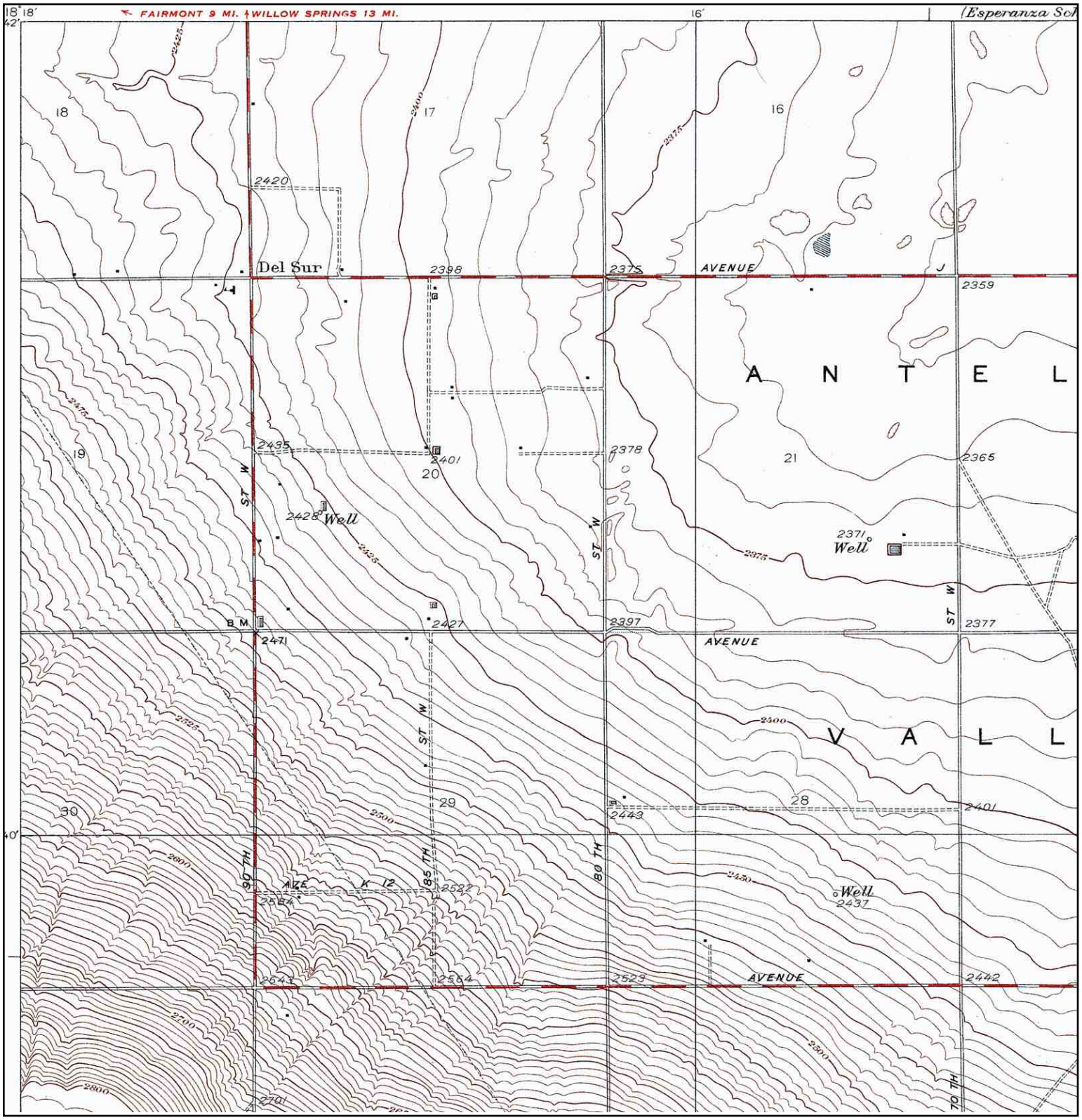
Historical Topographic Map



N	TARGET QUAD NAME: ELIZABETH LAKE MAP YEAR: 1917 SERIES: 30 SCALE: 1:125000	SITE NAME: Apex Greenworks ADDRESS: 10 Lancaster, CA 93536 LAT/LONG: 34.6911 / -118.2859	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.137 RESEARCH DATE: 06/08/2011

Historical Topographic Map

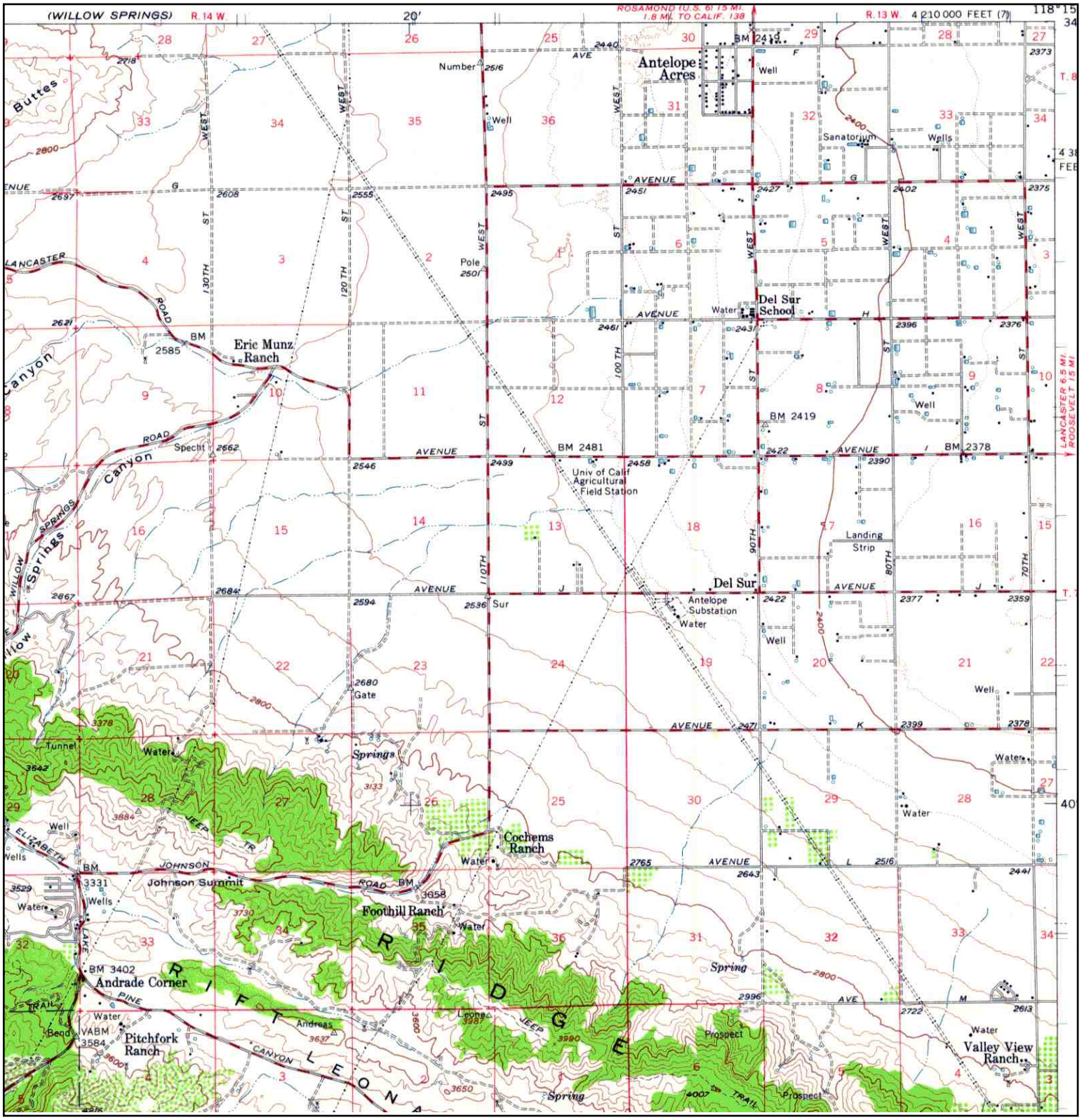


N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1936 SERIES: 6 SCALE: 1:24000	SITE NAME: Apex Greenworks ADDRESS: 10 Lancaster, CA 93536 LAT/LONG: 34.6911 / -118.2859	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.137 RESEARCH DATE: 06/08/2011

Historical Topographic Map

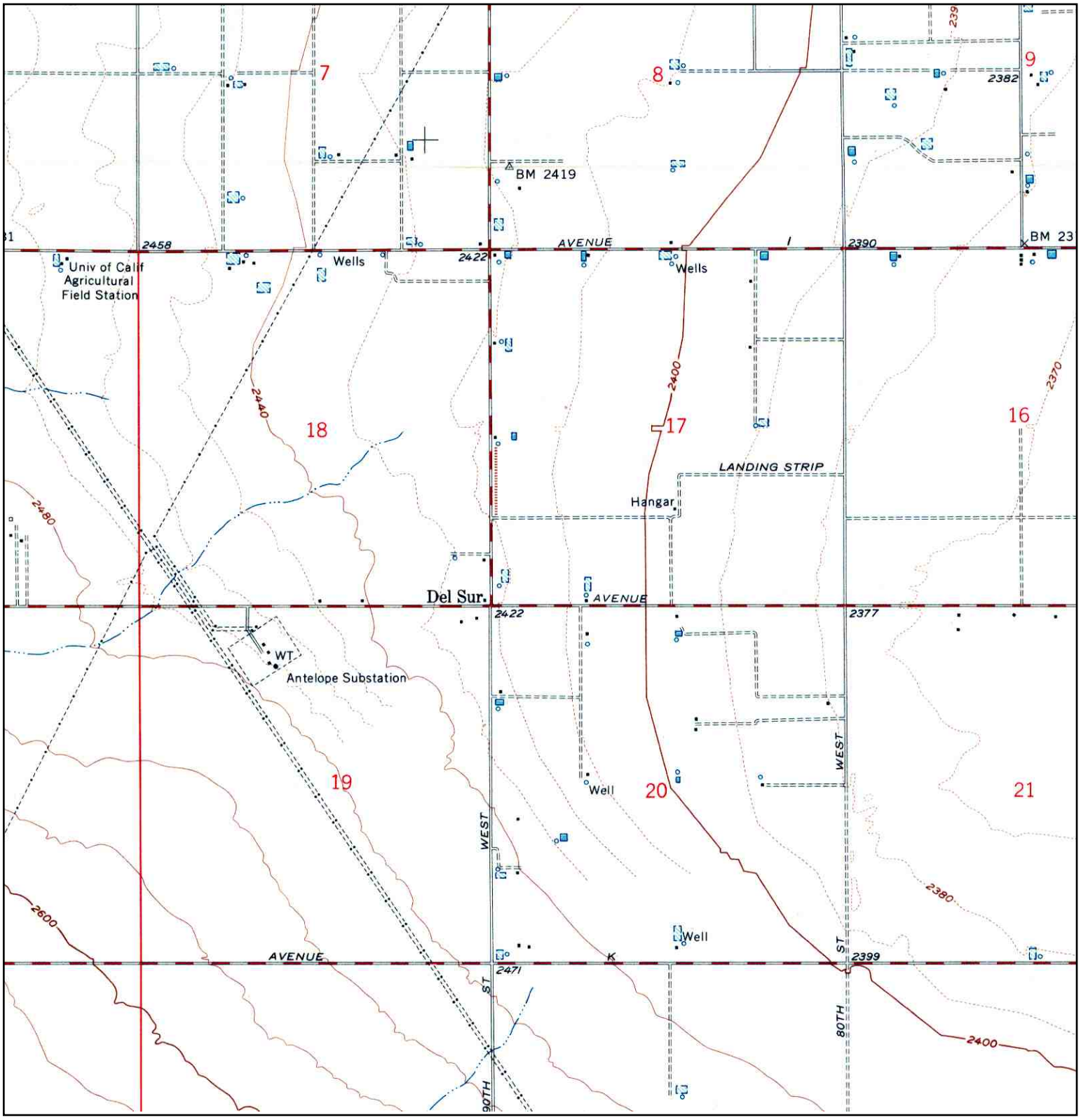
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1951 REVISED:1936 SERIES: 6 SCALE: 1:24000	SITE NAME: Apex Greenworks ADDRESS: 10 Lancaster, CA 93536 LAT/LONG: 34.6911 / -118.2859	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.137 RESEARCH DATE: 06/08/2011

Historical Topographic Map



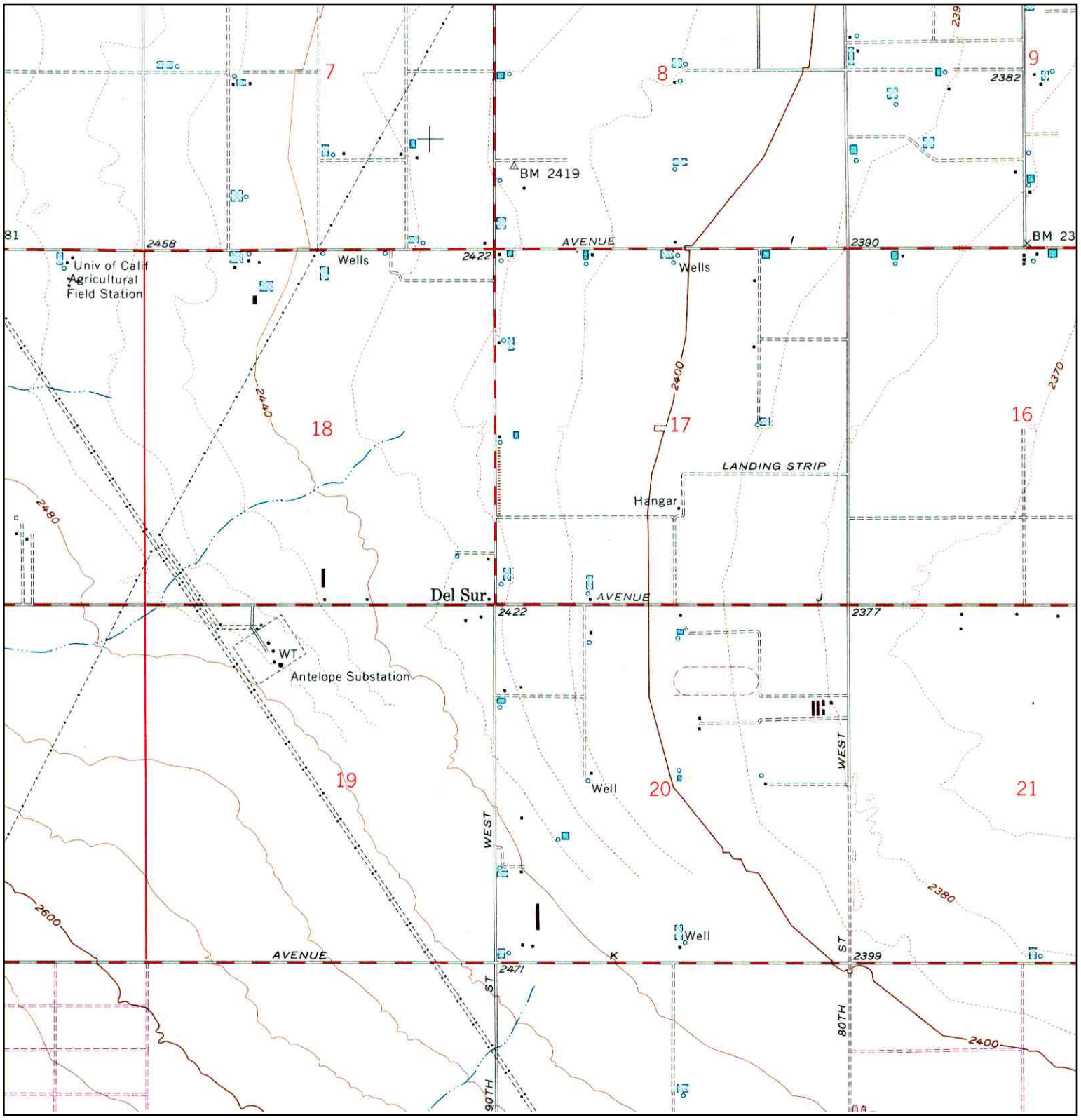
N	TARGET QUAD NAME: BOUQUET RESERVOIR MAP YEAR: 1958 SERIES: 15 SCALE: 1:62500	SITE NAME: Apex Greenworks ADDRESS: 10 Lancaster, CA 93536 LAT/LONG: 34.6911 / -118.2859	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.137 RESEARCH DATE: 06/08/2011

Historical Topographic Map



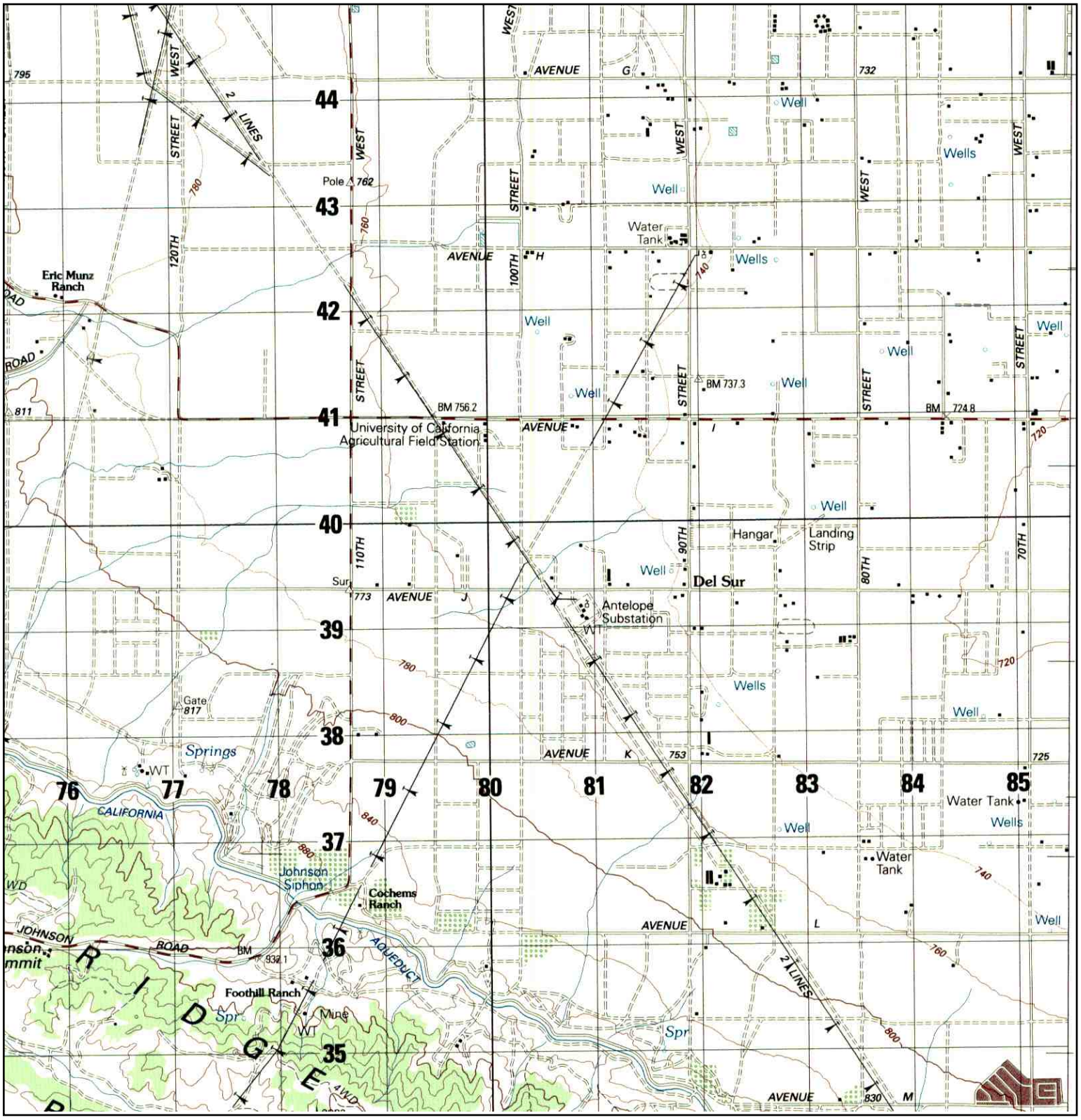
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Apex Greenworks ADDRESS: 10 Lancaster, CA 93536 LAT/LONG: 34.6911 / -118.2859	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.137 RESEARCH DATE: 06/08/2011

Historical Topographic Map



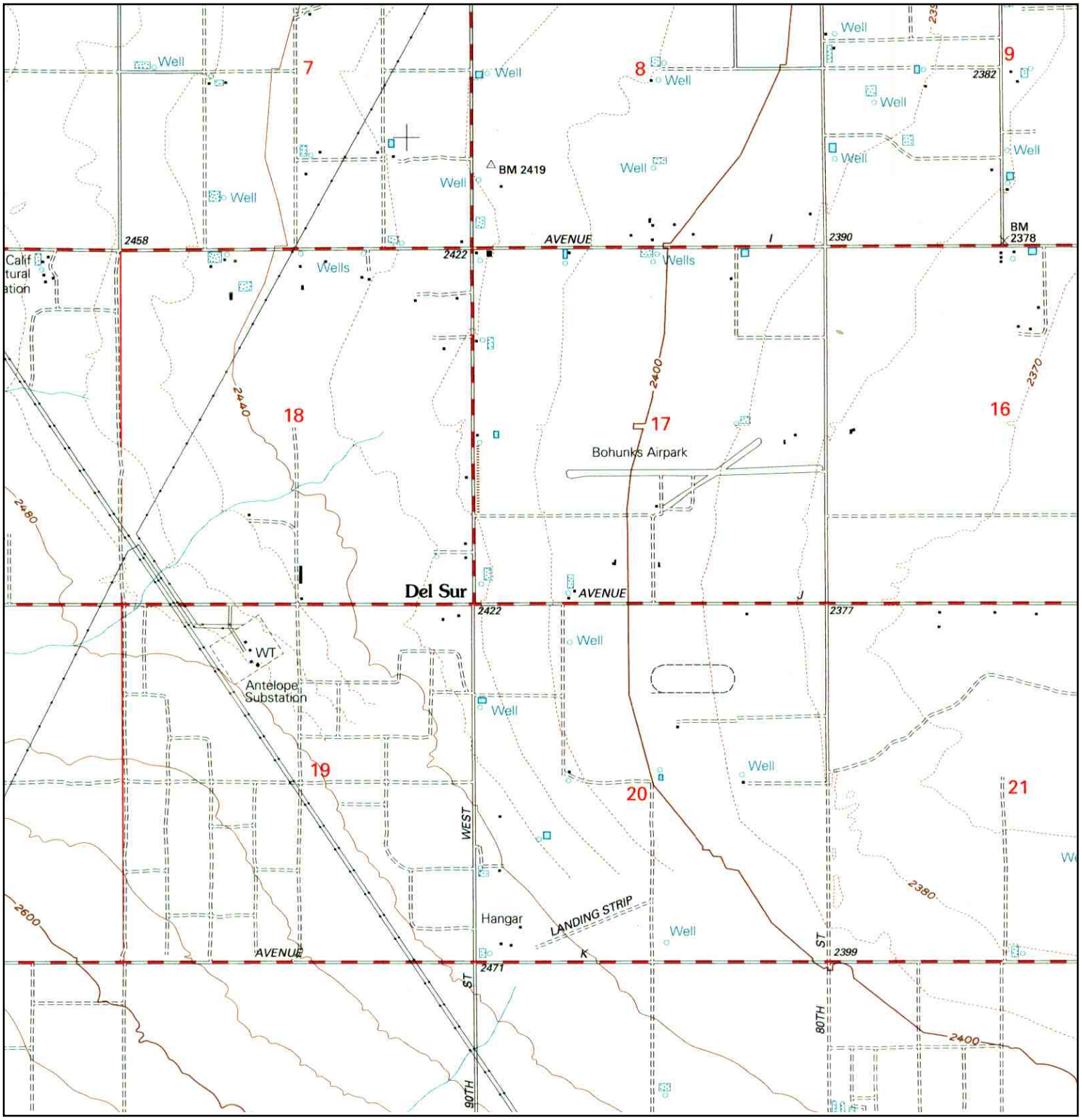
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1974 PHOTOREVISED:1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Apex Greenworks ADDRESS: 10 Lancaster, CA 93536 LAT/LONG: 34.6911 / -118.2859	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.137 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	TARGET QUAD NAME: BOUQUET RESERVOIR MAP YEAR: 1987 SERIES: 15 SCALE: 1:50000	SITE NAME: Apex Greenworks ADDRESS: 10 Lancaster, CA 93536 LAT/LONG: 34.6911 / -118.2859	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.137 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1995 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Apex Greenworks ADDRESS: 10 Lancaster, CA 93536 LAT/LONG: 34.6911 / -118.2859	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.137 RESEARCH DATE: 06/08/2011

Apex Greenworks
10
Lancaster, CA 93536

Inquiry Number: 3089735.135s
June 08, 2011

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

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Milford, CT 06461
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www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

10
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.691100 - 34° 41' 28.0''
Longitude (West):	118.285900 - 118° 17' 9.2''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	382214.0
UTM Y (Meters):	3839343.8
Elevation:	2414 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
SLIC ---------- Statewide SLIC Cases

INDIAN LUST - Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST - Active UST Facilities
AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - Underground Storage Tanks on Indian Land
FEMA UST - Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP - Voluntary Cleanup Program Properties
INDIAN VCP - Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI - Open Dump Inventory
DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT - Waste Management Unit Database
SWRCY - Recycler Database
HAULERS - Registered Waste Tire Haulers Listing
INDIAN ODI - Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL - Clandestine Drug Labs
HIST Cal-Sites - Historical Calsites Database
SCH - School Property Evaluation Program
Toxic Pits - Toxic Pits Cleanup Act Sites
AOCONCERN - San Gabriel Valley Areas of Concern
CDL - Clandestine Drug Labs
US HIST CDL - National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST - Facility Inventory Database
HIST UST - Hazardous Substance Storage Container Database
SWEEPS UST - SWEEPS UST Listing

Local Land Records

LIENS 2 - CERCLA Lien Information
LUCIS - Land Use Control Information System
LIENS - Environmental Liens Listing
DEED - Deed Restriction Listing

Records of Emergency Release Reports

HMIRS - Hazardous Materials Information Reporting System

CHMIRS California Hazardous Material Incident Report System
LDS Land Disposal Sites Listing
MCS Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen RCRA - Non Generators
DOT OPS Incident and Accident Data
DOD Department of Defense Sites
FUDS Formerly Used Defense Sites
CONSENT Superfund (CERCLA) Consent Decrees
ROD Records Of Decision
UMTRA Uranium Mill Tailings Sites
MINES Mines Master Index File
TRIS Toxic Chemical Release Inventory System
TSCA Toxic Substances Control Act
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
SSTS Section 7 Tracking Systems
ICIS Integrated Compliance Information System
PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database
FINDS Facility Index System/Facility Registry System
RAATS RCRA Administrative Action Tracking System
CA BOND EXP. PLAN Bond Expenditure Plan
NPDES NPDES Permits Listing
WDS Waste Discharge System
Cortese "Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE Hazardous Waste & Substance Site List
Notify 65 Proposition 65 Records
LA Co. Site Mitigation Site Mitigation List
DRYCLEANERS Cleaner Facilities
WIP Well Investigation Program Case List
LOS ANGELES CO. HMS HMS: Street Number List
HAZNET Facility and Manifest Data
EMI Emissions Inventory Data
INDIAN RESERV Indian Reservations
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
FINANCIAL ASSURANCE Financial Assurance Information Listing
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
PROC Certified Processors Database
MWMP Medical Waste Management Program Listing
COAL ASH DOE Sleam-Electric Plan Operation Data

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Historical Auto Stations EDR Proprietary Historic Gas Stations
EDR Historical Cleaners EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

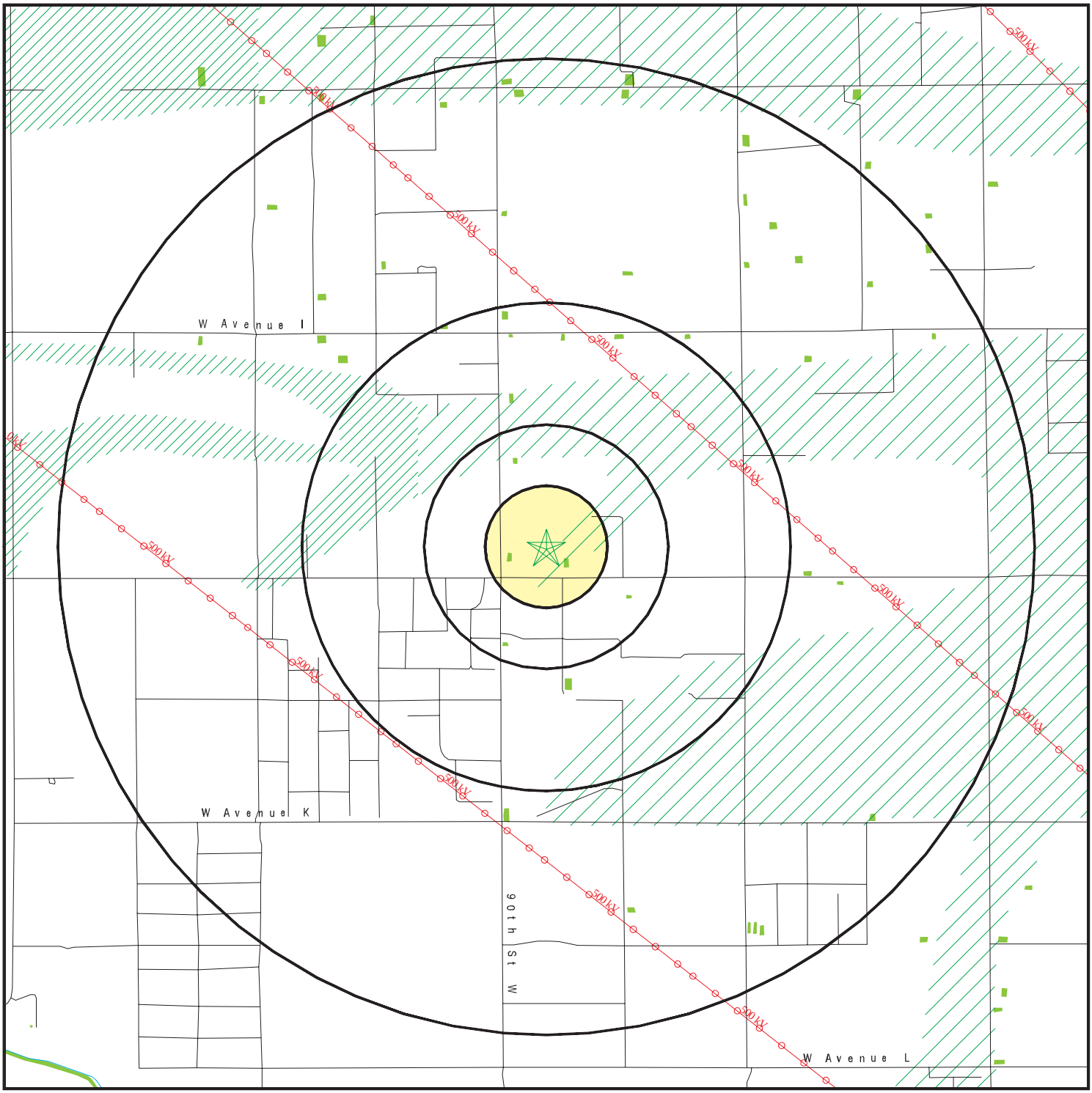
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 34 records.

Site Name	Database(s)
TRACT NO 060987	NPDES
GRANDIFLORA	NPDES
AVE E ETAL	NPDES
SO CALIF EDISON CO	NPDES, HAZNET
AVENUE K & 47TH STREET WEST	NPDES
D & D WELDING	NPDES
TRACT 060430	NPDES
SUNSET LANDING	NPDES
TRTP YARD 28 MATERIAL STORAGE	NPDES
HARSHFIELD TERRACE RETIREMENT HOUS	NPDES
CAL MAT	SWEEPS UST
ON AVENUE G, BETWEEN 100 WEST	CDL
ON NORTH 35TH STREET WEST AT A	CDL
85TH ST, W OF ALAMADA	CDL
28.15 MI.MARKER ON ANGELES CRE	CDL
90TH E / AVE J	AST
5 MI NW OF HWY 138 & 300TH ST	AST
PAR ELECTRICAL CONTRACTORS INC	HAZNET
SOUTHERN CAL EDISON /DEL SUR SUB S	HAZNET
SOUTHERN CALIFORNIA EDISON/ANTELOP	HAZNET
JMC TRANSPORTATION	HAZNET
OSO PUMPING PLANT	HAZNET
ILLEGAL DRUG LAB/OPERATOR UNKNOWN	HAZNET
LOS ANGELES COUNTY DEPT OF PUBLIC	HAZNET
CNTY LOS ANGELES/RD 551	HAZNET
3995 AVENUE H W	US CDL
VALUE CLEANERS, STUART MATROS	EMI
ANTELOPE VALLEY COLLEGE	EMI
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
CASTA DWR- CHECK SITE 59	EMI
JOE WALKER MIDDLE SCHOOL	EMI
BURGER KING	EMI
LACO RD 551 ROAD MAINTENANCE YARD	EMI

OVERVIEW MAP - 3089735.135s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

0 1/2 1 2 Miles

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Apex Greenworks	CLIENT: Tetra Tech Inc.
ADDRESS: 10	CONTACT: Garret Bean
Lancaster CA 93536	INQUIRY #: 3089735.135s
LAT/LONG: 34.6911 / 118.2859	DATE: June 08, 2011 1:00 pm

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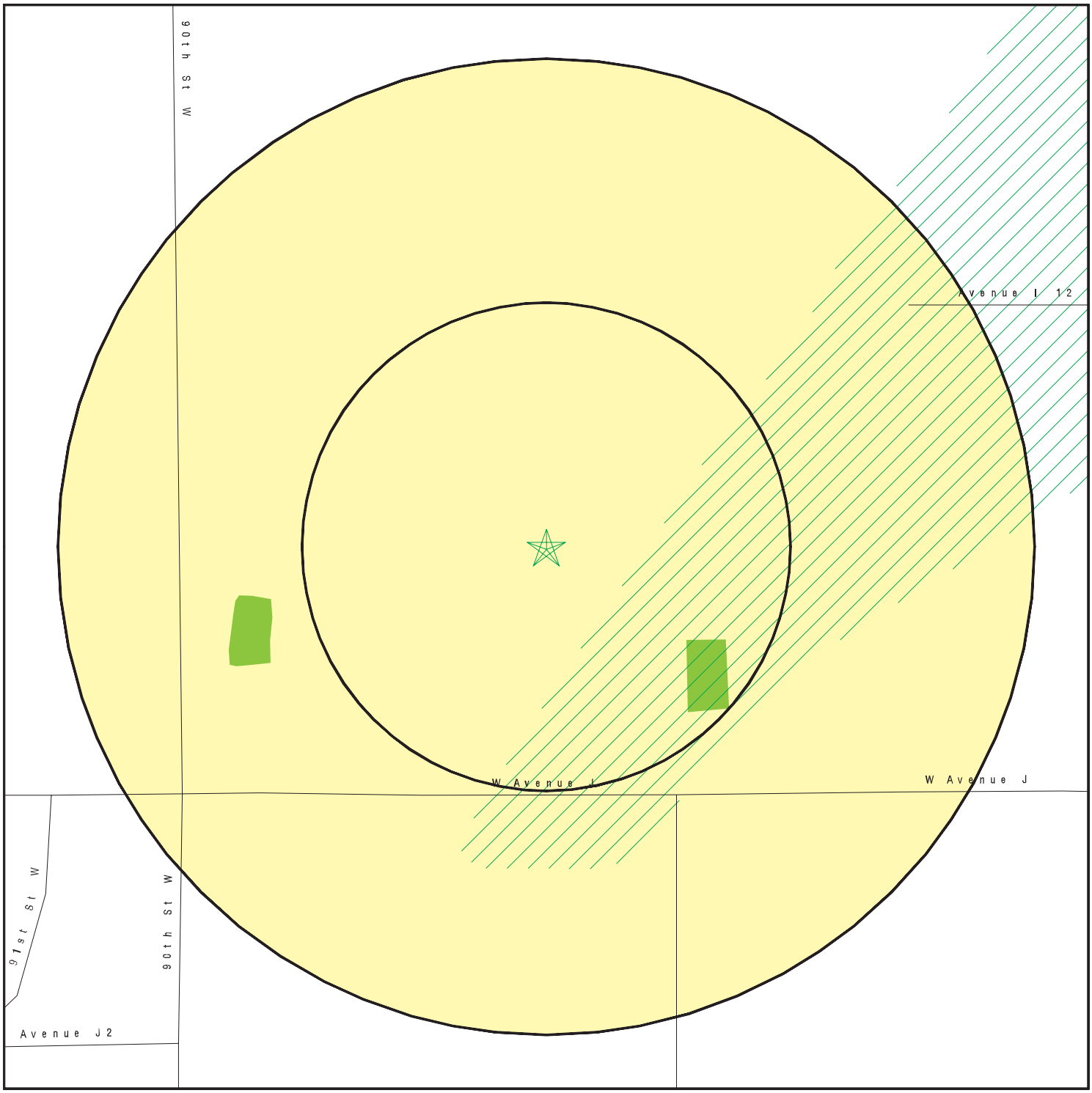
DETAIL MAP - 3089735.135s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Apex Greenworks ADDRESS: 10 Lancaster CA 93536 LAT/LONG: 34.6911 / 118.2859	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.135s DATE: June 08, 2011 1:02 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.125	0	0	0	0	0	0
Proposed NPL		1.125	0	0	0	0	0	0
NPL LIENS		0.125	0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.125	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		0.625	0	0	0	0	NR	0
FEDERAL FACILITY		1.125	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.625	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.125	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.625	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.375	0	0	0	NR	NR	0
RCRA-SQG		0.375	0	0	0	NR	NR	0
RCRA-CESQG		0.375	0	0	0	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.625	0	0	0	0	NR	0
US INST CONTROL		0.625	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.125	0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.125	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.125	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.625	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		0.625	0	0	0	0	NR	0
SLIC		0.625	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST		0.625	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.375	0	0	0	NR	NR	0
AST		0.375	0	0	0	NR	NR	0
INDIAN UST		0.375	0	0	0	NR	NR	0
FEMA UST		0.375	0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.625	0	0	0	0	NR	0
INDIAN VCP		0.625	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.625	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		0.625	0	0	0	0	NR	0
DEBRIS REGION 9		0.625	0	0	0	0	NR	0
WMUDS/SWAT		0.625	0	0	0	0	NR	0
SWRCY		0.625	0	0	0	0	NR	0
HAULERS		0.125	0	NR	NR	NR	NR	0
INDIAN ODI		0.625	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.125	0	NR	NR	NR	NR	0
HIST Cal-Sites		1.125	0	0	0	0	0	0
SCH		0.375	0	0	0	NR	NR	0
Toxic Pits		1.125	0	0	0	0	0	0
AOCONCERN		1.125	0	0	0	0	0	0
CDL		0.125	0	NR	NR	NR	NR	0
US HIST CDL		0.125	0	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.375	0	0	0	NR	NR	0
HIST UST		0.375	0	0	0	NR	NR	0
SWEEPS UST		0.375	0	0	0	NR	NR	0
Local Land Records								
LIENS 2		0.125	0	NR	NR	NR	NR	0
LUCIS		0.625	0	0	0	0	NR	0
LIENS		0.125	0	NR	NR	NR	NR	0
DEED		0.625	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.125	0	NR	NR	NR	NR	0
CHMIRS		0.125	0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS		0.125	0	NR	NR	NR	NR	0
MCS		0.125	0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.375	0	0	0	NR	NR	0
DOT OPS		0.125	0	NR	NR	NR	NR	0
DOD		1.125	0	0	0	0	0	0
FUDS		1.125	0	0	0	0	0	0
CONSENT		1.125	0	0	0	0	0	0
ROD		1.125	0	0	0	0	0	0
UMTRA		0.625	0	0	0	0	NR	0
MINES		0.375	0	0	0	NR	NR	0
TRIS		0.125	0	NR	NR	NR	NR	0
TSCA		0.125	0	NR	NR	NR	NR	0
FTTS		0.125	0	NR	NR	NR	NR	0
HIST FTTS		0.125	0	NR	NR	NR	NR	0
SSTS		0.125	0	NR	NR	NR	NR	0
ICIS		0.125	0	NR	NR	NR	NR	0
PADS		0.125	0	NR	NR	NR	NR	0
MLTS		0.125	0	NR	NR	NR	NR	0
RADINFO		0.125	0	NR	NR	NR	NR	0
FINDS		0.125	0	NR	NR	NR	NR	0
RAATS		0.125	0	NR	NR	NR	NR	0
CA BOND EXP. PLAN		1.125	0	0	0	0	0	0
NPDES		0.125	0	NR	NR	NR	NR	0
WDS		0.125	0	NR	NR	NR	NR	0
Cortese		0.625	0	0	0	0	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.125	0	0	0	0	0	0
LA Co. Site Mitigation		0.125	0	NR	NR	NR	NR	0
DRYCLEANERS		0.375	0	0	0	NR	NR	0
WIP		0.375	0	0	0	NR	NR	0
LOS ANGELES CO. HMS		0.125	0	NR	NR	NR	NR	0
HAZNET		0.125	0	NR	NR	NR	NR	0
EMI		0.125	0	NR	NR	NR	NR	0
INDIAN RESERV		1.125	0	0	0	0	0	0
SCRD DRYCLEANERS		0.625	0	0	0	0	NR	0
FINANCIAL ASSURANCE		0.125	0	NR	NR	NR	NR	0
HWP		1.125	0	0	0	0	0	0
HWT		0.375	0	0	0	NR	NR	0
COAL ASH EPA		0.625	0	0	0	0	NR	0
PCB TRANSFORMER		0.125	0	NR	NR	NR	NR	0
PROC		0.625	0	0	0	0	NR	0
MWMP		0.375	0	0	0	NR	NR	0
COAL ASH DOE		0.125	0	NR	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.125	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.375	0	0	0	NR	NR	0
EDR Historical Cleaners		0.375	0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 34 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
LANCASTER	S110374354	PAR ELECTRICAL CONTRACTORS INC	2866TH & 2 W AVENUE F	93536	HAZNET
LANCASTER	S109462558	TRACT NO 060987	52 52ND ST W / AVENUE J	93536	NPDES
LANCASTER	S109444838	GRANDIFLORA	60 60TH STREET WEST / AVENUE	93536	NPDES
LANCASTER	S105086048	SOUTHERN CAL EDISON /DEL SUR SUB S	90TH ST W & AVE H	93536	HAZNET
LANCASTER	A100345406		90TH E / AVE J	93536	AST
LANCASTER	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES
LANCASTER	S104568573	SO CALIF EDISON CO	9634 W AVENUE J	93536	NPDES, HAZNET
LANCASTER	S107143259	SOUTHERN CALIFORNIA EDISON/ANTELOP	9634 W AVENUE J	93536	HAZNET
LANCASTER	S106842034	VALUE CLEANERS, STUART MATROS	2849 W AVENUE L	93536	EMI
LANCASTER	S106826009	ANTELOPE VALLEY COLLEGE	3041 W AVENUE K	93536	EMI
LANCASTER	S107539709		ON AVENUE G, BETWEEN 100 WEST	93536	CDL
LANCASTER	S109436818	AVENUE K & 47TH STREET WEST	AVENUE K / 47TH STREET WEST		NPDES
LANCASTER	1012055833	3995 AVENUE H W	3995 AVENUE H W		US CDL
LANCASTER	S110367727	JMC TRANSPORTATION	W AVENUE L AT 30TH ST	93536	HAZNET
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 / 300TH S	93536	HAZNET
LANCASTER	S107539974		ON NORTH 35TH STREET WEST AT A	93536	CDL
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
LANCASTER	S109441193	D & D WELDING	NWC AVENUE L I2 / 7TH ST E		NPDES
LANCASTER	S109461420	TRACT 060430	SE OF 37TH STREET WEST / AVE		NPDES
LANCASTER	S109460024	SUNSET LANDING	SE OF INTERSECTION OF 45 ST W	93536	NPDES
LOS ANGELES	S110736984	TRTP YARD 28 MATERIAL STORAGE	W AVENUE I AND 73RD ST	93536	NPDES
LOS ANGELES COUNTY	S107536741		85TH ST, W OF ALAMADA	0	CDL
LOS ANGELES COUNTY	S107532211		28.15 MI.MARKER ON ANGELES CRE	0	CDL
PALMDALE	S103678194	ILLEGAL DRUG LAB/OPERATOR UNKNOWN	AVENUE T, 175TH ST EAST	93536	HAZNET
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HW	93536	EMI
QUARTZ HILL	S103975334	LOS ANGELES COUNTY DEPT OF PUBLIC	4859 W AVENUE L 12	93536	HAZNET
QUARTZ HILL	S103957875	CNTY LOS ANGELES/RD 551	4859 W AVENUE L 12	93536	HAZNET
QUARTZ HILL	S106920975	JOE WALKER MIDDLE SCHOOL	5632 W AVENUE L 8	93536	EMI
QUARTZ HILL	S106920186	BURGER KING	4107 W AVENUE L	93536	EMI
QUARTZ HILL	S108432323	LACO RD 551 ROAD MAINTENANCE YARD	4859 W AVENUE L 12	93536	EMI
QUARTZ HILL	S110042892	HARSHFIELD TERRACE RETIREMENT HOUS	6709 W AVENUE M	93536	NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPAa??s Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/15/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 05/25/2010
Date Data Arrived at EDR: 06/02/2010
Date Made Active in Reports: 10/04/2010
Number of Days to Update: 124

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/07/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 11/04/2009
Date Data Arrived at EDR: 05/04/2010
Date Made Active in Reports: 07/07/2010
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 12/02/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 57

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/03/2011
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/01/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 12/29/2010
Date Data Arrived at EDR: 12/30/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 02/24/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 46

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/07/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 03/04/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 05/02/2011
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/18/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 51

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/21/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 30

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

Other Ascertainable Records

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2011
Date Data Arrived at EDR: 02/11/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/15/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 10/29/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 5

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/21/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 99

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/02/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/08/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/17/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 94

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/07/2011
Date Data Arrived at EDR: 01/21/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/11/2011
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/04/2011
Number of Days to Update: 29

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/15/2010
Date Data Arrived at EDR: 09/16/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 13

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/07/2010
Date Made Active in Reports: 08/12/2010
Number of Days to Update: 36

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/01/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 02/28/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/04/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/09/2010
Date Data Arrived at EDR: 08/11/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 9
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 04/26/2011
Number of Days to Update: 41

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 33

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 03/29/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COLUSA COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 12/01/2010
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/06/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/31/2011
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/25/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2011
Date Data Arrived at EDR: 02/09/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 23
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/18/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/12/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 30
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/26/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 22
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 04/25/2011
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/20/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/07/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/15/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 16

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/17/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 31

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 20

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 11/16/2010
Date Made Active in Reports: 01/25/2011
Number of Days to Update: 70

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/21/2010
Next Scheduled EDR Contact: 03/28/2011
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/16/2011
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/30/2011
Date Data Arrived at EDR: 03/31/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 22
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/22/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 29
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 36
Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/14/2011
Date Data Arrived at EDR: 03/15/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 9
Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/25/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 25
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/07/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 35
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/07/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/08/2011
Number of Days to Update: 28
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 30
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 01/25/2011
Date Data Arrived at EDR: 02/03/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 29
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16
Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/26/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/22/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 05/12/2011
Date Made Active in Reports: 05/24/2011
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/12/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/06/2011
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/19/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 38

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/06/2010
Date Made Active in Reports: 07/26/2010
Number of Days to Update: 20

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

APEX GREENWORKS
10
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.69110 - 34° 41' 28.0''
Longitude (West):	118.2859 - 118° 17' 9.2''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	382214.0
UTM Y (Meters):	3839343.8
Elevation:	2414 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

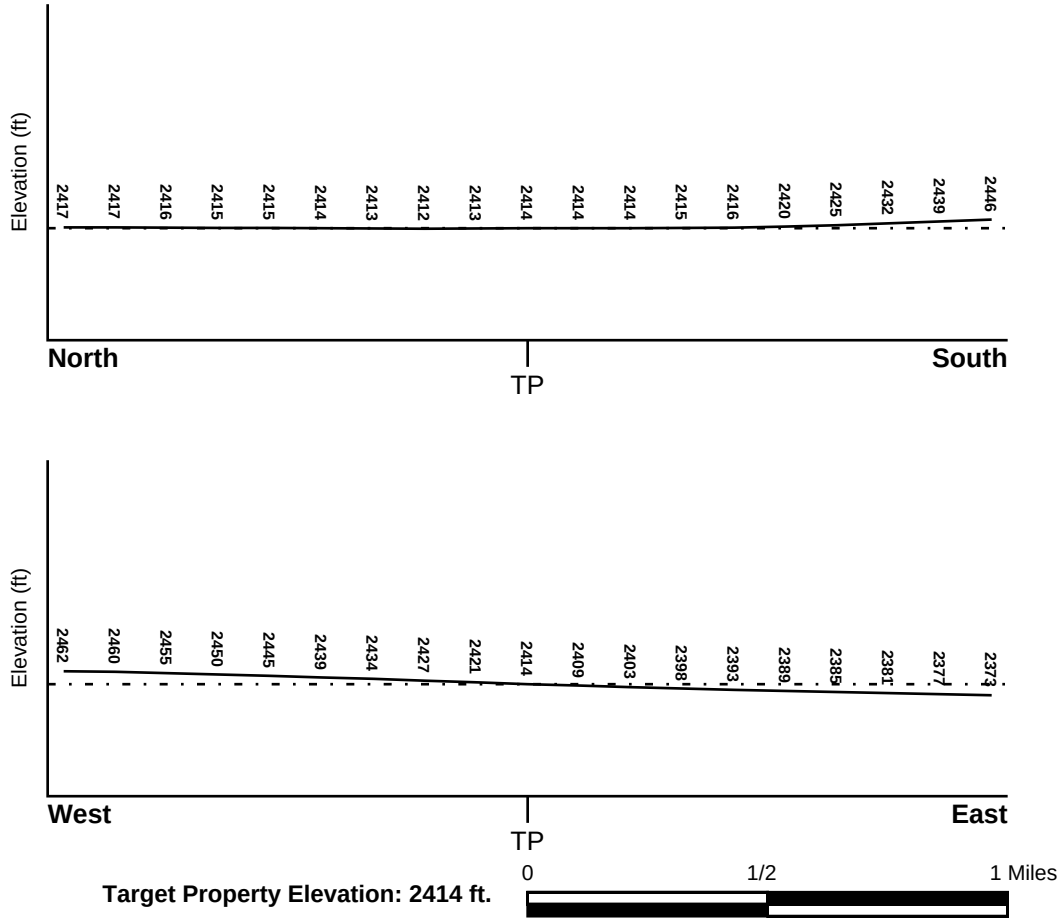
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General East

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
DEL SUR	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

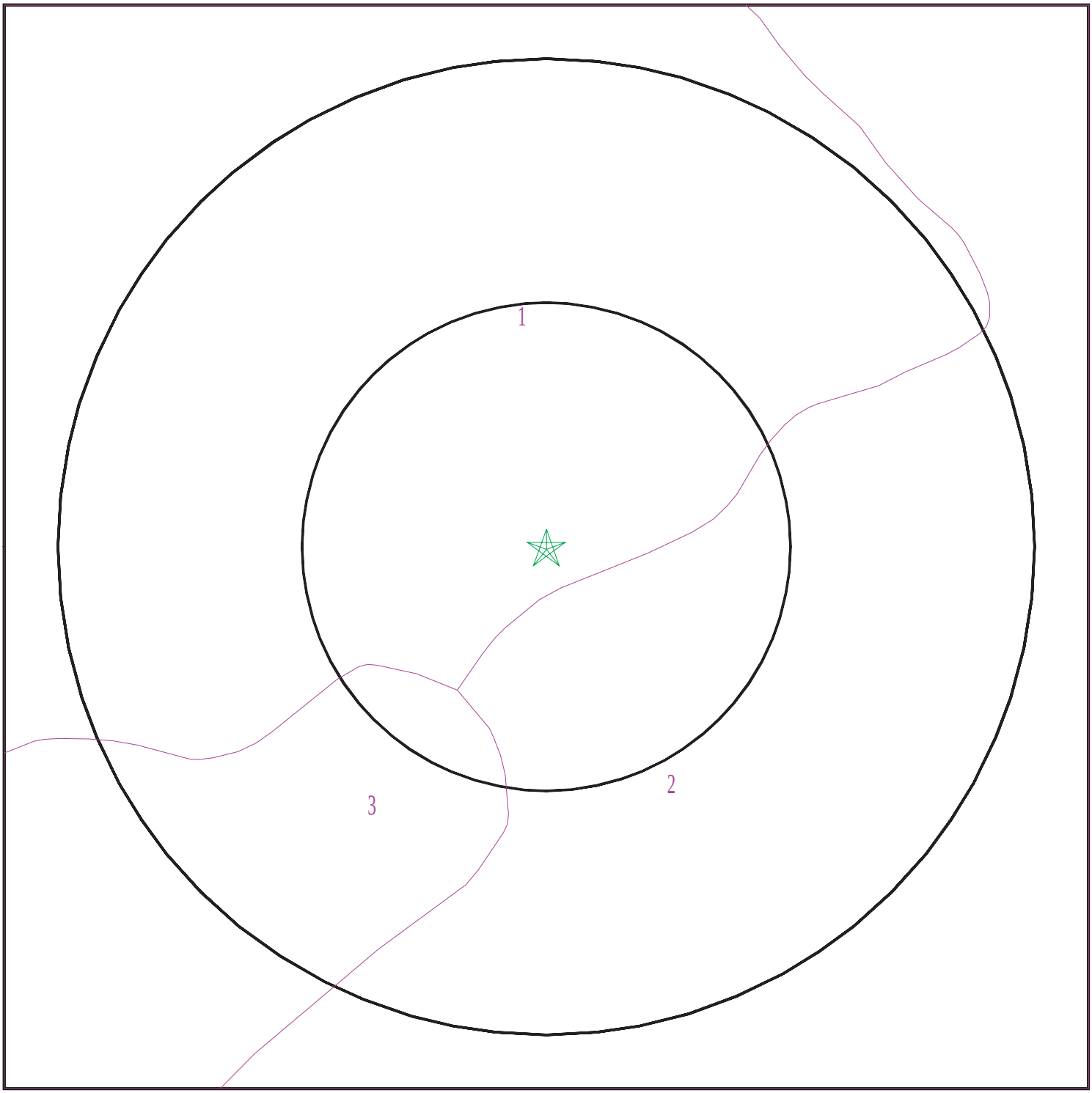
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3089735.135s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Apex Greenworks	CLIENT:	Tetra Tech Inc.
ADDRESS:	10 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.6911 / 118.2859	INQUIRY #:	3089735.135s
		DATE:	June 08, 2011 1:03 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 2

Soil Component Name: Sunrise

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	18 inches	31 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	31 inches	48 inches	cemented	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
4	48 inches	64 inches	stratified gravelly sandy loam to loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4

Soil Map ID: 3

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS3159401	1/8 - 1/4 Mile SSE
2	USGS3159603	1/8 - 1/4 Mile SSW
3	USGS3159402	1/8 - 1/4 Mile WSW
4	USGS3159592	1/4 - 1/2 Mile SSE
5	USGS3159429	1/4 - 1/2 Mile WSW
A6	USGS3159448	1/4 - 1/2 Mile West
C9	USGS3159598	1/4 - 1/2 Mile SW
D10	USGS3159281	1/4 - 1/2 Mile NNW
B11	USGS3159600	1/4 - 1/2 Mile ESE
D12	USGS3159289	1/4 - 1/2 Mile NNW
B13	USGS3159595	1/4 - 1/2 Mile SE
C14	USGS3159593	1/4 - 1/2 Mile SW
F18	USGS3159551	1/4 - 1/2 Mile SSW
E19	USGS3159589	1/4 - 1/2 Mile SW
F20	USGS3159552	1/4 - 1/2 Mile SSW
22	USGS3159417	1/2 - 1 Mile West
G24	USGS3159474	1/2 - 1 Mile ENE
25	USGS3159540	1/2 - 1 Mile SE
26	USGS3159500	1/2 - 1 Mile South
H27	USGS3159372	1/2 - 1 Mile NNW
H28	USGS3159371	1/2 - 1 Mile NNW
30	USGS3159297	1/2 - 1 Mile NE
I31	USGS3159512	1/2 - 1 Mile SSE
I32	USGS3159510	1/2 - 1 Mile SSE
J33	USGS3159403	1/2 - 1 Mile West
J34	USGS3159396	1/2 - 1 Mile West
K35	USGS3159376	1/2 - 1 Mile NNE
K36	USGS3159375	1/2 - 1 Mile NNE
L39	USGS3159700	1/2 - 1 Mile South
L40	USGS3159701	1/2 - 1 Mile South
43	USGS3159686	1/2 - 1 Mile South
M44	USGS3159581	1/2 - 1 Mile WSW
O46	USGS3159191	1/2 - 1 Mile North
N47	USGS3159509	1/2 - 1 Mile SE
P48	USGS3159192	1/2 - 1 Mile NNW
Q49	USGS3159558	1/2 - 1 Mile ESE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
O50	USGS3159196	1/2 - 1 Mile North
N51	USGS3159499	1/2 - 1 Mile SE
P55	USGS3159197	1/2 - 1 Mile NNW
Q56	USGS3159550	1/2 - 1 Mile ESE
R58	USGS3159190	1/2 - 1 Mile NNE
60	USGS3159660	1/2 - 1 Mile South
R61	USGS3159195	1/2 - 1 Mile NNE
S62	USGS3159211	1/2 - 1 Mile NNW
S63	USGS3159212	1/2 - 1 Mile NNW
65	USGS3159205	1/2 - 1 Mile NNW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

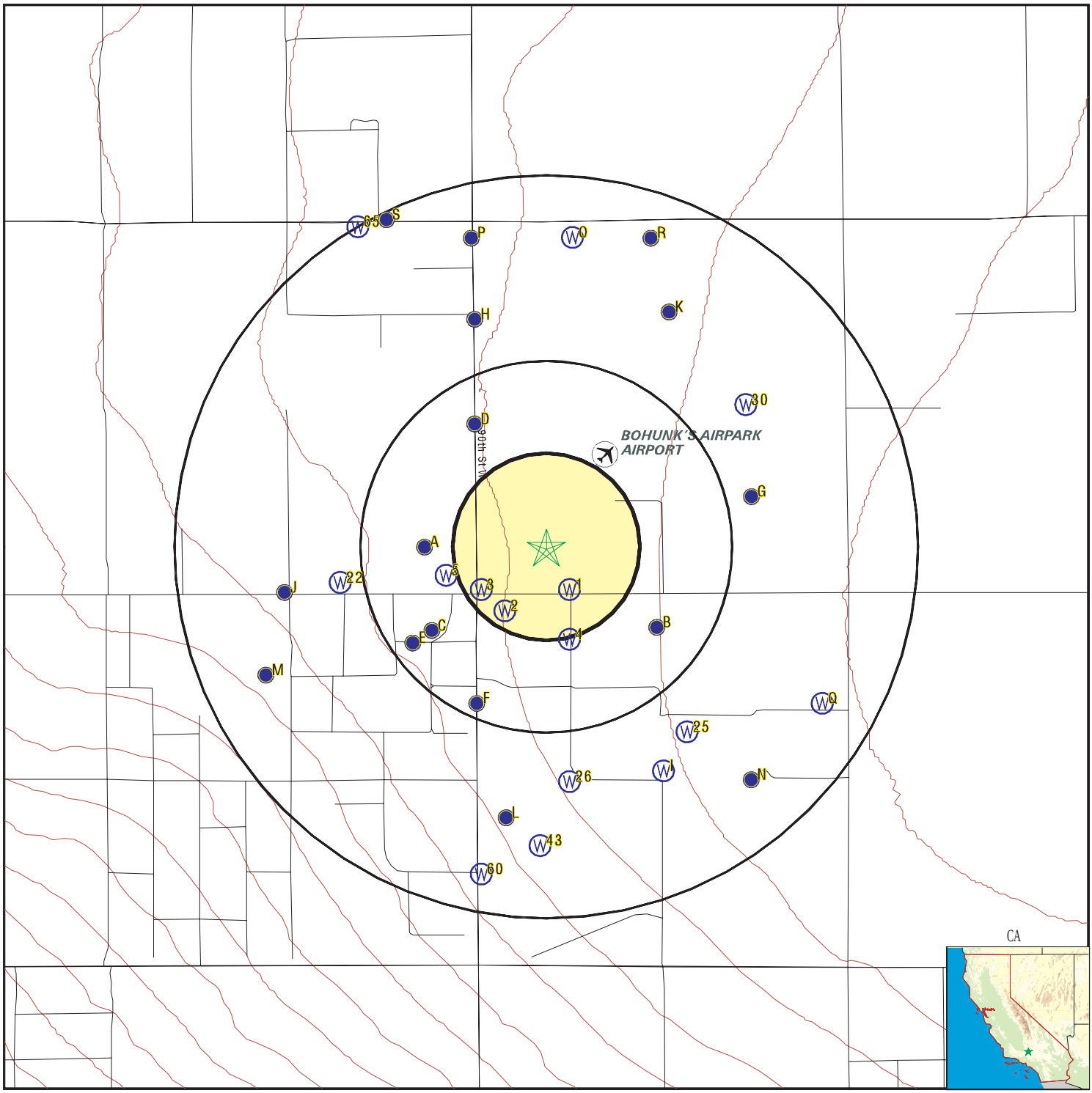
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
B7	CADW40000013849	1/4 - 1/2 Mile SE
A8	CADW40000013914	1/4 - 1/2 Mile West
D15	CADW40000013964	1/4 - 1/2 Mile NW
C16	CADW40000013852	1/4 - 1/2 Mile WSW
E17	CADW40000013835	1/4 - 1/2 Mile SW
F21	CADW40000013784	1/4 - 1/2 Mile SSW
G23	CADW40000013936	1/2 - 1 Mile ENE
H29	CADW40000014007	1/2 - 1 Mile NNW
K37	CADW40000014011	1/2 - 1 Mile NNE
K38	CADW40000014012	1/2 - 1 Mile NNE
J41	CADW40000013869	1/2 - 1 Mile West
L42	CADW40000013732	1/2 - 1 Mile SSW
N45	CADW40000013742	1/2 - 1 Mile SE
P52	CADW40000014042	1/2 - 1 Mile NNW
M53	CADW40000013802	1/2 - 1 Mile WSW
R54	CADW40000014043	1/2 - 1 Mile NNE
P57	CADW40000014046	1/2 - 1 Mile NNW
R59	CADW40000014047	1/2 - 1 Mile NNE
S64	CADW40000014058	1/2 - 1 Mile NNW

PHYSICAL SETTING SOURCE MAP - 3089735.135s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: Apex Greenworks	CLIENT: Tetra Tech Inc.
ADDRESS: 10	CONTACT: Garret Bean
Lancaster CA 93536	INQUIRY #: 3089735.135s
LAT/LONG: 34.6911 / 118.2859	DATE: June 08, 2011 1:03 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
SSE **FED USGS** **USGS3159401**
1/8 - 1/4 Mile
Lower

Agency cd:	USGS	Site no:	344122118170201
Site name:	007N013W17P001S		
Latitude:	344122	EDR Site id:	USGS3159401
Longitude:	1181702	Dec lat:	34.68942919
Dec lon:	-118.28479917	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2408.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	19280101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

2
SSW **FED USGS** **USGS3159603**
1/8 - 1/4 Mile
Higher

Agency cd:	USGS	Site no:	344119118171301
Site name:	007N013W20Z002S		
Latitude:	344119	EDR Site id:	USGS3159603
Longitude:	1181713	Dec lat:	34.68859589
Dec lon:	-118.28785483	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2415.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18900101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	560	Hole depth:	560
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

3
WSW **FED USGS** **USGS3159402**
1/8 - 1/4 Mile
Higher

Agency cd:	USGS	Site no:	344122118171701
Site name:	007N013W17N001S		
Latitude:	344122	EDR Site id:	USGS3159402
Longitude:	1181717	Dec lat:	34.68942918
Dec lon:	-118.28896597	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2422.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19521210
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	602	Hole depth:	602
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

4
SSE **FED USGS** **USGS3159592**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	344115118170201
Site name:	007N013W20C001S		
Latitude:	344115	EDR Site id:	USGS3159592
Longitude:	1181702	Dec lat:	34.68748482
Dec lon:	-118.28479918	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2409.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19350101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

5
WSW **FED USGS** **USGS3159429**
1/4 - 1/2 Mile
Higher

Agency cd:	USGS	Site no:	344124118172301
Site name:	007N013W18R003S		
Latitude:	344124	EDR Site id:	USGS3159429
Longitude:	1181723	Dec lat:	34.68998471
Dec lon:	-118.29063268	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2426.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

A6
West
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159448**

Agency cd:	USGS	Site no:	344128118172501
Site name:	007N013W18R001S		
Latitude:	344128	EDR Site id:	USGS3159448
Longitude:	1181725	Dec lat:	34.69109578
Dec lon:	-118.29118825	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-28	Ground water data end date:	1963-05-28
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-28	266.18	

Note: The site had been pumped recently.

B7
SE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000013849**

Longitude:	-118.2804
Latiude:	34.6878
Stwellno:	07N13W20B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013849

A8
West
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000013914**

Longitude:	-118.2912
Latiude:	34.6911
Stwellno:	07N13W18R001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013914

C9
SW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159598**

Agency cd:	USGS	Site no:	344117118172401
Site name:	007N013W19A001S		
Latitude:	344117	EDR Site id:	USGS3159598
Longitude:	1181724	Dec lat:	34.68804035
Dec lon:	-118.29091048	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2424.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19300101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-10-23	Ground water data end date:	1963-05-28
Ground water data count:	13		

Ground-water levels, Number of Measurements: 13

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-28	223.45		1963-04-01	219.20	
1962-11-07	210.70		1962-04-06	217.50	
1961-10-17	213.10		1960-10-24	204.90	
1960-03-07	193.50		1959-11-10	204.00	
1959-03-19	206.70		1958-11-28	194.70	
1958-03-12	184.70		1957-11-12	198.70	
1957-10-23	201.00				

D10
NNW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159281**

Agency cd:	USGS	Site no:	344145118171701
Site name:	007N013W17M001S		
Latitude:	344145	EDR Site id:	USGS3159281
Longitude:	1181717	Dec lat:	34.69581781
Dec lon:	-118.28896593	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19550125
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	601	Hole depth:	601
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1955-08-30	Ground water data end date:	1961-10-24
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1961-10-24	223.20		1960-09-16	258.00	
1959-10-25	244.40		1956-10-10	227.40	
1955-08-30	229.00				

Note: The site was being pumped.

B11
ESE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3159600**

Agency cd:	USGS	Site no:	344118118164601
Site name:	007N013W20B001S		
Latitude:	344118	EDR Site id:	USGS3159600
Longitude:	1181646	Dec lat:	34.68831813
Dec lon:	-118.28035459	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2398.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	307	Hole depth:	307
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

D12
NNW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159289**

Agency cd:	USGS	Site no:	344146118171701
Site name:	007N013W17M002S		
Latitude:	344146	EDR Site id:	USGS3159289
Longitude:	1181717	Dec lat:	34.69609557
Dec lon:	-118.28896593	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

B13
SE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3159595**

Agency cd:	USGS	Site no:	344116118164601
Site name:	007N013W20B002S		
Latitude:	344116	EDR Site id:	USGS3159595
Longitude:	1181646	Dec lat:	34.6877626
Dec lon:	-118.2803546	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2398.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19560101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-04-09	Ground water data end date:	1956-04-09
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1956-04-09	168.60	

Note: The site was being pumped.

C14
SW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159593**

Agency cd:	USGS	Site no:	344115118172501
Site name:	007N013W19A004S		
Latitude:	344115	EDR Site id:	USGS3159593
Longitude:	1181725	Dec lat:	34.68748481
Dec lon:	-118.29118827	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2427.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18900101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	75.0	Hole depth:	75.0
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1908-01-01	Ground water data end date:	1908-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1908-01-01	59.00	

D15
NW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000013964**

Longitude:	-118.289
Latiude:	34.6958
Stwellno:	07N13W17M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013964

C16
WSW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000013852**

Longitude:	-118.2909
Latiude:	34.688
Stwellno:	07N13W19A001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013852

E17
SW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000013835**

Longitude:	-118.2912
Latiude:	34.6875
Stwellno:	07N13W19A004S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013835

F18
SSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159551**

Agency cd:	USGS	Site no:	344106118171601
Site name:	007N013W20E002S		
Latitude:	344106	EDR Site id:	USGS3159551
Longitude:	1181716	Dec lat:	34.68498492
Dec lon:	-118.28868821	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2424.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19560201
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	605	Hole depth:	605
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-06-13	Ground water data end date:	1956-06-13
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1956-06-13	274.35	

E19
SW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159589**

Agency cd:	USGS	Site no:	344114118172901
Site name:	007N013W19A002S		
Latitude:	344114	EDR Site id:	USGS3159589
Longitude:	1181729	Dec lat:	34.68720705
Dec lon:	-118.29229942	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19510101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

F20
SSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159552**

Agency cd:	USGS	Site no:	344106118171801
Site name:	007N013W20E001S		
Latitude:	344106	EDR Site id:	USGS3159552
Longitude:	1181718	Dec lat:	34.68498492
Dec lon:	-118.28924378	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2425.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19320101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

F21
SSW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000013784**

Longitude:	-118.2887
Latiude:	34.685
Stwellno:	07N13W20E002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013784

22
West
1/2 - 1 Mile
Higher

FED USGS **USGS3159417**

Agency cd:	USGS	Site no:	344123118174101
Site name:	007N013W18Q003S		
Latitude:	344123	EDR Site id:	USGS3159417
Longitude:	1181741	Dec lat:	34.68970694
Dec lon:	-118.29563284	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2441.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

G23
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000013936**

Longitude:	-118.2753
Latiude:	34.6931
Stwellno:	07N13W17Z002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013936

G24
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3159474**

Agency cd:	USGS	Site no:	344135118163101
Site name:	007N013W17Z002S		
Latitude:	344135	EDR Site id:	USGS3159474
Longitude:	1181631	Dec lat:	34.69304016
Dec lon:	-118.27618777	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2389.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18900101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	300	Hole depth:	300
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1908-01-01	Ground water data end date:	1908-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1908-01-01	30.00	

25
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159540**

Agency cd:	USGS	Site no:	344102118164201
Site name:	007N013W20G003S		
Latitude:	344102	EDR Site id:	USGS3159540
Longitude:	1181642	Dec lat:	34.68387387
Dec lon:	-118.27924348	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2396.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	0.5	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

26
South
1/2 - 1 Mile
Higher

FED USGS **USGS3159500**

Agency cd:	USGS	Site no:	344055118170201
Site name:	007N013W20F001S		
Latitude:	344055	EDR Site id:	USGS3159500
Longitude:	1181702	Dec lat:	34.6819295
Dec lon:	-118.28479922	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2413.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19290301
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	455	Hole depth:	455
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

H27
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159372**

Agency cd:	USGS	Site no:	344200118171702
Site name:	007N013W17E002S		
Latitude:	344200	EDR Site id:	USGS3159372
Longitude:	1181717	Dec lat:	34.6999843
Dec lon:	-118.2889659	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19620101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	540	Hole depth:	540
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

H28
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159371**

Agency cd:	USGS	Site no:	344200118171701
Site name:	007N013W17E001S		
Latitude:	344200	EDR Site id:	USGS3159371
Longitude:	1181717	Dec lat:	34.6999843
Dec lon:	-118.2889659	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1949-00-00	Ground water data end date:	1956-00-00
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956	260.00				
Note: The site was being pumped.					
1955	248.00				
Note: The site was being pumped.					
1953	228.00				
Note: The site was being pumped.					
1950	200.00				
Note: The site was being pumped.					
1949	190.00				
Note: The site was being pumped.					

H29
NNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014007**

Longitude:	-118.289
Latiude:	34.7
Stwellno:	07N13W17E001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014007

30
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159297**

Agency cd:	USGS	Site no:	344148118163201
Site name:	007N013W17Z001S		
Latitude:	344148	EDR Site id:	USGS3159297
Longitude:	1181632	Dec lat:	34.69665113
Dec lon:	-118.27646553	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2391.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

I31
SSE **FED USGS** **USGS3159512**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344057118164601
Site name:	007N013W20G002S		
Latitude:	344057	EDR Site id:	USGS3159512
Longitude:	1181646	Dec lat:	34.68248504
Dec lon:	-118.28035463	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2400.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19481101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

I32
SSE **FED USGS** **USGS3159510**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344056118164601
Site name:	007N013W20G001S		
Latitude:	344056	EDR Site id:	USGS3159510
Longitude:	1181646	Dec lat:	34.68220727
Dec lon:	-118.28035463	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2400.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	111	Hole depth:	111
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

J33
West
1/2 - 1 Mile
Higher

FED USGS **USGS3159403**

Agency cd:	USGS	Site no:	344122118174901
Site name:	007N013W18Q001S		
Latitude:	344122	EDR Site id:	USGS3159403
Longitude:	1181749	Dec lat:	34.68942917
Dec lon:	-118.29785514	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2450.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-28	Ground water data end date:	1963-05-28
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-28	235.58	

J34
West
1/2 - 1 Mile
Higher

FED USGS **USGS3159396**

Agency cd:	USGS	Site no:	344121118175001
Site name:	007N013W18Q002S		
Latitude:	344121	EDR Site id:	USGS3159396
Longitude:	1181750	Dec lat:	34.6891514
Dec lon:	-118.29813293	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2450.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	200	Hole depth:	200
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

K35
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3159376**

Agency cd:	USGS	Site no:	344201118164502
Site name:	007N013W17Z004S		
Latitude:	344201	EDR Site id:	USGS3159376
Longitude:	1181645	Dec lat:	34.70026208
Dec lon:	-118.28007673	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2401.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	600	Hole depth:	600
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1920-01-01	Ground water data end date:	1920-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1920-01-01	23.00	

K36
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3159375**

Agency cd:	USGS	Site no:	344201118164501
Site name:	007N013W17Z003S		
Latitude:	344201	EDR Site id:	USGS3159375
Longitude:	1181645	Dec lat:	34.70026208
Dec lon:	-118.28007673	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2401.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	270	Hole depth:	270
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1920-01-01	Ground water data end date:	1920-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1920-01-01	27.00	

K37
NNE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014011**

Longitude:	-118.2792
Latiude:	34.7003
Stwellno:	07N13W17Z003S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014011

K38
NNE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014012**

Longitude:	-118.2792
Latiude:	34.7003
Stwellno:	07N13W17Z004S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014012

L39
South
1/2 - 1 Mile
Higher

FED USGS **USGS3159700**

Agency cd:	USGS	Site no:	344050118171101
Site name:	007N013W20M002S		
Latitude:	344050	EDR Site id:	USGS3159700
Longitude:	1181711	Dec lat:	34.68054066
Dec lon:	-118.28729931	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2435.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19620701
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	350	Hole depth:	350
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

L40
South
1/2 - 1 Mile
Higher

FED USGS **USGS3159701**

Agency cd:	USGS	Site no:	344050118171201
Site name:	007N013W20M001S		
Latitude:	344050	EDR Site id:	USGS3159701
Longitude:	1181712	Dec lat:	34.68054066
Dec lon:	-118.28757709	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2432.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19500101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	256	Hole depth:	256
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-10-23	Ground water data end date:	1961-10-17
Ground water data count:	3		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1961-10-17	208.80		1961-04-03	204.80	
1957-10-23	210.80				

J41
West
1/2 - 1 Mile
Higher

CA WELLS **CADW40000013869**

Longitude:	-118.2979
Latiude:	34.6894
Stwellno:	07N13W18Q001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013869

L42
SSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000013732**

Longitude:	-118.2876
Latiude:	34.6805
Stwellno:	07N13W20M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013732

43
South
1/2 - 1 Mile
Higher

FED USGS **USGS3159686**

Agency cd:	USGS	Site no:	344046118170701
Site name:	007N013W20M004S		
Latitude:	344046	EDR Site id:	USGS3159686
Longitude:	1181707	Dec lat:	34.6794296
Dec lon:	-118.28618817	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2447.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	153	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

M44
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3159581**

Agency cd:	USGS	Site no:	344111118175701
Site name:	007N013W19D001S		
Latitude:	344110	EDR Site id:	USGS3159581
Longitude:	1181752	Dec lat:	34.68609597
Dec lon:	-118.29868852	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2470.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19520815
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	driller		
Project number:	9479335800		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1973-05-15
Water quality data end date:	1992-08-04	Water quality data count:	17
Ground water data begin date:	1952-08-13	Ground water data end date:	1963-05-13
Ground water data count:	20		

Ground-water levels, Number of Measurements: 20

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-13	278.00		1963-04-01	269.00	
1963-03-05	262.00		1963-02-01	257.00	
1963-01-02	258.00		1962-12-03	268.00	
1962-11-02	272.00		1962-10-01	278.00	
1962-09-04	276.00		1962-08-06	277.00	
1962-05-17	269.00		1962-04-02	244.00	
1962-03-01	244.00		1962-02-02	248.00	
1962-01-03	249.60		1961-10-06	272.00	
1961-09-13	272.00		1961-08-03	272.00	
1956-09	237.00		1952-08-13	160.00	

N45
SE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000013742**

Longitude:	-118.2759
Latiude:	34.6819
Stwellno:	07N13W20H001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013742

O46
North
1/2 - 1 Mile
Higher

FED USGS **USGS3159191**

Agency cd:	USGS	Site no:	344211118170201
Site name:	007N013W17C001S		
Latitude:	344211	EDR Site id:	USGS3159191
Longitude:	1181702	Dec lat:	34.70303974
Dec lon:	-118.28479908	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2412.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19000101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

N47
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159509**

Agency cd:	USGS	Site no:	344056118163001
Site name:	007N013W20H002S		
Latitude:	344056	EDR Site id:	USGS3159509
Longitude:	1181630	Dec lat:	34.68220728
Dec lon:	-118.27591005	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2388.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

P48
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159192**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency cd:	USGS	Site no:	344211118171701
Site name:	007N013W17D002S		
Latitude:	344211	EDR Site id:	USGS3159192
Longitude:	1181717	Dec lat:	34.70303973
Dec lon:	-118.28896588	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2421.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	19450806
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	505	Hole depth:	505
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1945-08-06	Ground water data end date:	1965-11-09
Ground water data count:	26		

Ground-water levels, Number of Measurements: 26

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1965-11-09	225.24				
1963-04-04	247.20				
Note: The site had been pumped recently.					
1963-04-01	247.70		1962-11-07	216.30	
1962-08-02	228.50				
Note: The site had been pumped recently.					
1962-04-09	228.50		1961-10-19	204.10	
1961-04-05	217.40		1960-11-21	207.00	
1960-10-24	223.60		1960-04-12	216.50	
1959-10-21	214.00		1959-03-19	197.20	
1958-11-28	193.70		1958-11-13	196.70	
1958-06	285.00				
Note: The site was being pumped.					
1958-03-12	177.00		1957-11-12	190.70	
1957-03-08	183.60		1956-11-28	184.70	
1956	284.00				
Note: The site was being pumped.					
1954	271.00				
Note: The site was being pumped.					
1952	255.00				
Note: The site was being pumped.					
1948	197.00				
Note: The site was being pumped.					

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1947	179.00				
Note: The site was being pumped.					
1945-08-06	144.00				

Q49
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS3159558**

Agency cd:	USGS	Site no:	344107118161901
Site name:	007N013W20H004S		
Latitude:	344107	EDR Site id:	USGS3159558
Longitude:	1181619	Dec lat:	34.68526271
Dec lon:	-118.27285438	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2379.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19300101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	240	Hole depth:	240
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

O50
North
1/2 - 1 Mile
Higher

FED USGS **USGS3159196**

Agency cd:	USGS	Site no:	344212118170101
Site name:	007N013W17C002S		
Latitude:	344212	EDR Site id:	USGS3159196
Longitude:	1181701	Dec lat:	34.70331751
Dec lon:	-118.28452129	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2412.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19000101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	414	Hole depth:	414
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

N51
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159499**

Agency cd:	USGS	Site no:	344055118163001
Site name:	007N013W20H001S		
Latitude:	344055	EDR Site id:	USGS3159499
Longitude:	1181630	Dec lat:	34.68192951
Dec lon:	-118.27591005	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2388.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-06-13	Ground water data end date:	1963-06-13
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-06-13	91.80	

P52
NNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014042**

Longitude:	-118.289
Latiude:	34.703
Stwellno:	07N13W17D002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014042

M53
WSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000013802**

Longitude:	-118.2987
Latiude:	34.6861
Stwellno:	07N13W19D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013802

R54
NNE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014043**

Longitude:	-118.2806
Latiude:	34.703
Stwellno:	07N13W17B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014043

P55
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159197**

Agency cd:	USGS	Site no:	344212118171701
Site name:	007N013W17D001S		
Latitude:	344212	EDR Site id:	USGS3159197
Longitude:	1181717	Dec lat:	34.7033175
Dec lon:	-118.28896588	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2420.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	162	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1927-00-00	Ground water data end date:	1957-10-29
Ground water data count:	24		

Ground-water levels, Number of Measurements: 24

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1957-10-29	156.5		1956-11-21	157.90	
1955-10-24	161.55		1955-05-18	153.89	
1954-11-15	155.30		1954-03-26	146.90	
1953-12-01	152.20		1952-11-20	147.10	
1951-12-07	144.00		1950-11-28	138.50	
1950-01-04	135.40		1948-11-30	124.10	
1947-12-09	113.50		1945-11-13	107.10	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1945-03-05	93.40		1944-12-06	99.60	
1941-12-02	95.80		1941-04-25	99.50	
1940-12-05	95.90		1940-03-13	91.50	
1939-11-17	98.70		1939-03-08	84.40	
1937-11-09	91.50		1927	55.00	

Q56
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS3159550**

Agency cd:	USGS	Site no:	344105118161901
Site name:	007N013W20H003S		
Latitude:	344105	EDR Site id:	USGS3159550
Longitude:	1181619	Dec lat:	34.68470718
Dec lon:	-118.27285438	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2379.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

P57
NNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014046**

Longitude:	-118.289
Latiude:	34.7033
Stwellno:	07N13W17D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014046

R58
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3159190**

Agency cd:	USGS	Site no:	344211118164701
Site name:	007N013W17B002S		
Latitude:	344211	EDR Site id:	USGS3159190
Longitude:	1181647	Dec lat:	34.70303975
Dec lon:	-118.28063228	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2402.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19480101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	606	Hole depth:	606
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1953-10-01	Ground water data end date:	1956-05-07
Ground water data count:	4		

Ground-water levels, Number of Measurements: 4

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956-05-07	217.00		1955-06-17	227.90	
1954-10-15	197.20		1953-10-01	200.00	

R59
NNE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014047**

Longitude:	-118.2804
Latiude:	34.7033
Stwellno:	07N13W17B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014047

60
South
1/2 - 1 Mile
Higher

FED USGS **USGS3159660**

Agency cd:	USGS	Site no:	344042118171701
Site name:	007N013W20M003S		
Latitude:	344042	EDR Site id:	USGS3159660
Longitude:	1181717	Dec lat:	34.67831853
Dec lon:	-118.28896604	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2449.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

R61
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3159195**

Agency cd:	USGS	Site no:	344212118164601
Site name:	007N013W17B001S		
Latitude:	344212	EDR Site id:	USGS3159195
Longitude:	1181646	Dec lat:	34.70331751
Dec lon:	-118.2803545	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2401.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19191222
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	502	Hole depth:	502
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1919-12-22	Ground water data end date:	1919-12-22
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1919-12-22	38.00	

S62
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159211**

Agency cd:	USGS	Site no:	344214118173101
Site name:	007N013W07R001S		
Latitude:	344214	EDR Site id:	USGS3159211
Longitude:	1181731	Dec lat:	34.70387302
Dec lon:	-118.29285489	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19460606
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-09-15	Ground water data end date:	1957-06-10
Ground water data count:	3		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1957-06-10	232.00		1952-04-12	210.00	
1946-09-15	163.00				

S63
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159212**

Agency cd:	USGS	Site no:	344214118173401
Site name:	007N013W07R002S		
Latitude:	344214	EDR Site id:	USGS3159212
Longitude:	1181734	Dec lat:	34.70387302
Dec lon:	-118.29368825	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2431.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
S64 **NNW** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CADW40000014058**

Longitude:	-118.2929
Latiude:	34.7039
Stwellno:	07N13W07R001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014058

	Database	EDR ID Number
65 **NNW** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS3159205**

Agency cd:	USGS	Site no:	344213118173801
Site name:	007N013W18B001S		
Latitude:	344213	EDR Site id:	USGS3159205
Longitude:	1181738	Dec lat:	34.70359525
Dec lon:	-118.2947994	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2434.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	700	Hole depth:	700
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-10-00	Ground water data end date:	1956-10-00
Ground water data count:	6		

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel
1956-10	205.00	
1951-10	175.00	
1948-10	165.00	
1953-10	185.00	
1950-10	170.00	
1946-10	160.00	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Apex Greenworks
10
Lancaster, CA 93536

Inquiry Number: 3089735.136
June 08, 2011

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
Apex Greenworks
10
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089735.136

Contact: Garret Bean

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Tetra Tech Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Apex Greenworks
Address: 10
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 10
Certification # CF69-4065-B63F

Sanborn® Library search results
Certification # CF69-4065-B63F

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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Central Antelope Dry Farm Ranch
11
Lancaster, CA 93536

Inquiry Number: 3089735.144
June 08, 2011

EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
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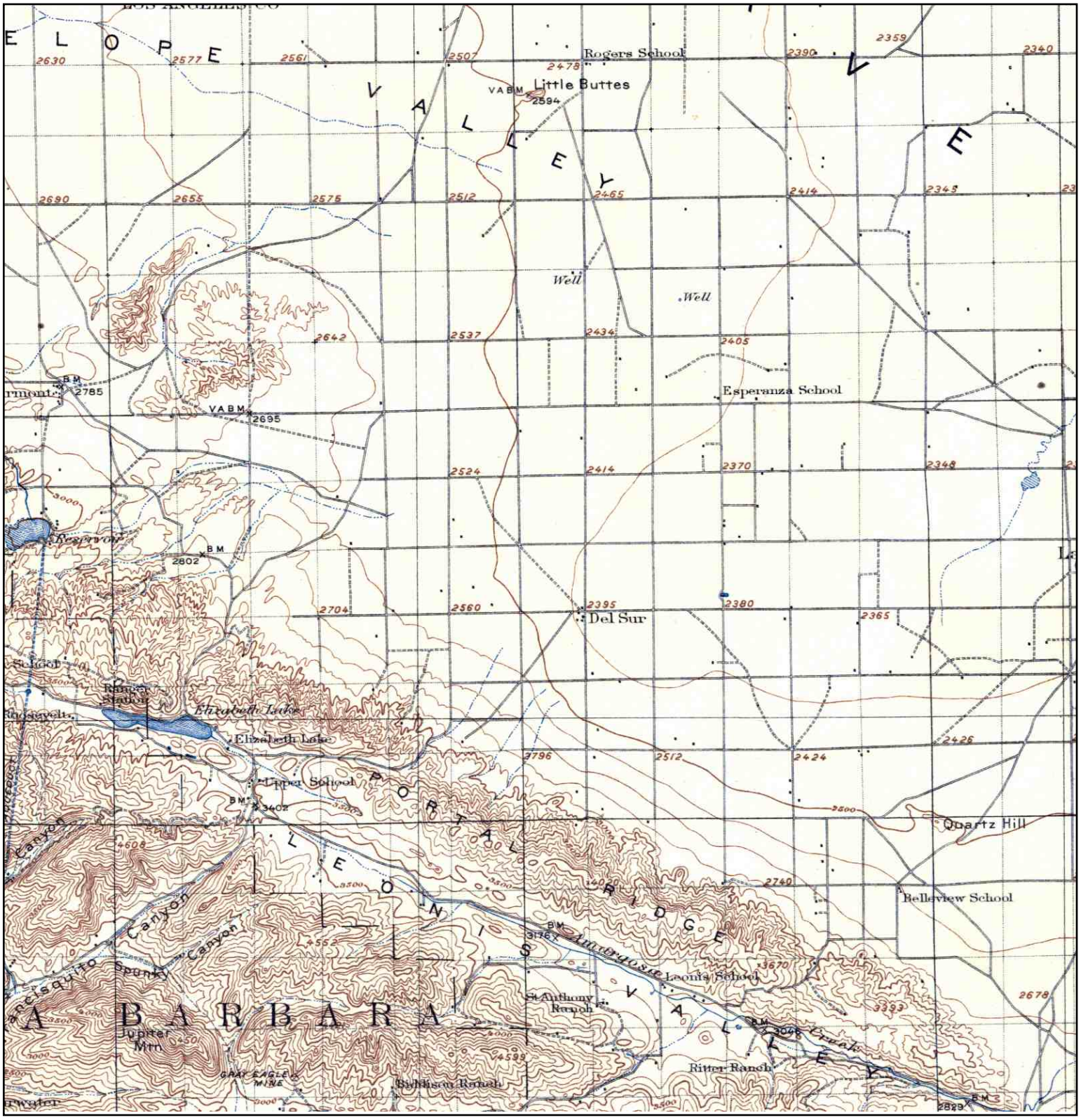
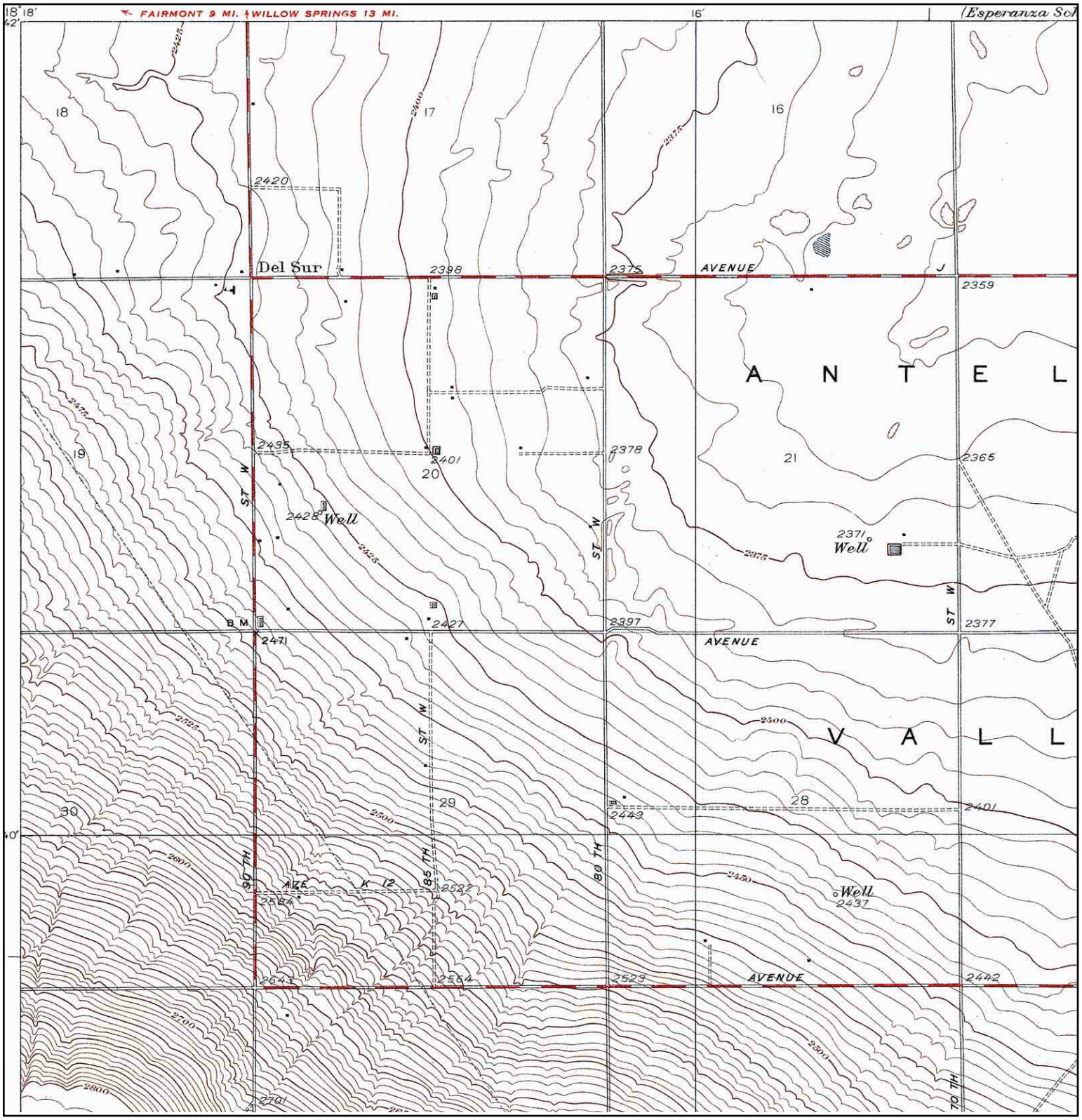
Historical Topographic Map



N	TARGET QUAD					
	NAME:	ELIZABETH LAKE	SITE NAME:	Central Antelope Dry Farm Ranch	CLIENT:	Tetra Tech Inc.
	MAP YEAR:	1917	ADDRESS:	11 Lancaster, CA 93536	CONTACT:	Garret Bean
	SERIES:	30	LAT/LONG:	34.6989 / -118.2997	INQUIRY#:	3089735.144
	SCALE:	1:125000			RESEARCH DATE:	06/08/2011

Historical Topographic Map

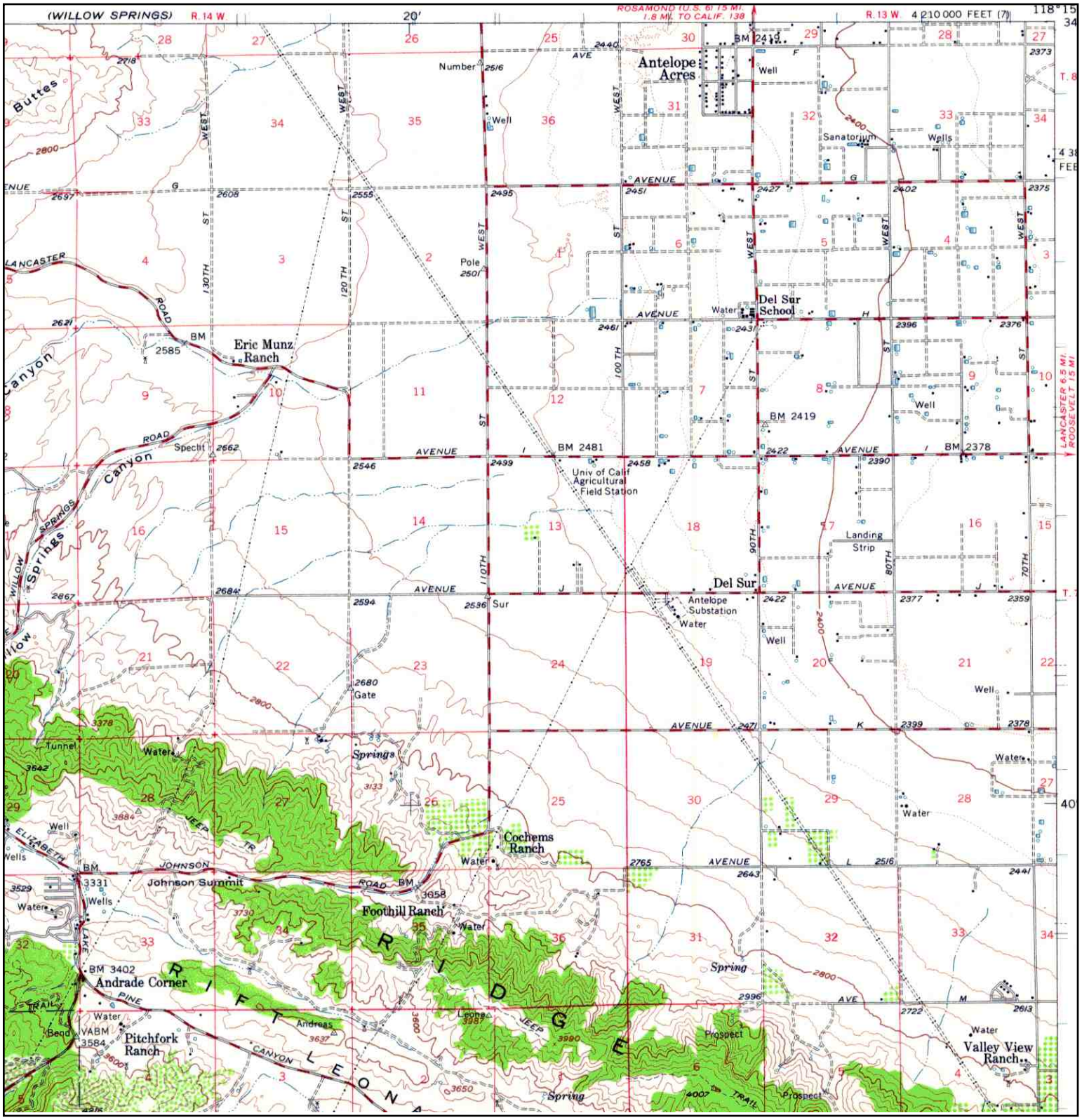


N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1936 SERIES: 6 SCALE: 1:24000	SITE NAME: Central Antelope Dry Farm Ranch ADDRESS: 11 Lancaster, CA 93536 LAT/LONG: 34.6989 / -118.2997	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.144 RESEARCH DATE: 06/08/2011

Historical Topographic Map

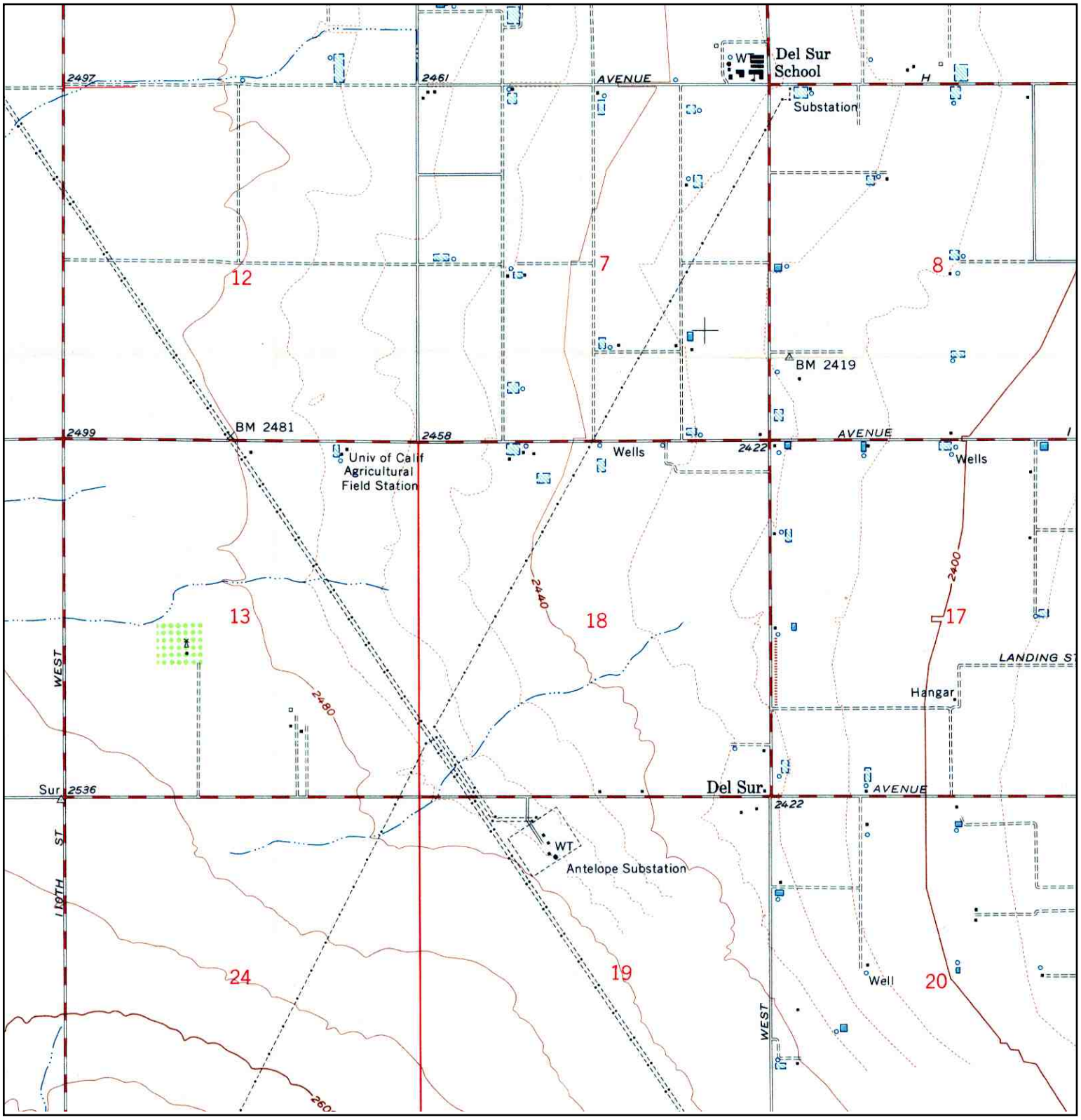
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1951 REVISED:1936 SERIES: 6 SCALE: 1:24000	SITE NAME: Central Antelope Dry Farm Ranch ADDRESS: 11 Lancaster, CA 93536 LAT/LONG: 34.6989 / -118.2997	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.144 RESEARCH DATE: 06/08/2011

Historical Topographic Map



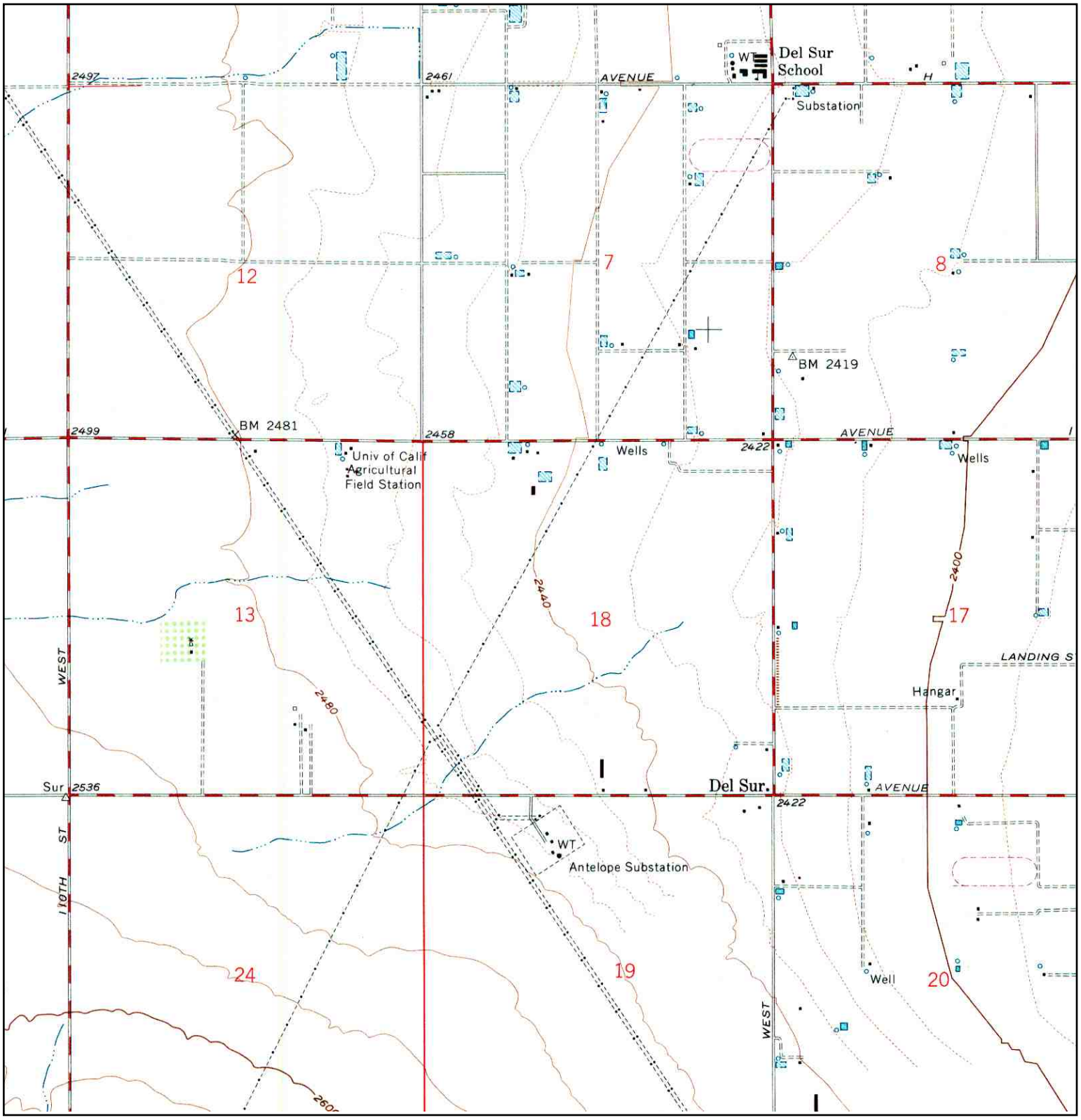
N	**TARGET QUAD**		
	NAME: BOUQUET RESERVOIR	SITE NAME: Central Antelope Dry Farm Ranch	CLIENT: Tetra Tech Inc.
	MAP YEAR: 1958	ADDRESS: 11 Lancaster, CA 93536	CONTACT: Garret Bean
			INQUIRY#: 3089735.144
	SERIES: 15	LAT/LONG: 34.6989 / -118.2997	RESEARCH DATE: 06/08/2011
	SCALE: 1:62500		

Historical Topographic Map



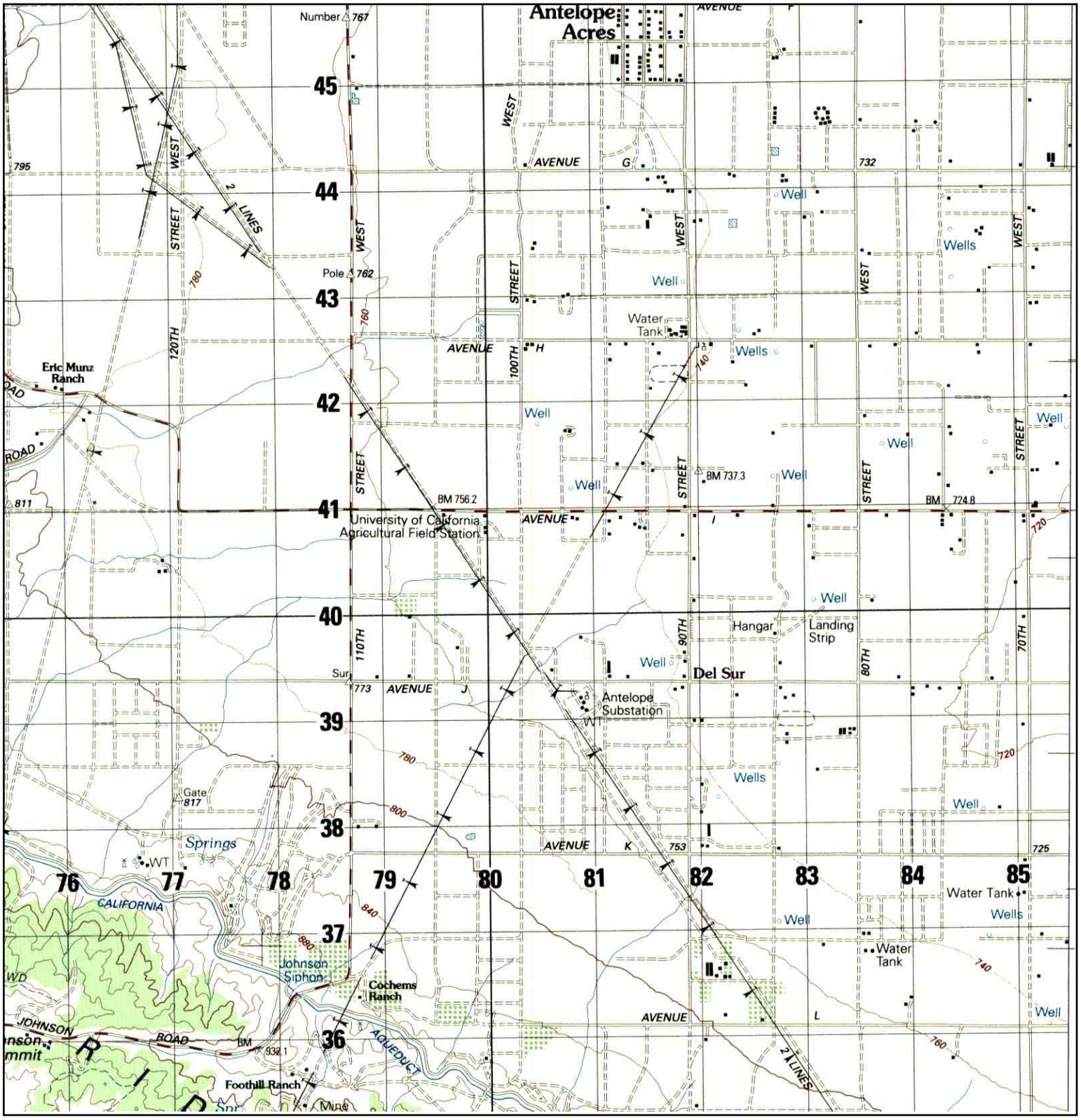
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Central Antelope Dry Farm Ranch ADDRESS: 11 Lancaster, CA 93536 LAT/LONG: 34.6989 / -118.2997	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.144 RESEARCH DATE: 06/08/2011

Historical Topographic Map



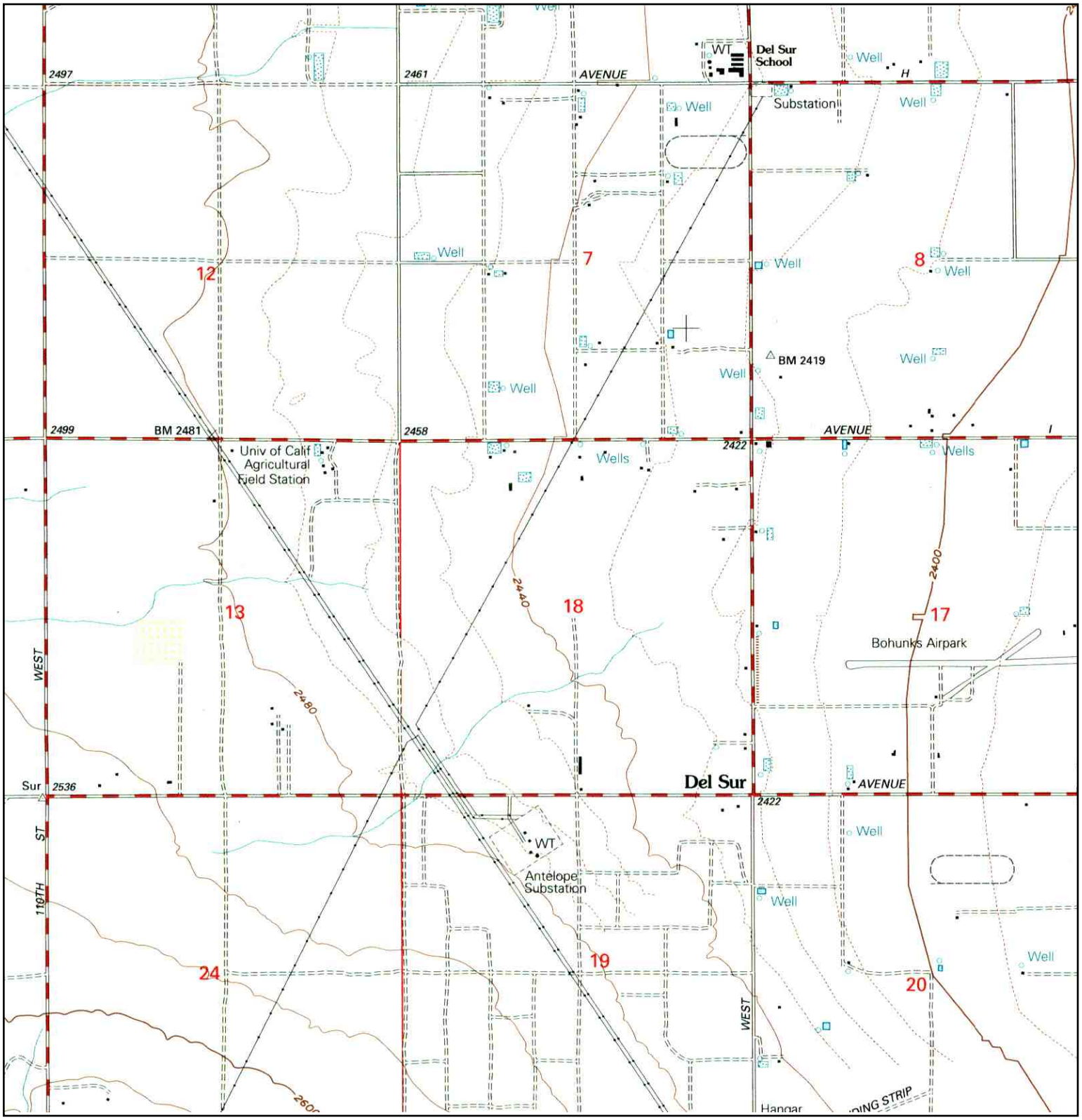
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1974 PHOTOREVISED:1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Central Antelope Dry Farm Ranch ADDRESS: 11 Lancaster, CA 93536 LAT/LONG: 34.6989 / -118.2997	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.144 RESEARCH DATE: 06/08/2011

Historical Topographic Map



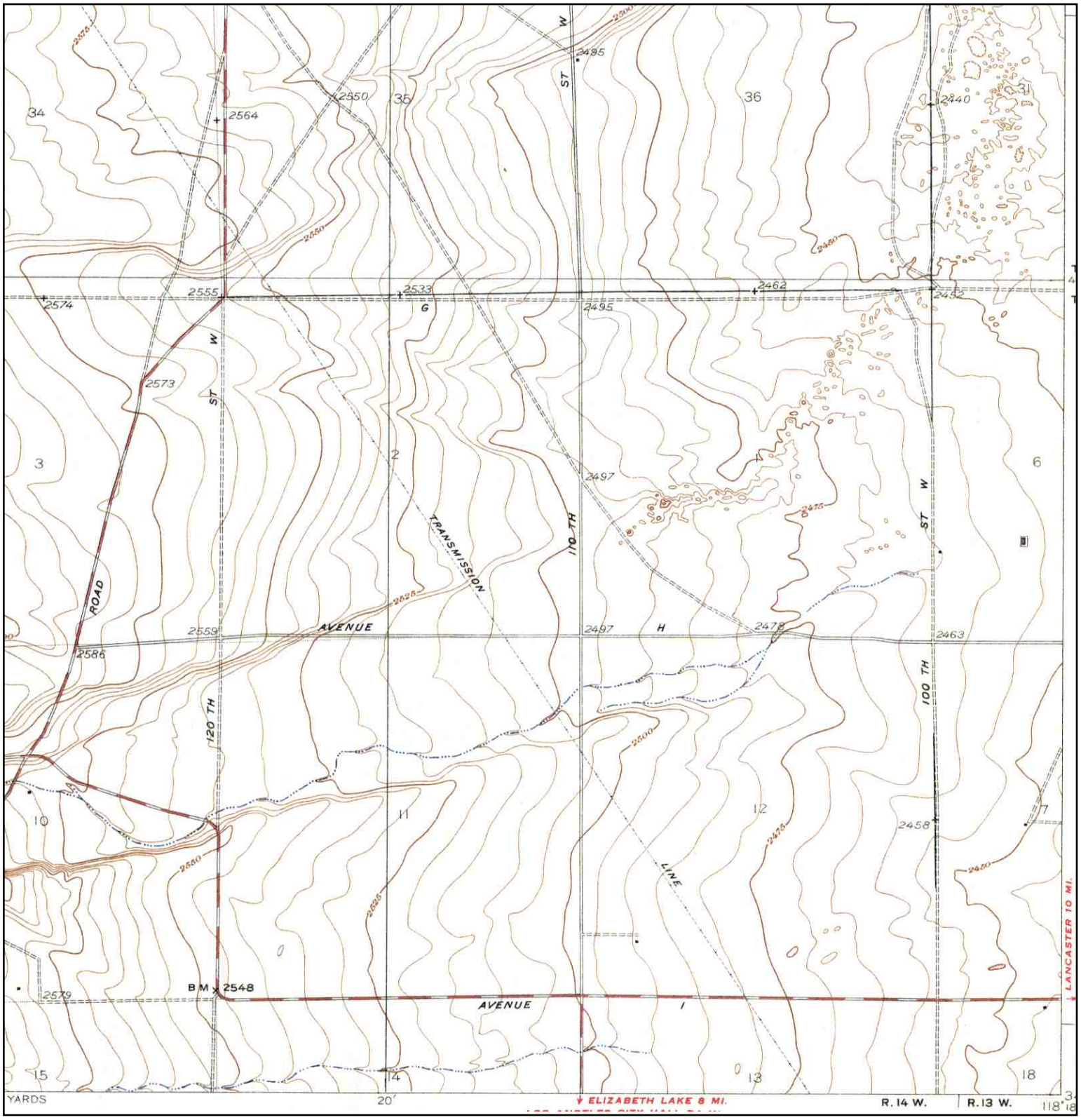
N	TARGET QUAD NAME: BOUQUET RESERVOIR MAP YEAR: 1987 SERIES: 15 SCALE: 1:50000	SITE NAME: Central Antelope Dry Farm Ranch ADDRESS: 11 Lancaster, CA 93536 LAT/LONG: 34.6989 / -118.2997	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.144 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1995 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Central Antelope Dry Farm Ranch ADDRESS: 11 Lancaster, CA 93536 LAT/LONG: 34.6989 / -118.2997	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.144 RESEARCH DATE: 06/08/2011

Historical Topographic Map

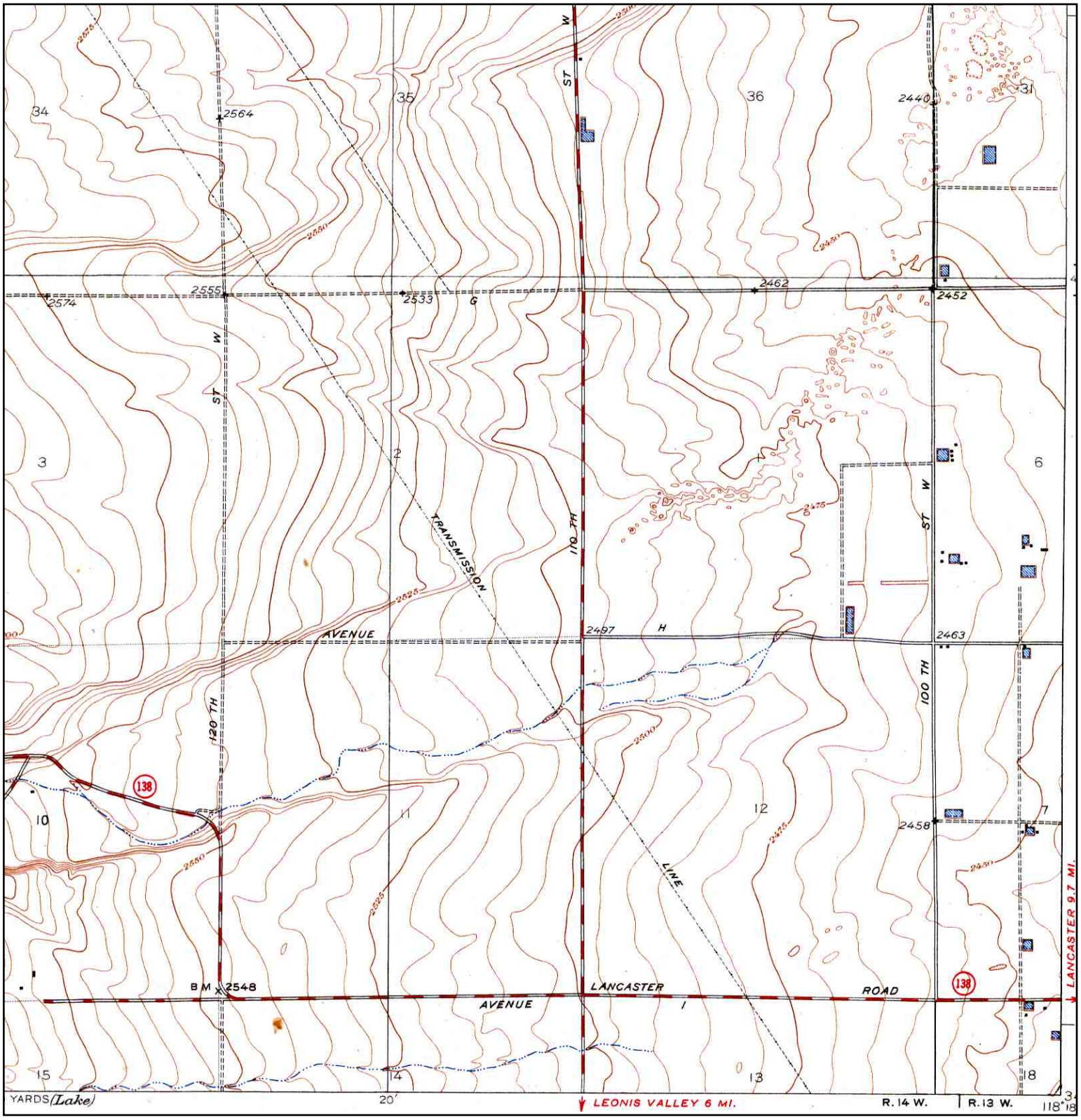


N	ADJOINING QUAD NAME: LITTLE BUTTES MAP YEAR: 1934 SERIES: 6 SCALE: 1:24000	SITE NAME: Central Antelope Dry Farm Ranch ADDRESS: 11 Lancaster, CA 93536 LAT/LONG: 34.6989 / -118.2997	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.144 RESEARCH DATE: 06/08/2011

Historical Topographic Map

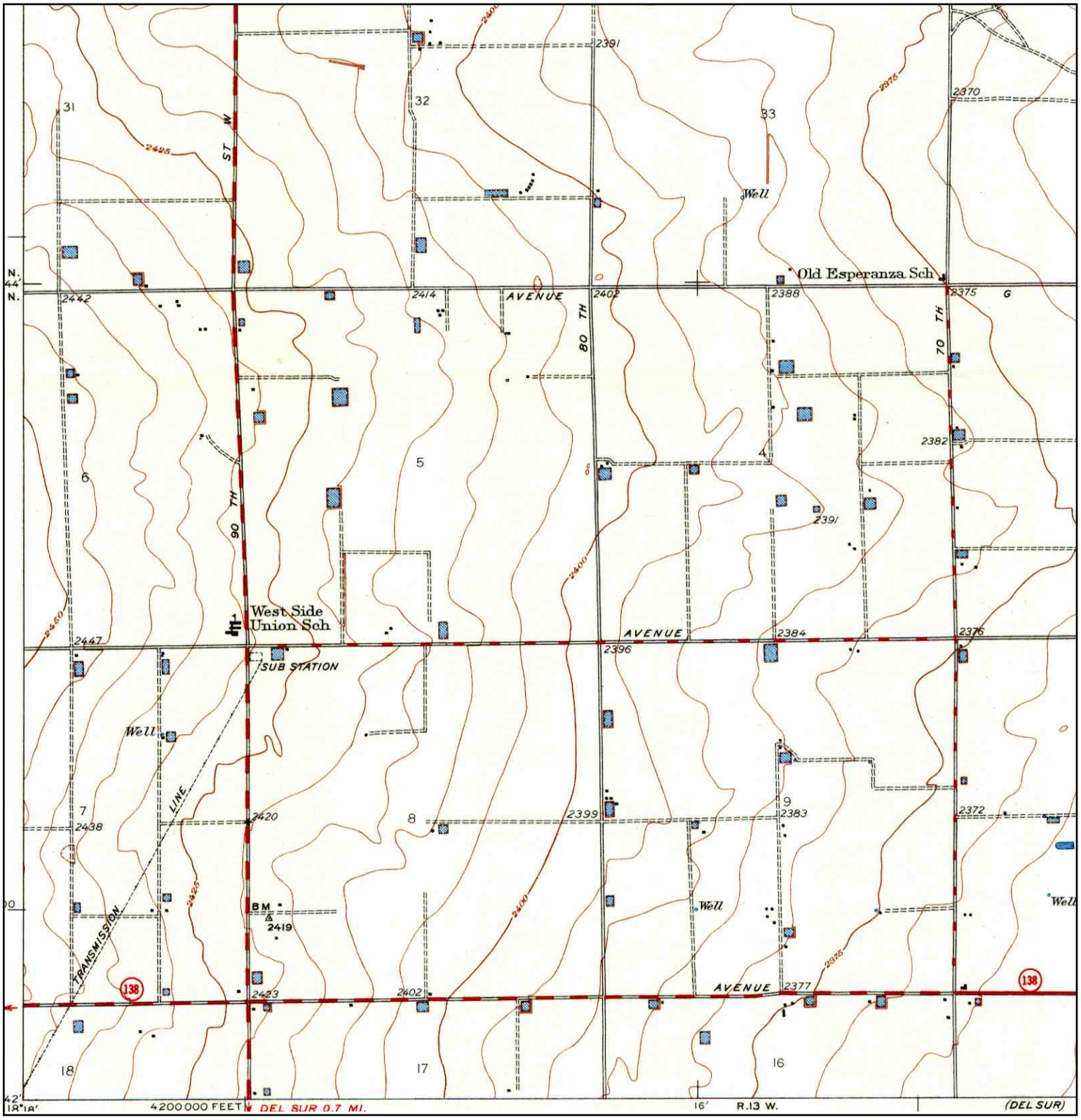
N	ADJOINING QUAD NAME: LAKE MAP YEAR: 1937 SERIES: 6 SCALE: 1:24000	SITE NAME: Central Antelope Dry Farm Ranch ADDRESS: 11 Lancaster, CA 93536 LAT/LONG: 34.6989 / -118.2997	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.144 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	ADJOINING QUAD NAME: LITTLE BUTTES MAP YEAR: 1951 REVISED:1934 SERIES: 6 SCALE: 1:24000	SITE NAME: Central Antelope Dry Farm Ranch ADDRESS: 11 Lancaster, CA 93536 LAT/LONG: 34.6989 / -118.2997	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.144 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	ADJOINING QUAD NAME: ESPERANZA SCHOOL MAP YEAR: 1951 SERIES: 6 SCALE: 1:24000	SITE NAME: Central Antelope Dry Farm Ranch ADDRESS: 11 Lancaster, CA 93536 LAT/LONG: 34.6989 / -118.2997	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.144 RESEARCH DATE: 06/08/2011

Central Antelope Dry Farm Ranch
11
Lancaster, CA 93536

Inquiry Number: 3089735.142s
June 08, 2011

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

11
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.698900 - 34° 41' 56.0''
Longitude (West):	118.299700 - 118° 17' 58.9''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	380961.1
UTM Y (Meters):	3840225.0
Elevation:	2440 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
SLIC ---------- Statewide SLIC Cases

INDIAN LUST - Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST - Active UST Facilities
AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - Underground Storage Tanks on Indian Land
FEMA UST - Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP - Voluntary Cleanup Program Properties
INDIAN VCP - Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI - Open Dump Inventory
DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT - Waste Management Unit Database
SWRCY - Recycler Database
HAULERS - Registered Waste Tire Haulers Listing
INDIAN ODI - Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL - Clandestine Drug Labs
HIST Cal-Sites - Historical Calsites Database
SCH - School Property Evaluation Program
Toxic Pits - Toxic Pits Cleanup Act Sites
AOCONCERN - San Gabriel Valley Areas of Concern
US HIST CDL - National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST - Facility Inventory Database

Local Land Records

LIENS 2 - CERCLA Lien Information
LUCIS - Land Use Control Information System
LIENS - Environmental Liens Listing
DEED - Deed Restriction Listing

Records of Emergency Release Reports

HMIRS - Hazardous Materials Information Reporting System
CHMIRS - California Hazardous Material Incident Report System
LDS - Land Disposal Sites Listing

MCS Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen RCRA - Non Generators
DOT OPS Incident and Accident Data
DOD Department of Defense Sites
FUDS Formerly Used Defense Sites
CONSENT Superfund (CERCLA) Consent Decrees
ROD Records Of Decision
UMTRA Uranium Mill Tailings Sites
MINES Mines Master Index File
TRIS Toxic Chemical Release Inventory System
TSCA Toxic Substances Control Act
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
SSTS Section 7 Tracking Systems
ICIS Integrated Compliance Information System
PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database
FINDS Facility Index System/Facility Registry System
RAATS RCRA Administrative Action Tracking System
CA BOND EXP. PLAN Bond Expenditure Plan
NPDES NPDES Permits Listing
WDS Waste Discharge System
Cortese "Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE Hazardous Waste & Substance Site List
Notify 65 Proposition 65 Records
LA Co. Site Mitigation Site Mitigation List
DRYCLEANERS Cleaner Facilities
WIP Well Investigation Program Case List
LOS ANGELES CO. HMS HMS: Street Number List
HAZNET Facility and Manifest Data
EMI Emissions Inventory Data
INDIAN RESERV Indian Reservations
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
FINANCIAL ASSURANCE Financial Assurance Information Listing
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
PROC Certified Processors Database
MWMP Medical Waste Management Program Listing
COAL ASH DOE Sleam-Electric Plan Operation Data

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants EDR Proprietary Manufactured Gas Plants
EDR Historical Auto Stations EDR Proprietary Historic Gas Stations
EDR Historical Cleaners EDR Proprietary Historic Dry Cleaners

EXECUTIVE SUMMARY

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

CDL: A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

A review of the CDL list, as provided by EDR, and dated 12/31/2010 has revealed that there is 1 CDL site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
Not reported	9626 WEST AVE I	N 1/4 - 1/2 (0.335 mi.)	1	8

Local Lists of Registered Storage Tanks

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1 HIST UST site within approximately 0.75 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ANTELOPE SUBSTATION	9364 W AVENUE J	SSE 1/2 - 1 (0.693 mi.)	A2	8

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.75 miles of the target property.

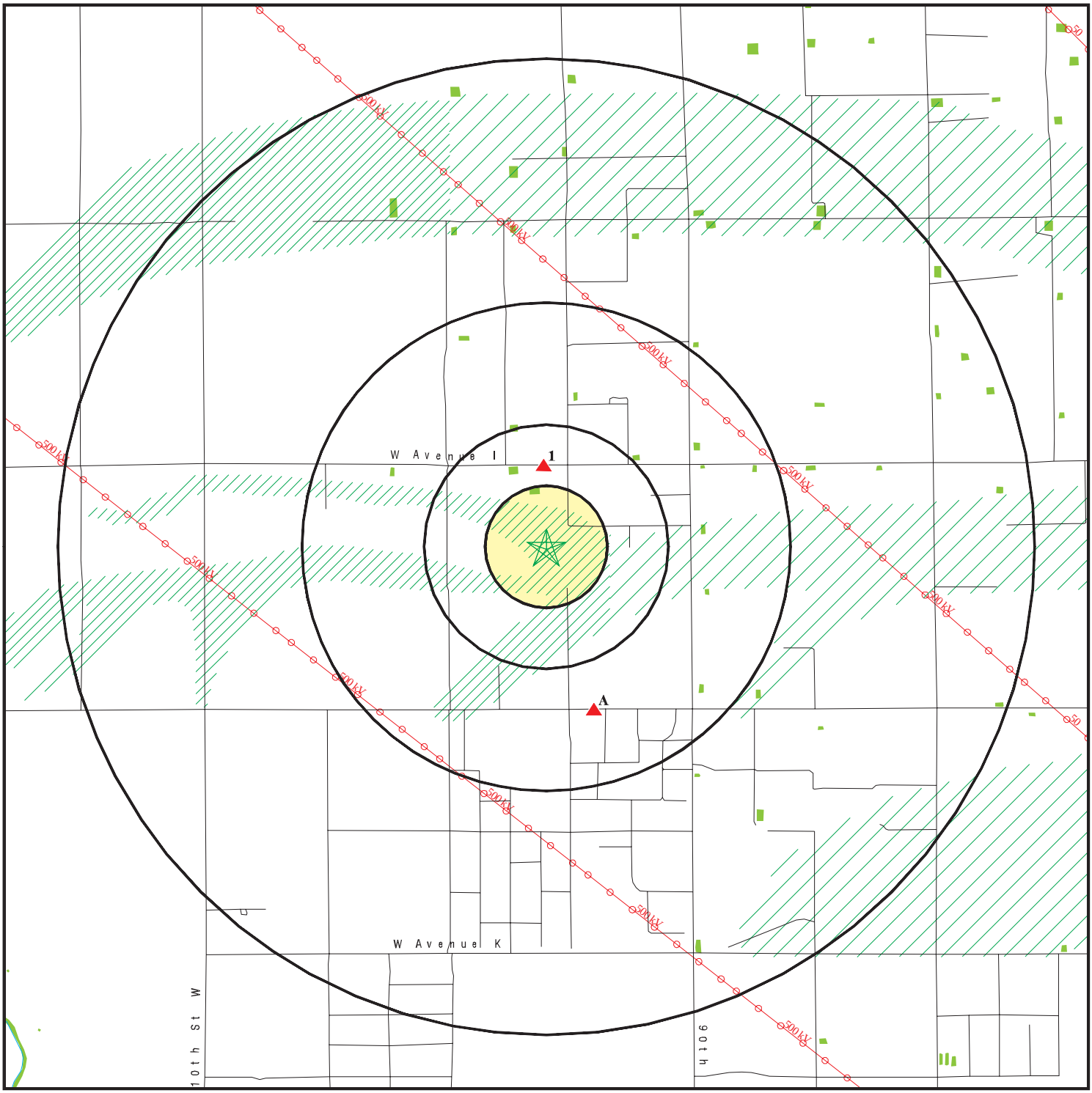
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SOUTHERN CALIFORNIA EDISON CO	***9364 W AVE J***	***SSE 1/2 - 1 (0.693 mi.)***	***A3***	***8***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 20 records.

Site Name	Database(s)
AVE E ETAL	NPDES
TEHACHAPI RENEWABLE TRANSMISSION P	HAZNET,NPDES
CAL MAT	SWEEPS UST
RETLAW WEST RANCH	FID,SWEEPS UST
DALES AUTO CLINIC & FARM	FID,SWEEPS UST
STEVEN KOSTECKY	FID,SWEEPS UST
28.15 MI.MARKER ON ANGELES CRE	CDL
90TH E / AVE J	AST
5 MI NW OF HWY 138 & 300TH ST	AST
OSO PUMPING PLANT	HAZNET
ILLEGAL DRUG LAB/OPERATOR UNKNOWN	HAZNET
LOS ANGELES COUNTY DEPT OF PUBLIC	HAZNET
CNTY LOS ANGELES/RD 551	HAZNET
SOARING VISTA RANCH COMPOSTING	WDS
INVESTIGATIONS-AREA4	HMS LOS ANGELES
ANTELOPE VALLEY AGGREGATE, INC.	MINES
3995 AVENUE H W	CDL
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
CASTA DWR- CHECK SITE 59	EMI

OVERVIEW MAP - 3089735.142s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Central Antelope Dry Farm Ranch ADDRESS: 11 Lancaster CA 93536 LAT/LONG: 34.6989 / 118.2997	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.142s DATE: June 08, 2011 1:02 pm

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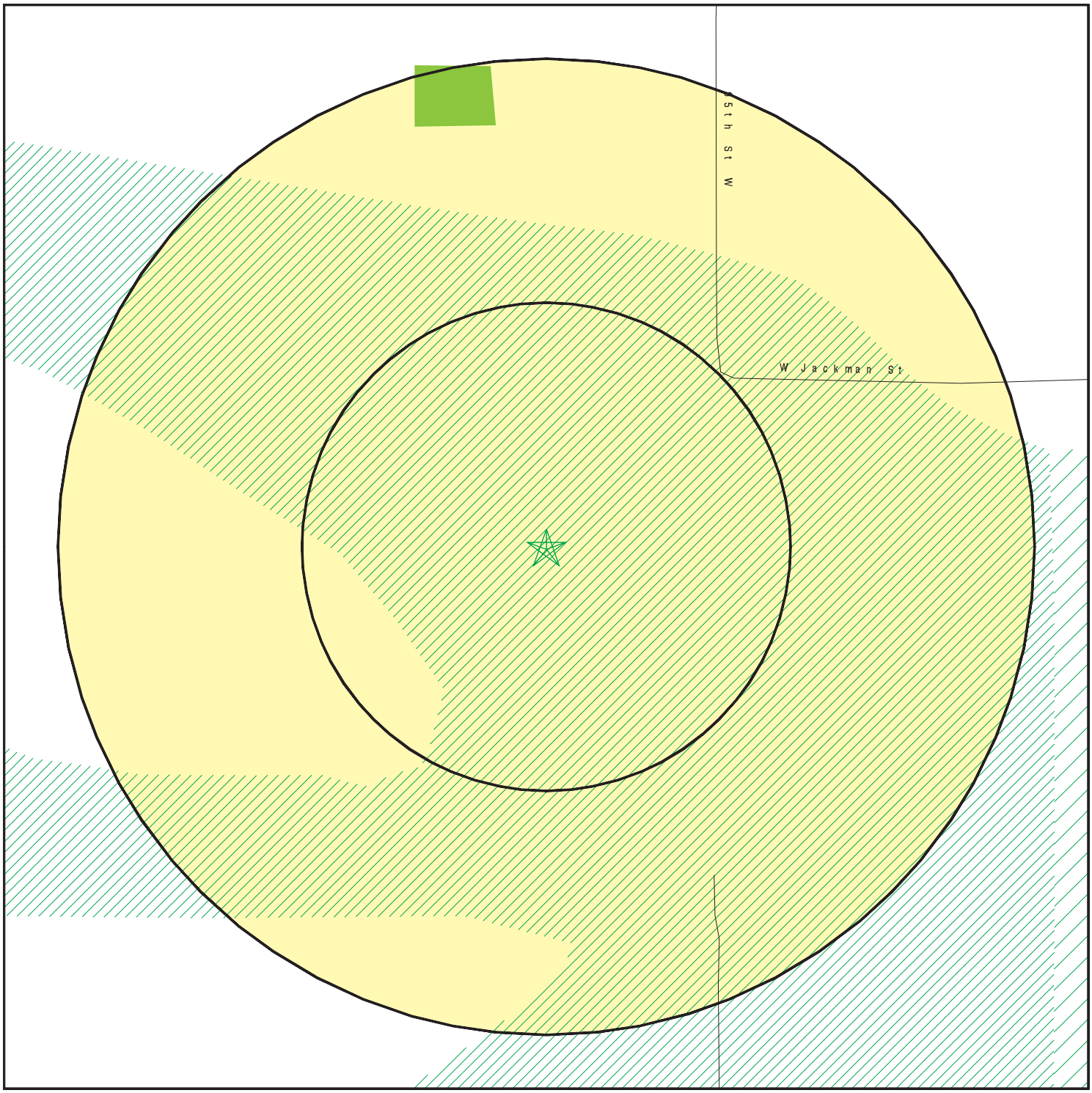
DETAIL MAP - 3089735.142s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Central Antelope Dry Farm Ranch ADDRESS: 11 Lancaster CA 93536 LAT/LONG: 34.6989 / 118.2997	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.142s DATE: June 08, 2011 1:04 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.500	0	0	0	0	0	0
Proposed NPL		1.500	0	0	0	0	0	0
NPL LIENS		0.500	0	0	0	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.500	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		1.000	0	0	0	0	NR	0
FEDERAL FACILITY		1.500	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		1.000	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.500	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		1.000	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.750	0	0	0	0	NR	0
RCRA-SQG		0.750	0	0	0	0	NR	0
RCRA-CESQG		0.750	0	0	0	0	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		1.000	0	0	0	0	NR	0
US INST CONTROL		1.000	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.500	0	0	0	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.500	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.500	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		1.000	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		1.000	0	0	0	0	NR	0
SLIC		1.000	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST		1.000	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.750	0	0	0	0	NR	0
AST		0.750	0	0	0	0	NR	0
INDIAN UST		0.750	0	0	0	0	NR	0
FEMA UST		0.750	0	0	0	0	NR	0
State and tribal voluntary cleanup sites								
VCP		1.000	0	0	0	0	NR	0
INDIAN VCP		1.000	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		1.000	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		1.000	0	0	0	0	NR	0
DEBRIS REGION 9		1.000	0	0	0	0	NR	0
WMUDS/SWAT		1.000	0	0	0	0	NR	0
SWRCY		1.000	0	0	0	0	NR	0
HAULERS		0.500	0	0	0	NR	NR	0
INDIAN ODI		1.000	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.500	0	0	0	NR	NR	0
HIST Cal-Sites		1.500	0	0	0	0	0	0
SCH		0.750	0	0	0	0	NR	0
Toxic Pits		1.500	0	0	0	0	0	0
AOCONCERN		1.500	0	0	0	0	0	0
CDL		0.500	0	0	1	NR	NR	1
US HIST CDL		0.500	0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.750	0	0	0	0	NR	0
HIST UST		0.750	0	0	0	1	NR	1
SWEEPS UST		0.750	0	0	0	1	NR	1
Local Land Records								
LIENS 2		0.500	0	0	0	NR	NR	0
LUCIS		1.000	0	0	0	0	NR	0
LIENS		0.500	0	0	0	NR	NR	0
DEED		1.000	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.500	0	0	0	NR	NR	0
CHMIRS		0.500	0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS		0.500	0	0	0	NR	NR	0
MCS		0.500	0	0	0	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.750	0	0	0	0	NR	0
DOT OPS		0.500	0	0	0	NR	NR	0
DOD		1.500	0	0	0	0	0	0
FUDS		1.500	0	0	0	0	0	0
CONSENT		1.500	0	0	0	0	0	0
ROD		1.500	0	0	0	0	0	0
UMTRA		1.000	0	0	0	0	NR	0
MINES		0.750	0	0	0	0	NR	0
TRIS		0.500	0	0	0	NR	NR	0
TSCA		0.500	0	0	0	NR	NR	0
FTTS		0.500	0	0	0	NR	NR	0
HIST FTTS		0.500	0	0	0	NR	NR	0
SSTS		0.500	0	0	0	NR	NR	0
ICIS		0.500	0	0	0	NR	NR	0
PADS		0.500	0	0	0	NR	NR	0
MLTS		0.500	0	0	0	NR	NR	0
RADINFO		0.500	0	0	0	NR	NR	0
FINDS		0.500	0	0	0	NR	NR	0
RAATS		0.500	0	0	0	NR	NR	0
CA BOND EXP. PLAN		1.500	0	0	0	0	0	0
NPDES		0.500	0	0	0	NR	NR	0
WDS		0.500	0	0	0	NR	NR	0
Cortese		1.000	0	0	0	0	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.500	0	0	0	0	0	0
LA Co. Site Mitigation		0.500	0	0	0	NR	NR	0
DRYCLEANERS		0.750	0	0	0	0	NR	0
WIP		0.750	0	0	0	0	NR	0
LOS ANGELES CO. HMS		0.500	0	0	0	NR	NR	0
HAZNET		0.500	0	0	0	NR	NR	0
EMI		0.500	0	0	0	NR	NR	0
INDIAN RESERV		1.500	0	0	0	0	0	0
SCRD DRYCLEANERS		1.000	0	0	0	0	NR	0
FINANCIAL ASSURANCE		0.500	0	0	0	NR	NR	0
HWP		1.500	0	0	0	0	0	0
HWT		0.750	0	0	0	0	NR	0
COAL ASH EPA		1.000	0	0	0	0	NR	0
PCB TRANSFORMER		0.500	0	0	0	NR	NR	0
PROC		1.000	0	0	0	0	NR	0
MWMP		0.750	0	0	0	0	NR	0
COAL ASH DOE		0.500	0	0	0	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.500	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.750	0	0	0	0	NR	0
EDR Historical Cleaners		0.750	0	0	0	0	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
North
1/4-1/2
0.335 mi.
1770 ft.

9626 WEST AVE I
LANCASTER, CA 93536

CDL **S107537281**
N/A

Relative:
Higher

Actual:
2445 ft.

CDL:
Facility ID: 199905136
Lab Type: Illegal Drug Lab (L) - location where an illegal drug lab was operated or drug lab equipment and/or materials were stored.

A2
SSE
1/2-1
0.693 mi.
3659 ft.

ANTELOPE SUBSTATION
9364 W AVENUE J
LANCASTER, CA 93534

Site 1 of 2 in cluster A

HIST UST **U001586653**
N/A

Relative:
Higher

Actual:
2447 ft.

HIST UST:
Region: STATE
Facility ID: 00000022220
Facility Type: Other
Other Type: ELECTRIC UTILITY
Total Tanks: 0001
Contact Name: R E BROWN
Telephone: 8185721801
Owner Name: SOUTHERN CALIFORNIA EDISON CO.
Owner Address: 2244 WALNUT GROVE AVENUE
Owner City,St,Zip: ROSEMEAD, CA 91770

Tank Num: 001
Container Num: 279
Year Installed: 1972
Tank Capacity: 00002000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Tank Construction: Not reported
Leak Detection: Visual, None

A3
SSE
1/2-1
0.693 mi.
3661 ft.

SOUTHERN CALIFORNIA EDISON CO
9364 W AVE J
LANCASTER, CA

SWEEPS UST **S104733161**
LOS ANGELES CO. HMS **N/A**

Site 2 of 2 in cluster A

Relative:
Higher

Actual:
2447 ft.

SWEEPS UST:
Status: A
Comp Number: 11553
Number: 9
Board Of Equalization: 44-009353
Ref Date: 06-30-89
Act Date: Not reported
Created Date: 06-30-89
Tank Status: A
Owner Tank Id: Not reported
Swrcb Tank Id: 19-000-011553-000001
Actv Date: 06-30-89
Capacity: Not reported
Tank Use: UNKNOWN

SOUTHERN CALIFORNIA EDISON CO (Continued) **S104733161**

Stg: W
Content: Not reported
Number Of Tanks: 1

LOS ANGELES CO. HMS:
Region: LA
Facility Id: 011508-011553
Facility Status: Removed
Area: 4B
Permit Number: 00003108T
Permit Status: Removed
Facility Type: T0

Count: 20 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LANCASTER	1012055833	3995 AVENUE H W	3995 AVENUE H W		CDL
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
LANCASTER	A100345406		90TH E / AVE J	93536	AST
	M300003094	ANTELOPE VALLEY AGGREGATE, INC.	LITTLE ROCK PIT		MINES
LANCASTER	S101620938	DALES AUTO CLINIC & FARM	44434 E N 090TH ST		FID,SWEEPS UST
LANCASTER	S101620943	RETLAW WEST RANCH	44040 E N 110TH ST		FID,SWEEPS UST
LANCASTER	S101620945	STEVEN KOSTECKY	44000 E N 100TH ST		FID,SWEEPS UST
LANCASTER	S102056126	INVESTIGATIONS-AREA4	46204 W 97TH ST		HMS LOS ANGELES
PALMDALE	S103678194	ILLEGAL DRUG LAB/OPERATOR UNKNOWN	AVENUE T, 175TH ST EAST	93536	HAZNET
QUARTZ HILL	S103957875	CNTY LOS ANGELES/RD 551	4859 W AVE L-12	93534	HAZNET
QUARTZ HILL	S103975334	LOS ANGELES COUNTY DEPT OF PUBLIC	4859 W AVE L-12	93534	HAZNET
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 & 300TH ST	93536	HAZNET
LOS ANGELES	S104568573	TEHACHAPI RENEWABLE TRANSMISSION P	9634 W AVE J	93536	HAZNET,NPDES
LANCASTER	S104586626	SOARING VISTA RANCH COMPOSTING	AVE A 140 ST W.	0	WDS
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
	S107532211		28.15 MI.MARKER ON ANGELES CRE		CDL
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HW	93536	EMI
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HW	93536	EMI
LOS ANGELES	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPAa??s Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/15/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 05/25/2010
Date Data Arrived at EDR: 06/02/2010
Date Made Active in Reports: 10/04/2010
Number of Days to Update: 124

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/07/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 11/04/2009
Date Data Arrived at EDR: 05/04/2010
Date Made Active in Reports: 07/07/2010
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 12/02/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 57

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/03/2011
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/01/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 12/29/2010
Date Data Arrived at EDR: 12/30/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 02/24/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 46

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/07/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 03/04/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 05/02/2011
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/18/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 51

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/21/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 30

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2011
Date Data Arrived at EDR: 02/11/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/15/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 10/29/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 5

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/21/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 99

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/02/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/08/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/17/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 94

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/07/2011
Date Data Arrived at EDR: 01/21/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/11/2011
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Biennially

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/04/2011
Number of Days to Update: 29

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/15/2010
Date Data Arrived at EDR: 09/16/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 13

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/07/2010
Date Made Active in Reports: 08/12/2010
Number of Days to Update: 36

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/01/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 02/28/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/04/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/09/2010
Date Data Arrived at EDR: 08/11/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 9
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 04/26/2011
Number of Days to Update: 41

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 33

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 03/29/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COLUSA COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 12/01/2010
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/06/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/31/2011
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/25/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2011
Date Data Arrived at EDR: 02/09/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 23
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/18/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/12/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 30
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/26/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 22
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 04/25/2011
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/20/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/07/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/15/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 16
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/17/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 31
Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 20
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 11/16/2010
Date Made Active in Reports: 01/25/2011
Number of Days to Update: 70

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/21/2010
Next Scheduled EDR Contact: 03/28/2011
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/16/2011
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/30/2011
Date Data Arrived at EDR: 03/31/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 22
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/22/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 29
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 36
Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/14/2011
Date Data Arrived at EDR: 03/15/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 9
Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/25/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 25
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/07/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 35
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/07/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/08/2011
Number of Days to Update: 28
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 30
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 01/25/2011
Date Data Arrived at EDR: 02/03/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 29
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16
Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/26/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/22/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 05/12/2011
Date Made Active in Reports: 05/24/2011
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/12/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/06/2011
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/19/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 38

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/06/2010
Date Made Active in Reports: 07/26/2010
Number of Days to Update: 20

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

CENTRAL ANTELOPE DRY FARM RANCH
11
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.69890 - 34° 41' 56.0''
Longitude (West):	118.2997 - 118° 17' 58.9''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	380961.1
UTM Y (Meters):	3840225.0
Elevation:	2440 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

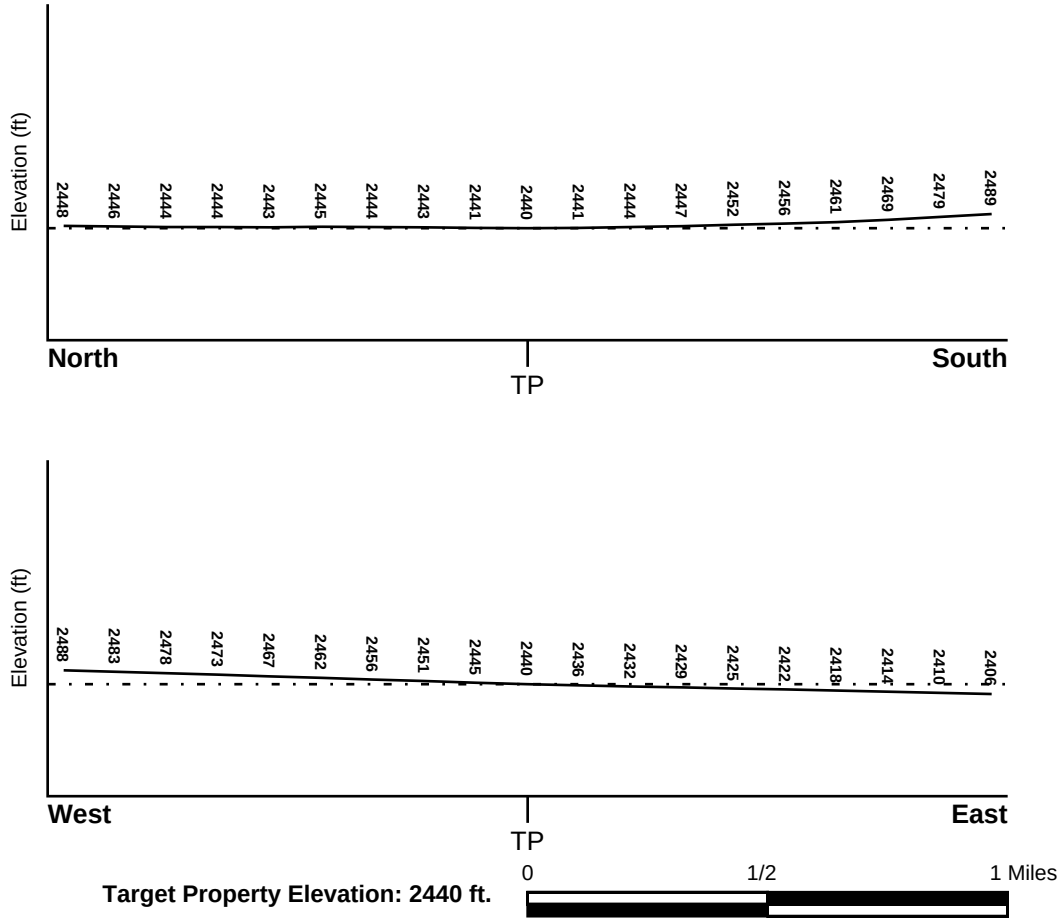
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General East

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
DEL SUR	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

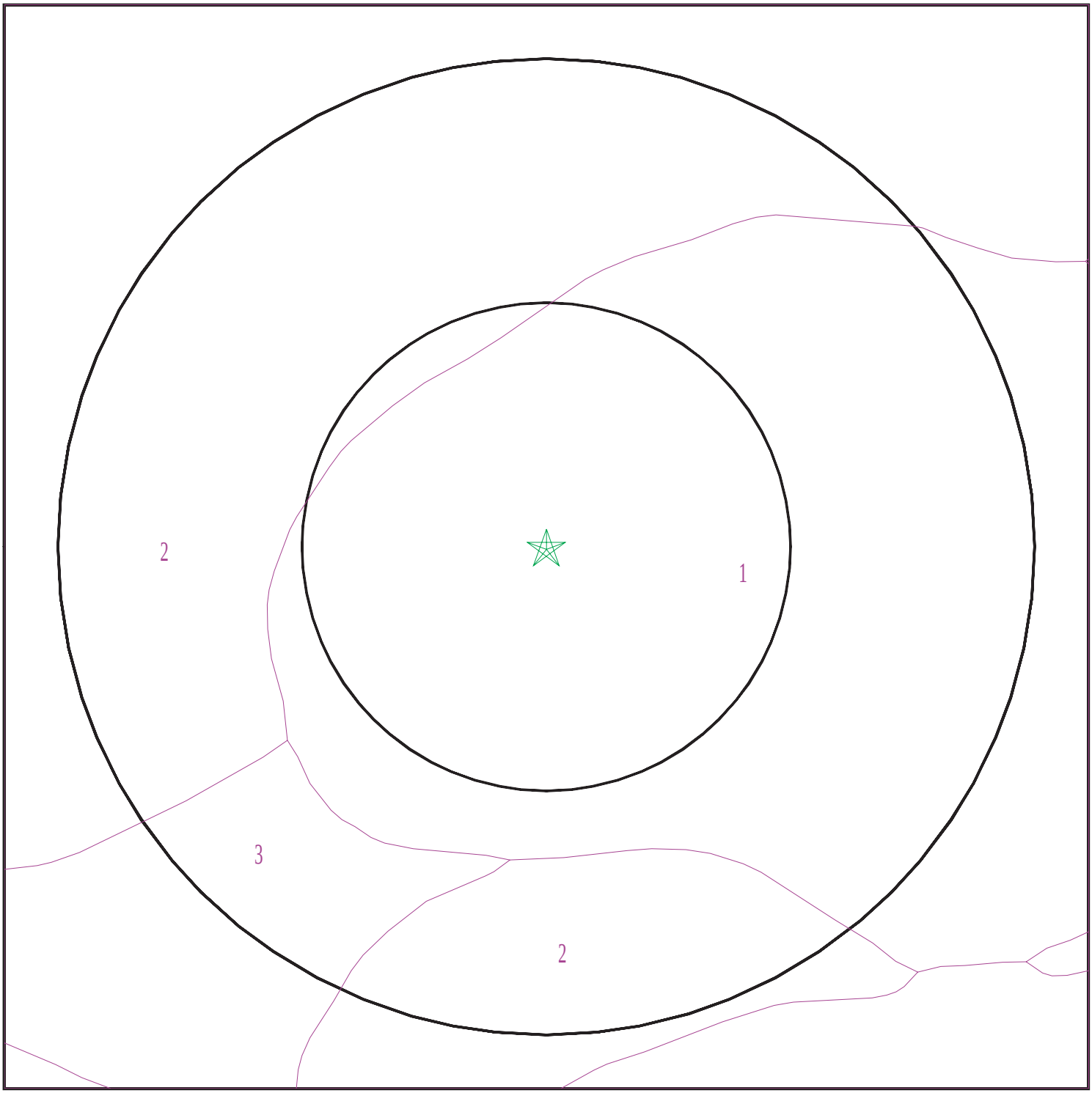
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3089735.142s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Central Antelope Dry Farm Ranch	CLIENT:	Tetra Tech Inc.
ADDRESS:	11 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.6989 / 118.2997	INQUIRY #:	3089735.142s
		DATE:	June 08, 2011 1:04 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Sunrise

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	18 inches	31 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	31 inches	48 inches	cemented	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
4	48 inches	64 inches	stratified gravelly sandy loam to loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4

Soil Map ID: 2

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 3

Soil Component Name: Ramona

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
2	20 inches	31 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
3	31 inches	90 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	USGS3159206	1/4 - 1/2 Mile NNE
B3	USGS3159207	1/4 - 1/2 Mile NNW
B4	USGS3159208	1/4 - 1/2 Mile NNW
C8	USGS3159205	1/4 - 1/2 Mile NE
D10	USGS3159212	1/4 - 1/2 Mile NE
E11	USGS3159083	1/4 - 1/2 Mile NNW
D13	USGS3159211	1/2 - 1 Mile NE
G17	USGS3159115	1/2 - 1 Mile NNE
F18	USGS3159372	1/2 - 1 Mile East
F19	USGS3159371	1/2 - 1 Mile East
H22	USGS3159289	1/2 - 1 Mile ESE
H23	USGS3159281	1/2 - 1 Mile ESE
J25	USGS3159403	1/2 - 1 Mile South
I26	USGS3159192	1/2 - 1 Mile ENE
27	USGS3159417	1/2 - 1 Mile SSE
J28	USGS3159396	1/2 - 1 Mile South

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
I29	USGS3159197	1/2 - 1 Mile ENE
L31	USGS3159114	1/2 - 1 Mile NNE
M32	USGS3159181	1/2 - 1 Mile WNW
K33	USGS3159448	1/2 - 1 Mile SE
L34	USGS3159132	1/2 - 1 Mile NNE
36	USGS3159094	1/2 - 1 Mile NE
37	USGS3159429	1/2 - 1 Mile SE
N38	USGS3158961	1/2 - 1 Mile North
O40	USGS3159457	1/2 - 1 Mile SW
O41	USGS3159460	1/2 - 1 Mile WSW
Q44	USGS3159581	1/2 - 1 Mile South
45	USGS3159402	1/2 - 1 Mile SE
R46	USGS3159191	1/2 - 1 Mile ENE
P48	USGS3159598	1/2 - 1 Mile SE
P49	USGS3159589	1/2 - 1 Mile SSE
R51	USGS3159196	1/2 - 1 Mile ENE
52	USGS3159193	1/2 - 1 Mile WNW
P53	USGS3159593	1/2 - 1 Mile SSE
S55	USGS3158930	1/2 - 1 Mile NE
56	USGS3159603	1/2 - 1 Mile SE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

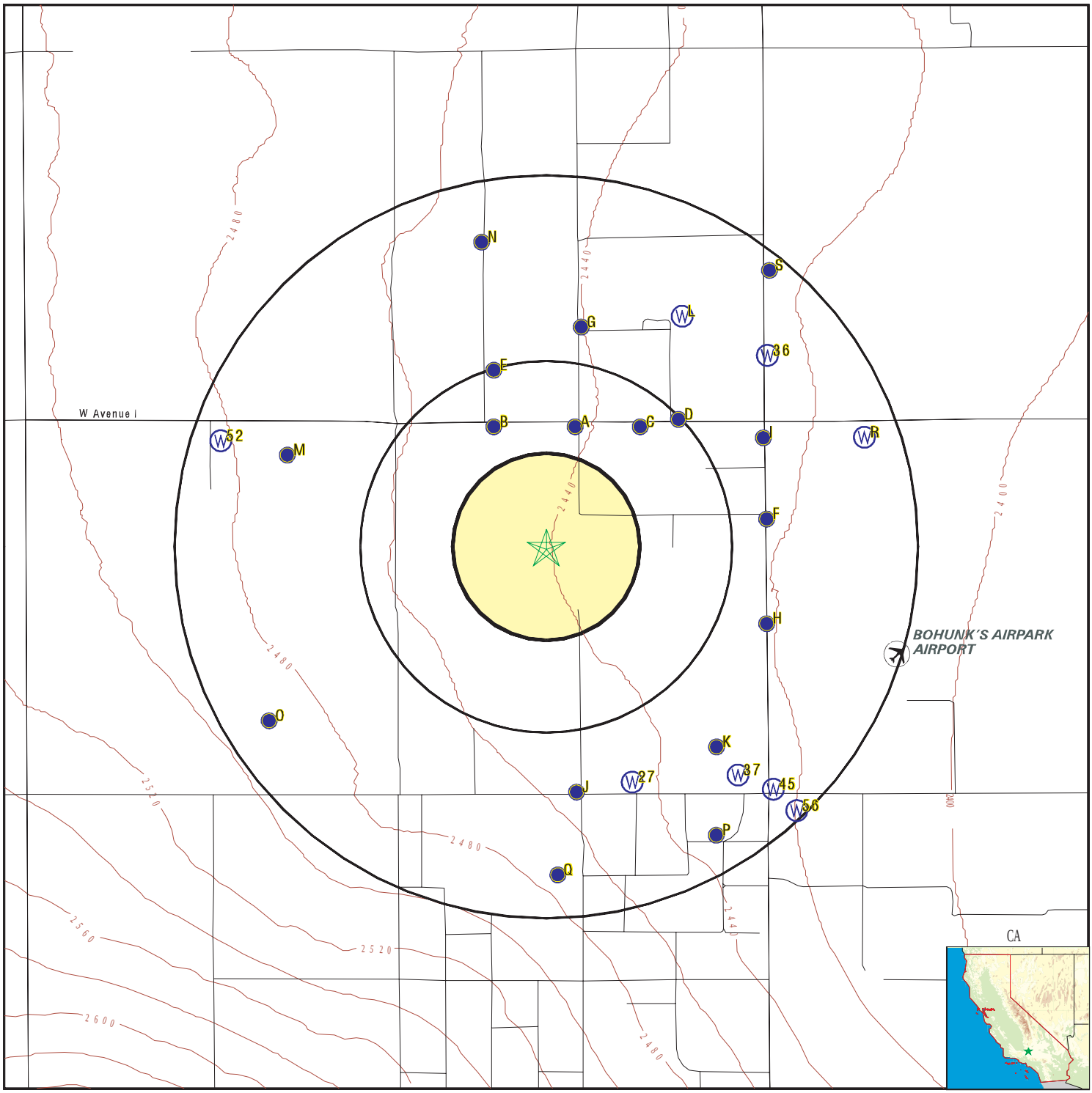
MAP ID	WELL ID	LOCATION FROM TP
A1	CADW40000014050	1/4 - 1/2 Mile North
B5	CADW40000014048	1/4 - 1/2 Mile NNW
B6	CADW40000014049	1/4 - 1/2 Mile NNW
C7	CADW40000014051	1/4 - 1/2 Mile NE
D9	CADW40000014058	1/4 - 1/2 Mile NE
E12	CADW40000014105	1/2 - 1 Mile NNW
F14	CADW40000014007	1/2 - 1 Mile East
G15	CADW40000014117	1/2 - 1 Mile North
H16	CADW40000013964	1/2 - 1 Mile ESE
I20	CADW40000014042	1/2 - 1 Mile ENE
I21	CADW40000014046	1/2 - 1 Mile ENE
J24	CADW40000013869	1/2 - 1 Mile South
K30	CADW40000013914	1/2 - 1 Mile SE
M35	CADW40000014037	1/2 - 1 Mile WNW
N39	CADW40000014152	1/2 - 1 Mile NNW
P42	CADW40000013852	1/2 - 1 Mile SSE
Q43	CADW40000013802	1/2 - 1 Mile South

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
P47	CADW40000013835	1/2 - 1 Mile SSE
O50	CADW40000013927	1/2 - 1 Mile WSW
S54	CADW40000014144	1/2 - 1 Mile NE

PHYSICAL SETTING SOURCE MAP - 3089735.142s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Central Antelope Dry Farm Ranch	CLIENT:	Tetra Tech Inc.
ADDRESS:	11 Lancaster CA 93536	CONTACT:	Garret Bean
		INQUIRY #:	3089735.142s
LAT/LONG:	34.6989 / 118.2997	DATE:	June 08, 2011 1:04 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
A1 **North** **1/4 - 1/2 Mile** **Higher**	**CA WELLS**	**CADW40000014050**

Longitude:	-118.2979
Latiude:	34.7036
Stwellno:	07N13W18B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014050

	Database	EDR ID Number
A2 **NNE** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS3159206**

Agency cd:	USGS	Site no:	344213118174901
Site name:	007N013W18B002S		
Latitude:	344213	EDR Site id:	USGS3159206
Longitude:	1181749	Dec lat:	34.70359525
Dec lon:	-118.29785505	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2439.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	700	Hole depth:	700
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-10-00	Ground water data end date:	1956-10-00
Ground water data count:	6		

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956-10	210.00		1953-10	190.00	
1951-10	180.00		1950-10	175.00	
1948-10	165.00		1946-10	163.00	

B3
NNW **FED USGS** **USGS3159207**
1/4 - 1/2 Mile
Higher

Agency cd:	USGS	Site no:	344213118180301
Site name:	007N013W18C001S		
Latitude:	344213	EDR Site id:	USGS3159207
Longitude:	1181803	Dec lat:	34.70359524
Dec lon:	-118.30174406	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2445.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	479	Hole depth:	512
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-09-12	Ground water data end date:	1963-09-12
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-09-12	140.00	

B4
NNW **FED USGS** **USGS3159208**
1/4 - 1/2 Mile
Higher

Agency cd:	USGS	Site no:	344213118180302
Site name:	007N013W18C002S		
Latitude:	344213	EDR Site id:	USGS3159208
Longitude:	1181803	Dec lat:	34.70359524
Dec lon:	-118.30174406	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2445.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19610628
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	600	Hole depth:	600
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-27	Ground water data end date:	1963-05-27
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-27	298.00	

Note: The site was being pumped.

B5
NNW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014048**

Longitude:	-118.3017
Latiude:	34.7036
Stwellno:	07N13W18C001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014048

B6
NNW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014049**

Longitude:	-118.3017
Latiude:	34.7036
Stwellno:	07N13W18C002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014049

C7
NE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000014051**

Longitude:	-118.2948
Latiude:	34.7036
Stwellno:	07N13W18B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014051

C8
NE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3159205**

Agency cd:	USGS	Site no:	344213118173801
Site name:	007N013W18B001S		
Latitude:	344213	EDR Site id:	USGS3159205
Longitude:	1181738	Dec lat:	34.70359525
Dec lon:	-118.2947994	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2434.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	700	Hole depth:	700
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 0000-00-00
Water quality data end date: 0000-00-00
Water quality data count: 0
Ground water data begin date: 1946-10-00
Ground water data end date: 1956-10-00
Ground water data count: 6

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956-10	205.00		1953-10	185.00	
1951-10	175.00		1950-10	170.00	
1948-10	165.00		1946-10	160.00	

D9
NE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000014058**

Longitude: -118.2929
Latiude: 34.7039
Stwellno: 07N13W07R001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000014058

D10
NE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3159212**

Agency cd: USGS
Site no: 344214118173401
Site name: 007N013W07R002S
Latitude: 344214
EDR Site id: USGS3159212
Longitude: 1181734
Dec lat: 34.70387302
Dec lon: -118.29368825
Coor meth: M
Coor accr: S
Latlong datum: NAD27
Dec latlong datum: NAD83
District: 06
State: 06
County: 037
Country: US
Land net: Not Reported
Location map: DEL SUR
Map scale: 24000
Altitude: 2431.00
Altitude method: Interpolated from topographic map
Altitude accuracy: 010
Altitude datum: National Geodetic Vertical Datum of 1929
Hydrologic: AntelopeFremont Valleys. California. Area = 3310 sq.mi.
Topographic: Not Reported
Site type: Ground-water other than Spring
Date construction: Not Reported
Date inventoried: Not Reported
Mean greenwich time offset: PST
Local standard time flag: Y
Type of ground water site: Single well, other than collector or Ranney type
Aquifer Type: Not Reported
Aquifer: Not Reported
Well depth: 450
Hole depth: 450
Source of depth data: Not Reported
Project number: 479381106
Real time data flag: Not Reported
Daily flow data begin date: Not Reported
Daily flow data end date: Not Reported
Daily flow data count: Not Reported
Peak flow data begin date: Not Reported
Peak flow data end date: Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

E11
NNW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159083**

Agency cd:	USGS	Site no:	344221118180301
Site name:	007N013W07P001S		
Latitude:	344221	EDR Site id:	USGS3159083
Longitude:	1181803	Dec lat:	34.70581737
Dec lon:	-118.30174405	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2447.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19471030
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	600	Hole depth:	600
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-23	Ground water data end date:	1967-03-15
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1967-03-15	282.75		1963-05-23	269.45	

E12
NNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014105**

Longitude:	-118.3017
Latiude:	34.7058
Stwellno:	07N13W07P001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014105

D13
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159211**

Agency cd:	USGS	Site no:	344214118173101
Site name:	007N013W07R001S		
Latitude:	344214	EDR Site id:	USGS3159211
Longitude:	1181731	Dec lat:	34.70387302
Dec lon:	-118.29285489	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19460606
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-09-15	Ground water data end date:	1957-06-10
Ground water data count:	3		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1957-06-10	232.00		1952-04-12	210.00	
1946-09-15	163.00				

F14
East
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014007**

Longitude:	-118.289
Latiude:	34.7
Stwellno:	07N13W17E001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014007

G15
North
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014117**

Longitude:	-118.2976
Latiude:	34.7075
Stwellno:	07N13W07K001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014117

H16
ESE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000013964**

Longitude:	-118.289
Latiude:	34.6958
Stwellno:	07N13W17M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013964

G17
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3159115**

Agency cd:	USGS	Site no:	344227118174801
Site name:	007N013W07K001S		
Latitude:	344227	EDR Site id:	USGS3159115
Longitude:	1181748	Dec lat:	34.70748398
Dec lon:	-118.29757724	Coor meth:	M
Coor accr:	M	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2437.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19550701
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	603	Hole depth:	603
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-23	Ground water data end date:	1963-05-23
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-23	287.96	

F18
East
1/2 - 1 Mile
Lower

FED USGS **USGS3159372**

Agency cd:	USGS	Site no:	344200118171702
Site name:	007N013W17E002S		
Latitude:	344200	EDR Site id:	USGS3159372
Longitude:	1181717	Dec lat:	34.6999843
Dec lon:	-118.2889659	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19620101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	540	Hole depth:	540
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

F19
East
1/2 - 1 Mile
Lower

FED USGS **USGS3159371**

Agency cd:	USGS	Site no:	344200118171701
Site name:	007N013W17E001S		
Latitude:	344200	EDR Site id:	USGS3159371
Longitude:	1181717	Dec lat:	34.6999843
Dec lon:	-118.2889659	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1949-00-00	Ground water data end date:	1956-00-00
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel
1956	260.00	
Note: The site was being pumped.		
1955	248.00	
Note: The site was being pumped.		
1953	228.00	
Note: The site was being pumped.		
1950	200.00	
Note: The site was being pumped.		
1949	190.00	
Note: The site was being pumped.		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
I20 **ENE** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADW40000014042**

Longitude:	-118.289
Latiude:	34.703
Stwellno:	07N13W17D002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014042

	Database	EDR ID Number
I21 **ENE** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADW40000014046**

Longitude:	-118.289
Latiude:	34.7033
Stwellno:	07N13W17D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014046

	Database	EDR ID Number
H22 **ESE** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS3159289**

Agency cd:	USGS	Site no:	344146118171701
Site name:	007N013W17M002S		
Latitude:	344146	EDR Site id:	USGS3159289
Longitude:	1181717	Dec lat:	34.69609557
Dec lon:	-118.28896593	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

H23
ESE **FED USGS** **USGS3159281**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344145118171701
Site name:	007N013W17M001S		
Latitude:	344145	EDR Site id:	USGS3159281
Longitude:	1181717	Dec lat:	34.69581781
Dec lon:	-118.28896593	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19550125
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	601	Hole depth:	601
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1955-08-30	Ground water data end date:	1961-10-24
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1961-10-24	223.20		1960-09-16	258.00	
1959-10-25	244.40		1956-10-10	227.40	
1955-08-30	229.00				

Note: The site was being pumped.

J24
South **CA WELLS** **CADW40000013869**
1/2 - 1 Mile
Higher

Longitude:	-118.2979
Latiude:	34.6894
Stwellno:	07N13W18Q001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013869

J25
South
1/2 - 1 Mile
Higher

FED USGS **USGS3159403**

Agency cd:	USGS	Site no:	344122118174901
Site name:	007N013W18Q001S		
Latitude:	344122	EDR Site id:	USGS3159403
Longitude:	1181749	Dec lat:	34.68942917
Dec lon:	-118.29785514	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2450.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-28	Ground water data end date:	1963-05-28
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-28	235.58	

I26
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3159192**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency cd:	USGS	Site no:	344211118171701
Site name:	007N013W17D002S		
Latitude:	344211	EDR Site id:	USGS3159192
Longitude:	1181717	Dec lat:	34.70303973
Dec lon:	-118.28896588	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2421.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	19450806
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	505	Hole depth:	505
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1945-08-06	Ground water data end date:	1965-11-09
Ground water data count:	26		

Ground-water levels, Number of Measurements: 26

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1965-11-09	225.24				
1963-04-04	247.20				
Note: The site had been pumped recently.					
1963-04-01	247.70		1962-11-07	216.30	
1962-08-02	228.50				
Note: The site had been pumped recently.					
1962-04-09	228.50		1961-10-19	204.10	
1961-04-05	217.40		1960-11-21	207.00	
1960-10-24	223.60		1960-04-12	216.50	
1959-10-21	214.00		1959-03-19	197.20	
1958-11-28	193.70		1958-11-13	196.70	
1958-06	285.00				
Note: The site was being pumped.					
1958-03-12	177.00		1957-11-12	190.70	
1957-03-08	183.60		1956-11-28	184.70	
1956	284.00				
Note: The site was being pumped.					
1954	271.00				
Note: The site was being pumped.					
1952	255.00				
Note: The site was being pumped.					
1948	197.00				
Note: The site was being pumped.					

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1947	179.00				
Note: The site was being pumped.					
1945-08-06	144.00				

27
SSE **FED USGS** **USGS3159417**
1/2 - 1 Mile
Higher

Agency cd:	USGS	Site no:	344123118174101
Site name:	007N013W18Q003S		
Latitude:	344123	EDR Site id:	USGS3159417
Longitude:	1181741	Dec lat:	34.68970694
Dec lon:	-118.29563284	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2441.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

J28
South **FED USGS** **USGS3159396**
1/2 - 1 Mile
Higher

Agency cd:	USGS	Site no:	344121118175001
Site name:	007N013W18Q002S		
Latitude:	344121	EDR Site id:	USGS3159396
Longitude:	1181750	Dec lat:	34.6891514
Dec lon:	-118.29813293	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2450.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	200	Hole depth:	200
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

I29
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3159197**

Agency cd:	USGS	Site no:	344212118171701
Site name:	007N013W17D001S		
Latitude:	344212	EDR Site id:	USGS3159197
Longitude:	1181717	Dec lat:	34.7033175
Dec lon:	-118.28896588	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2420.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	162	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1927-00-00	Ground water data end date:	1957-10-29
Ground water data count:	24		

Ground-water levels, Number of Measurements: 24

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1957-10-29	156.5		1956-11-21	157.90	
1955-10-24	161.55		1955-05-18	153.89	
1954-11-15	155.30		1954-03-26	146.90	
1953-12-01	152.20		1952-11-20	147.10	
1951-12-07	144.00		1950-11-28	138.50	
1950-01-04	135.40		1948-11-30	124.10	
1947-12-09	113.50		1945-11-13	107.10	
1945-03-05	93.40		1944-12-06	99.60	
1941-12-02	95.80		1941-04-25	99.50	
1940-12-05	95.90		1940-03-13	91.50	
1939-11-17	98.70		1939-03-08	84.40	
1937-11-09	91.50		1927	55.00	

K30
SE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000013914**

Longitude:	-118.2912
Latiude:	34.6911
Stwellno:	07N13W18R001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013914

L31
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3159114**

Agency cd:	USGS	Site no:	344227118173101
Site name:	007N013W07J001S		
Latitude:	344227	EDR Site id:	USGS3159114
Longitude:	1181731	Dec lat:	34.70748398
Dec lon:	-118.29285487	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2426.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19620312
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	451	Hole depth:	451
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1963-05-27
Water quality data end date:	1963-05-27	Water quality data count:	1
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

M32
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159181**

Agency cd:	USGS	Site no:	344209118183801
Site name:	007N014W13A001S		
Latitude:	344209	EDR Site id:	USGS3159181
Longitude:	1181838	Dec lat:	34.70248416
Dec lon:	-118.3114666	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2467.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19521212
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	519	Hole depth:	519
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1992-08-20
Water quality data end date:	2003-08-19	Water quality data count:	12
Ground water data begin date:	1953-10-14	Ground water data end date:	2004-08-17
Ground water data count:	47		

Ground-water levels, Number of Measurements: 47

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-08-17	250.76		2004-03-30	240.25	
2003-03-27	238.45		2002-03-26	237.39	
2001-03-14	233.94		2000-03-22	234.78	
1999-06-08	238.56				
1999-04-01					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1998-03-17	232.97		1997-03-05	233.34	
1996-04-19	234.22		1995-04-19	232.77	
1994-04-15	233.41		1993-04-20	232.75	
1992-04-14	234.41		1991-03-18	235.98	
1990-03-13	237.95				
Note: A nearby site that taps the same aquifer was being pumped.					
1989-03-23	240.10				
1988-03-29	242.89				
Note: A nearby site that taps the same aquifer was being pumped.					
1987-02-25	258.80		1986-03-18	271.02	
1985-03-26	270.99		1984-03-06	257.40	
1983-04-15	276.09		1982-02-09	271.37	
1980-03-24	270.28		1979-02-13	272.78	
1978-03-29	273.73		1977-03-09	276.21	
1976-03-08	275.04		1975-02-12	277.53	
1974-02-11	289.10		1973-02-14	280.22	
1972-03-15	286.77				
1971-03-17	299.95				
Note: A nearby site that taps the same aquifer was being pumped.					
1970-10-22	307.23		1970-03-17	291.70	
1968-03-12	289.24		1967-12-27	287.74	
1963-05-10	279.78		1962-05-22	275.20	
1960-11-02	249.60		1959-11-03	238.00	
1957-08-28	251.70		1956-05-23	238.10	
1955-09-21	239.30		1953-10-14	219.00	

K33
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159448**

Agency cd:	USGS	Site no:	344128118172501
Site name:	007N013W18R001S		
Latitude:	344128	EDR Site id:	USGS3159448
Longitude:	1181725	Dec lat:	34.69109578
Dec lon:	-118.29118825	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-28	Ground water data end date:	1963-05-28
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-28	266.18	

Note: The site had been pumped recently.

L34
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3159132**

Agency cd:	USGS	Site no:	344230118173401
Site name:	007N013W07J002S		
Latitude:	344230	EDR Site id:	USGS3159132
Longitude:	1181734	Dec lat:	34.70831728
Dec lon:	-118.29368822	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2428.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19470101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

M35
WNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014037**

Longitude:	-118.3115
Latiude:	34.7025
Stwellno:	07N14W13A001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014037

36
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159094**

Agency cd:	USGS	Site no:	344223118171801
Site name:	007N013W08N001S		
Latitude:	344223	EDR Site id:	USGS3159094
Longitude:	1181718	Dec lat:	34.70637293
Dec lon:	-118.28924365	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19380101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

37
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159429**

Agency cd:	USGS	Site no:	344124118172301
Site name:	007N013W18R003S		
Latitude:	344124	EDR Site id:	USGS3159429
Longitude:	1181723	Dec lat:	34.68998471
Dec lon:	-118.29063268	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2426.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

N38
North
1/2 - 1 Mile
Higher

FED USGS **USGS3158961**

Agency cd:	USGS	Site no:	344239118180501
Site name:	007N013W07L001S		
Latitude:	344239	EDR Site id:	USGS3158961
Longitude:	1181805	Dec lat:	34.71081716
Dec lon:	-118.30229959	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2450.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-23	Ground water data end date:	1963-05-23
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-23	300.00	

N39
NNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014152**

Longitude:	-118.3023
Latiude:	34.7108
Stwellno:	07N13W07L001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014152

O40
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3159457**

Agency cd:	USGS	Site no:	344131118184101
Site name:	007N014W13Q002S		
Latitude:	344131	EDR Site id:	USGS3159457
Longitude:	1181841	Dec lat:	34.69192904
Dec lon:	-118.31230002	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2490.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18850101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	287
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1908-01-01
Water quality data end date:	1908-01-01	Water quality data count:	1
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

O41
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3159460**

Agency cd:	USGS	Site no:	344132118184201
Site name:	007N014W13Q001S		
Latitude:	344132	EDR Site id:	USGS3159460
Longitude:	1181842	Dec lat:	34.69220681
Dec lon:	-118.31257781	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2490.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-10-23	Ground water data end date:	1963-05-13
Ground water data count:	14		

Ground-water levels, Number of Measurements: 14

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-13	288.91		1963-04-04	276.50	
1962-11-07	268.40		1962-04-06	271.80	
1961-10-17	270.40		1961-04-06	274.60	
1960-10-24	258.20		1960-03-07	257.00	
1959-11-10	253.00		1959-03-19	244.50	
1958-11-28	241.20		1958-03-13	232.70	
1957-11-12	240.00		1957-10-23	241.00	

P42
SSE **CA WELLS** **CADW40000013852**
1/2 - 1 Mile
Lower

Longitude:	-118.2909
Latiude:	34.688
Stwellno:	07N13W19A001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013852

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database	EDR ID Number
CA WELLS	**CADW40000013802**

Q43
South
1/2 - 1 Mile
Higher

Longitude:	-118.2987
Latiude:	34.6861
Stwellno:	07N13W19D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013802

Q44
South
1/2 - 1 Mile
Higher

FED USGS **USGS3159581**

Agency cd:	USGS	Site no:	344111118175701
Site name:	007N013W19D001S		
Latitude:	344110	EDR Site id:	USGS3159581
Longitude:	1181752	Dec lat:	34.68609597
Dec lon:	-118.29868852	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2470.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19520815
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	driller		
Project number:	9479335800		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1973-05-15
Water quality data end date:	1992-08-04	Water quality data count:	17
Ground water data begin date:	1952-08-13	Ground water data end date:	1963-05-13
Ground water data count:	20		

Ground-water levels, Number of Measurements: 20

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-13	278.00		1963-04-01	269.00	
1963-03-05	262.00		1963-02-01	257.00	
1963-01-02	258.00		1962-12-03	268.00	
1962-11-02	272.00		1962-10-01	278.00	
1962-09-04	276.00		1962-08-06	277.00	
1962-05-17	269.00		1962-04-02	244.00	
1962-03-01	244.00		1962-02-02	248.00	
1962-01-03	249.60		1961-10-06	272.00	
1961-09-13	272.00		1961-08-03	272.00	
1956-09	237.00		1952-08-13	160.00	

45
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159402**

Agency cd:	USGS	Site no:	344122118171701
Site name:	007N013W17N001S		
Latitude:	344122	EDR Site id:	USGS3159402
Longitude:	1181717	Dec lat:	34.68942918
Dec lon:	-118.28896597	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2422.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19521210
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	602	Hole depth:	602
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

R46
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3159191**

Agency cd:	USGS	Site no:	344211118170201
Site name:	007N013W17C001S		
Latitude:	344211	EDR Site id:	USGS3159191
Longitude:	1181702	Dec lat:	34.70303974
Dec lon:	-118.28479908	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2412.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19000101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

P47
SSE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000013835**

Longitude:	-118.2912
Latiude:	34.6875
Stwellno:	07N13W19A004S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013835

P48
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159598**

Agency cd:	USGS	Site no:	344117118172401
Site name:	007N013W19A001S		
Latitude:	344117	EDR Site id:	USGS3159598
Longitude:	1181724	Dec lat:	34.68804035
Dec lon:	-118.29091048	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2424.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19300101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-10-23	Ground water data end date:	1963-05-28
Ground water data count:	13		

Ground-water levels, Number of Measurements: 13

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-28	223.45		1963-04-01	219.20	
1962-11-07	210.70		1962-04-06	217.50	
1961-10-17	213.10		1960-10-24	204.90	
1960-03-07	193.50		1959-11-10	204.00	
1959-03-19	206.70		1958-11-28	194.70	
1958-03-12	184.70		1957-11-12	198.70	
1957-10-23	201.00				

P49
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS3159589**

Agency cd:	USGS	Site no:	344114118172901
Site name:	007N013W19A002S		
Latitude:	344114	EDR Site id:	USGS3159589
Longitude:	1181729	Dec lat:	34.68720705
Dec lon:	-118.29229942	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19510101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

O50
WSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000013927**

Longitude:	-118.3126
Latiude:	34.6922
Stwellno:	07N14W13Q001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013927

R51
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3159196**

Agency cd:	USGS	Site no:	344212118170101
Site name:	007N013W17C002S		
Latitude:	344212	EDR Site id:	USGS3159196
Longitude:	1181701	Dec lat:	34.70331751
Dec lon:	-118.28452129	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2412.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19000101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	414	Hole depth:	414
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

52
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159193**

Agency cd:	USGS	Site no:	344211118185101
Site name:	007N014W13B001S		
Latitude:	344211	EDR Site id:	USGS3159193
Longitude:	1181851	Dec lat:	34.70303968
Dec lon:	-118.31507782	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2478.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	21.3	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

P53
SSE **FED USGS** **USGS3159593**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344115118172501
Site name:	007N013W19A004S		
Latitude:	344115	EDR Site id:	USGS3159593
Longitude:	1181725	Dec lat:	34.68748481
Dec lon:	-118.29118827	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2427.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18900101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	75.0	Hole depth:	75.0
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1908-01-01	Ground water data end date:	1908-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1908-01-01	59.00	

S54
NE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014144**

Longitude:	-118.2887
Latiude:	34.7097
Stwellno:	07N13W08M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014144

S55
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3158930**

Agency cd:	USGS	Site no:	344235118171601
Site name:	007N013W08M001S		
Latitude:	344235	EDR Site id:	USGS3158930
Longitude:	1181716	Dec lat:	34.70970612
Dec lon:	-118.28868805	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2420.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19520128
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	752	Hole depth:	752
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1952-01-00	Ground water data end date:	1961-07-10
Ground water data count:	6		

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1961-07-10	283.00		1960-07-13	272.40	
1957-08-19	240.00		1957-02-01	143.00	
1957-02	143.00		1952-01	150.00	

56
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159603**

Agency cd:	USGS	Site no:	344119118171301
Site name:	007N013W20Z002S		
Latitude:	344119	EDR Site id:	USGS3159603
Longitude:	1181713	Dec lat:	34.68859589
Dec lon:	-118.28785483	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2415.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18900101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	560	Hole depth:	560
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Central Antelope Dry Farm Ranch
11
Lancaster, CA 93536

Inquiry Number: 3089735.143
June 08, 2011

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
Central Antelope Dry Farm
11
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089735.143

Contact: Garret Bean

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Tetra Tech Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Central Antelope Dry Farm Ranch
Address: 11
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 10
Certification # 6761-48C2-A715

Sanborn® Library search results
Certification # 6761-48C2-A715

UNMAPPED PROPERTY

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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Halcyon Solar
15
Lancaster, CA 93536

Inquiry Number: 3089735.151
June 08, 2011

EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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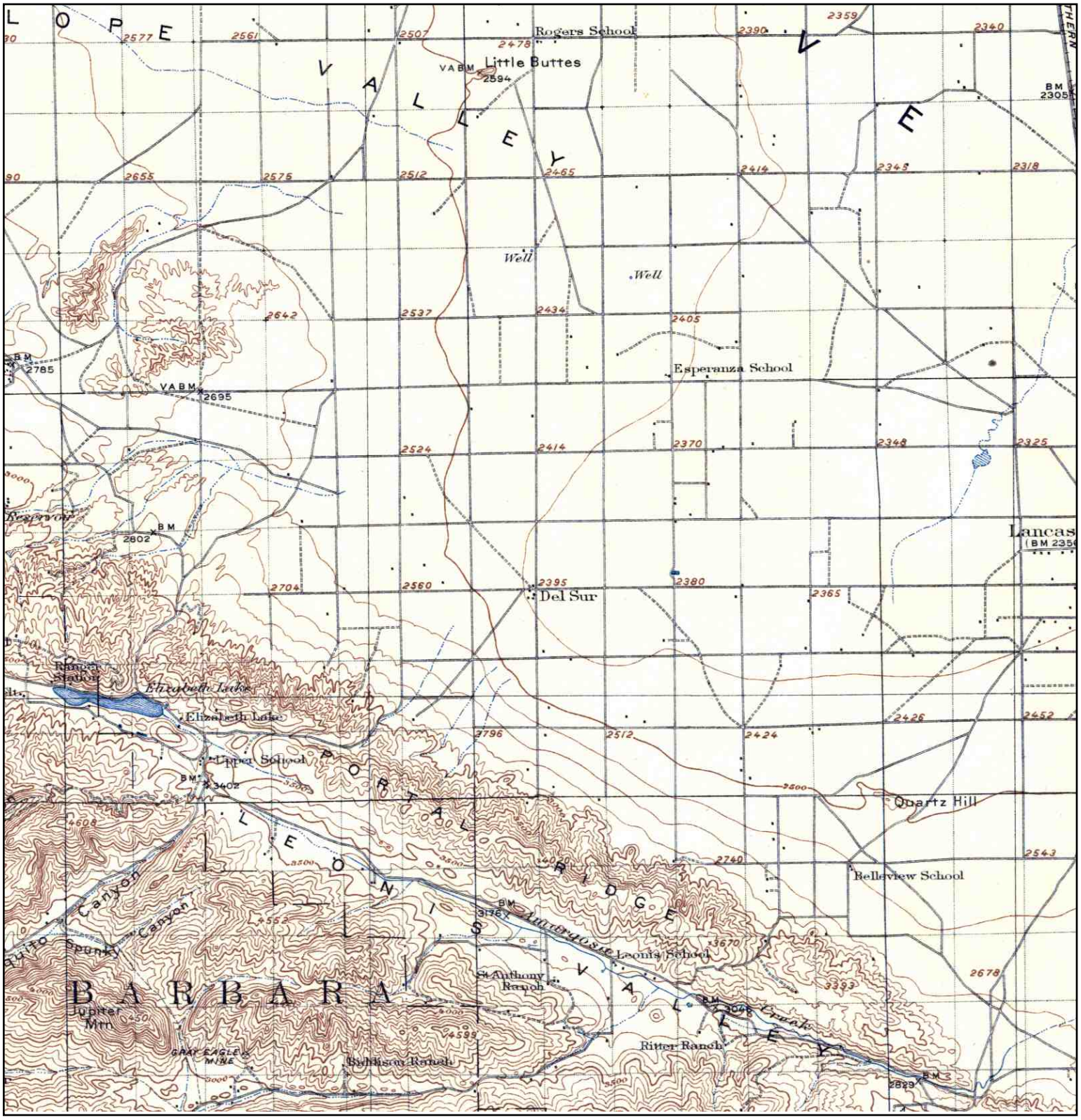
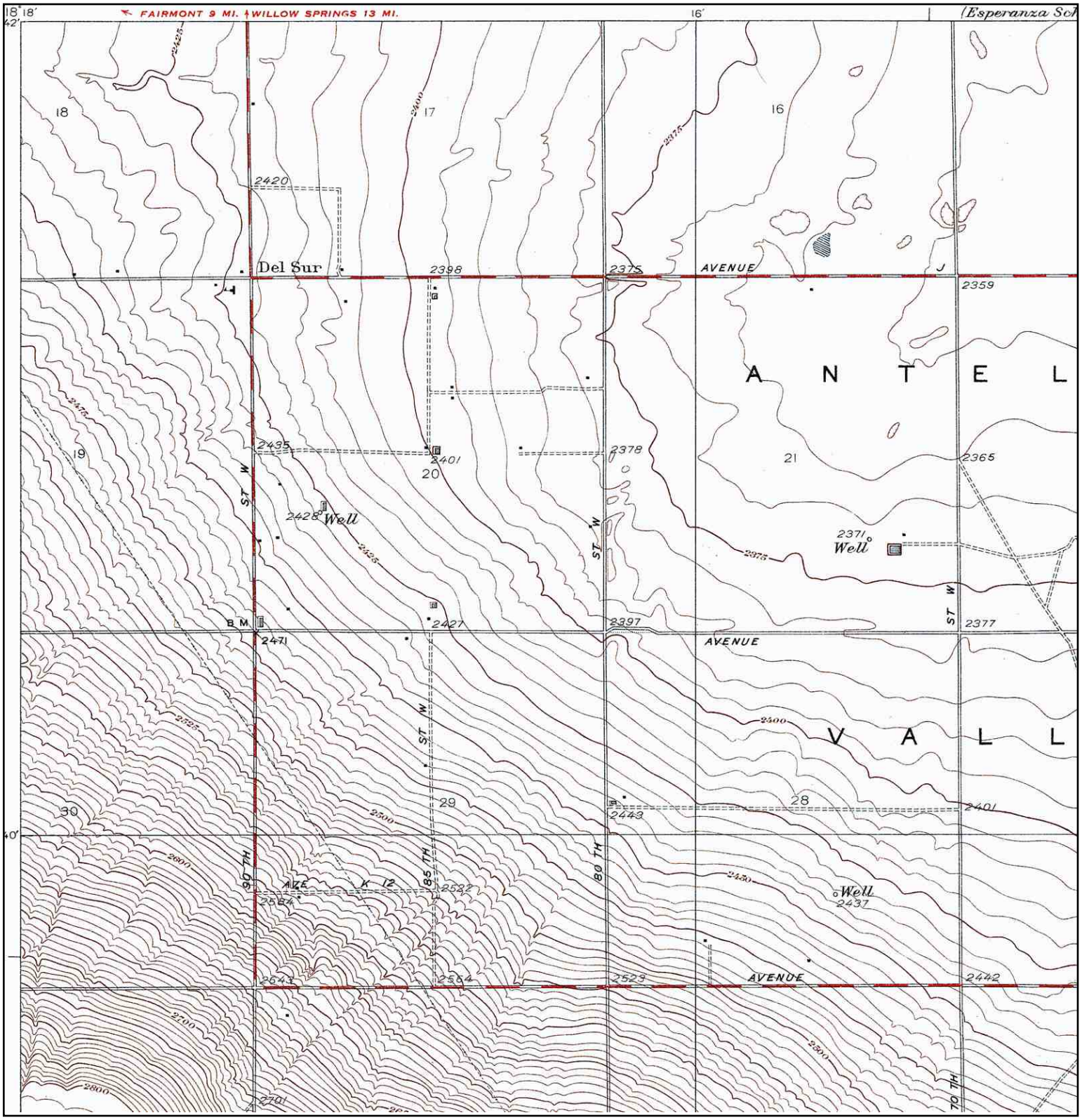
Historical Topographic Map



N	TARGET QUAD NAME: ELIZABETH LAKE MAP YEAR: 1917 SERIES: 30 SCALE: 1:125000	SITE NAME: Halcyon Solar ADDRESS: 15 Lancaster, CA 93536 LAT/LONG: 34.6943 / -118.287	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.151 RESEARCH DATE: 06/08/2011

Historical Topographic Map

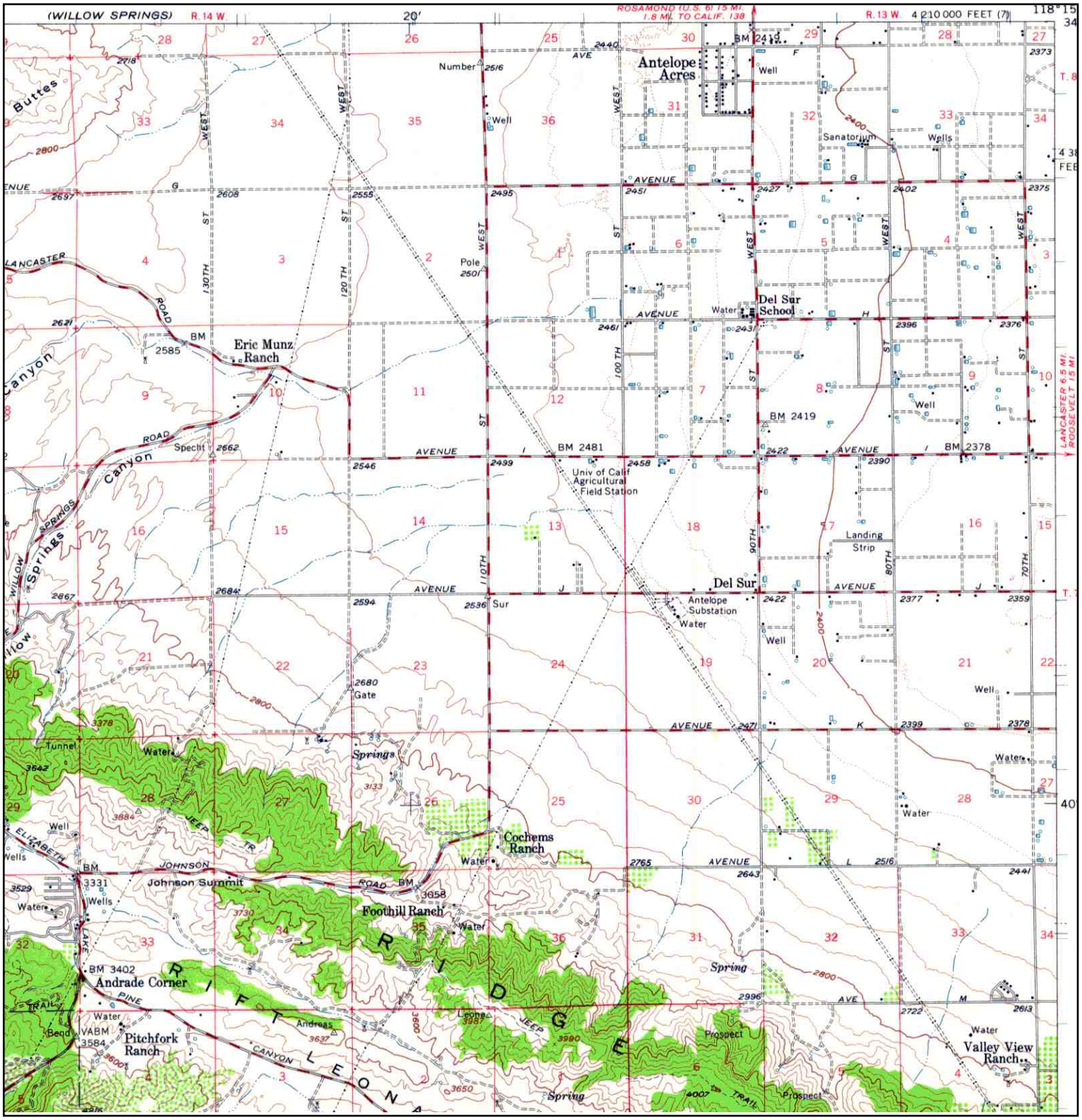


N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1936 SERIES: 6 SCALE: 1:24000	SITE NAME: Halcyon Solar ADDRESS: 15 Lancaster, CA 93536 LAT/LONG: 34.6943 / -118.287	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.151 RESEARCH DATE: 06/08/2011

Historical Topographic Map

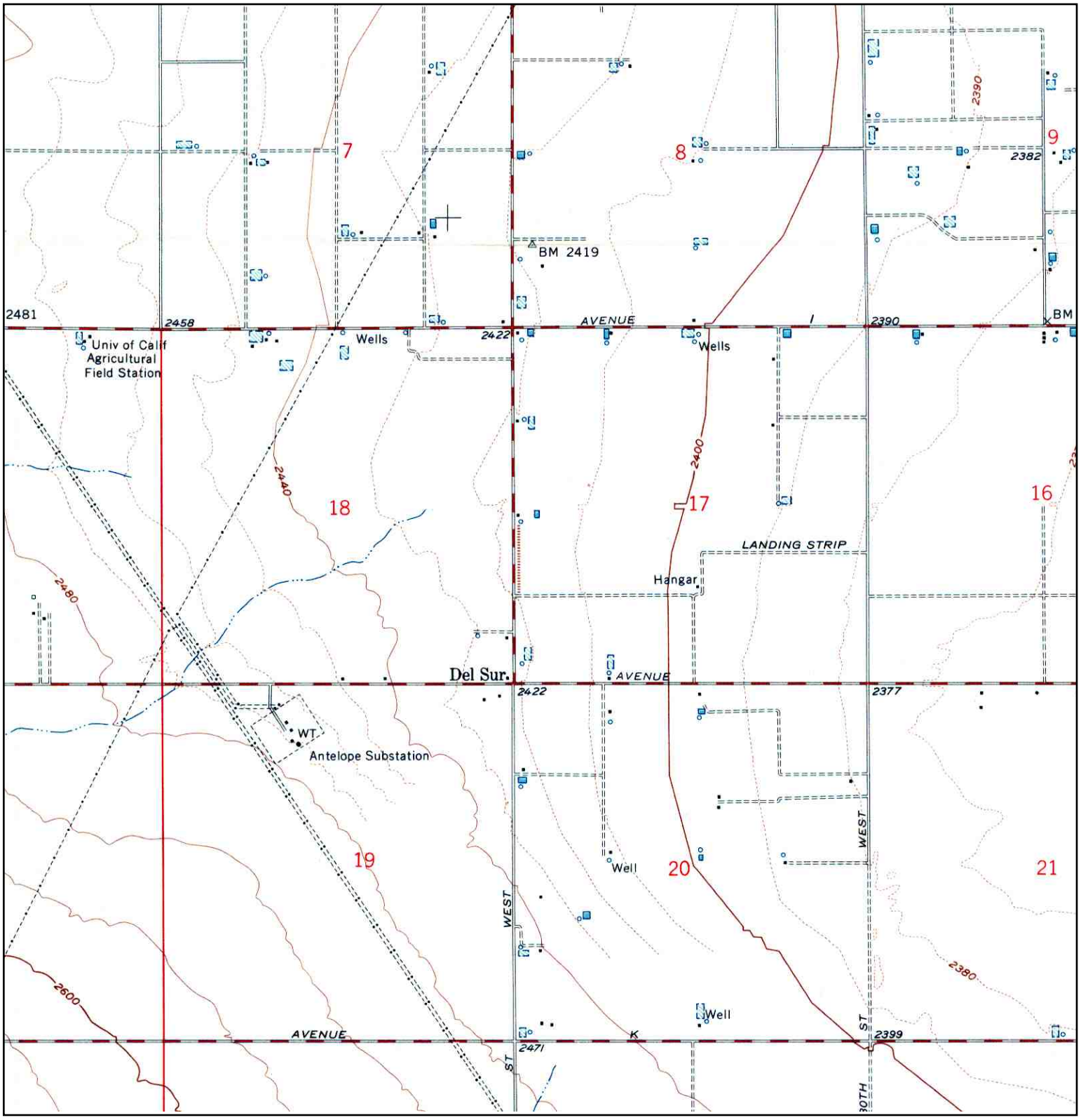
N	TARGET QUAD			
	NAME:	DEL SUR	SITE NAME: Halcyon Solar	CLIENT: Tetra Tech Inc.
	MAP YEAR:	1951	ADDRESS: 15	CONTACT: Garret Bean
	REVISED:	1936	Lancaster, CA 93536	INQUIRY#: 3089735.151
	SERIES:	6	LAT/LONG: 34.6943 / -118.287	RESEARCH DATE: 06/08/2011
	SCALE:	1:24000		

Historical Topographic Map



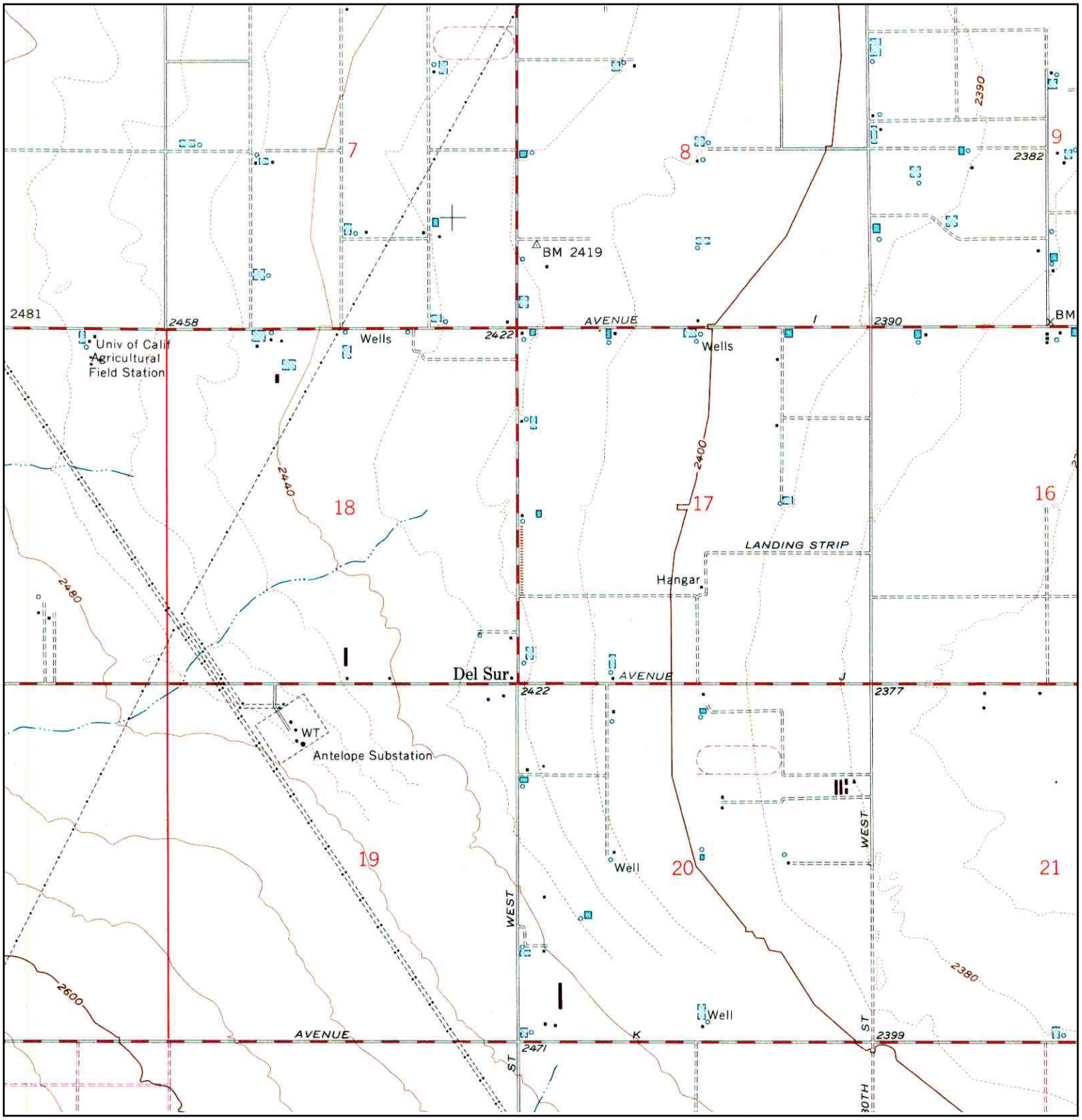
N	TARGET QUAD NAME: BOUQUET RESERVOIR MAP YEAR: 1958 SERIES: 15 SCALE: 1:62500	SITE NAME: Halcyon Solar ADDRESS: 15 Lancaster, CA 93536 LAT/LONG: 34.6943 / -118.287	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.151 RESEARCH DATE: 06/08/2011

Historical Topographic Map



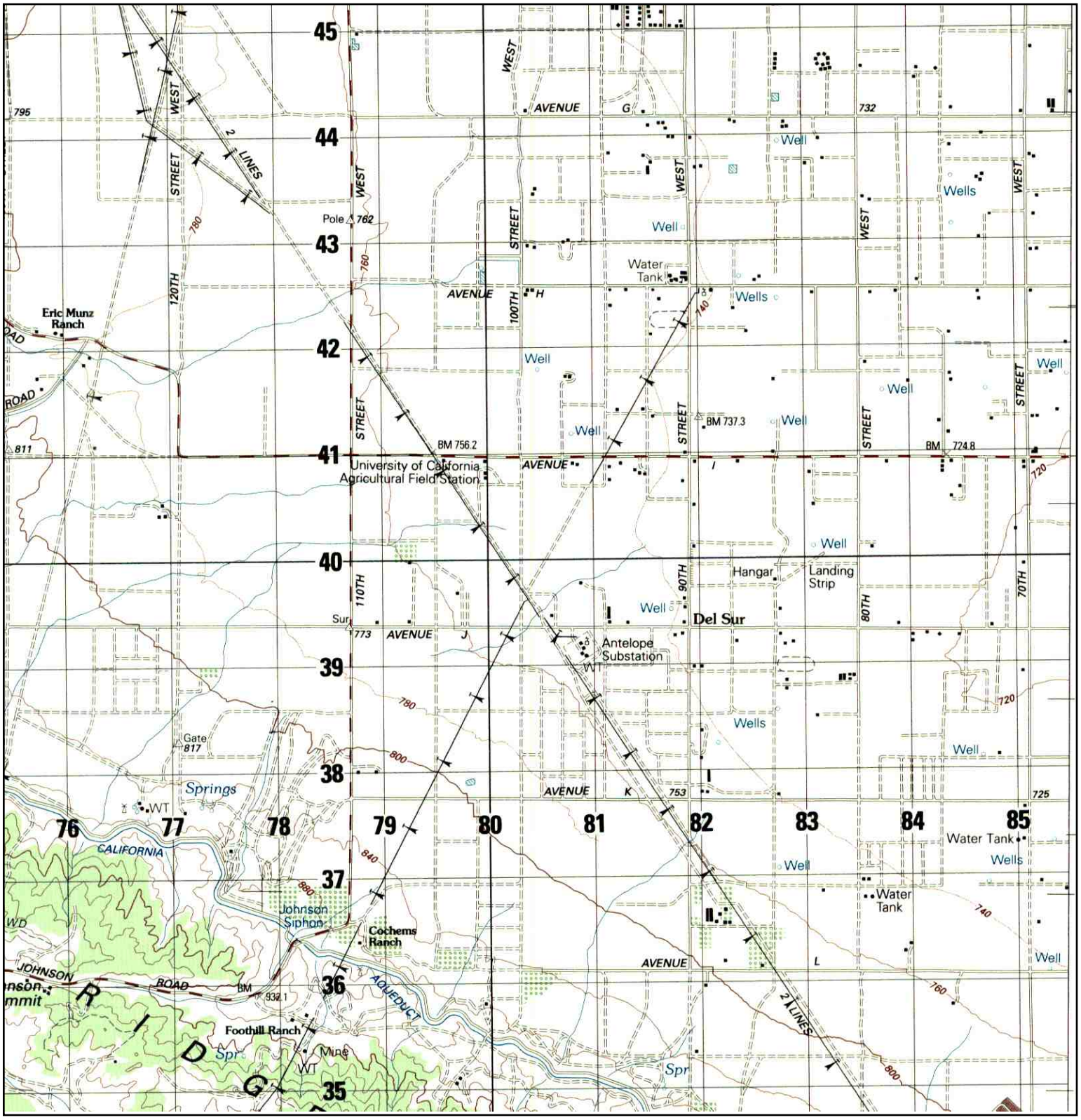
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Halcyon Solar ADDRESS: 15 Lancaster, CA 93536 LAT/LONG: 34.6943 / -118.287	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.151 RESEARCH DATE: 06/08/2011

Historical Topographic Map



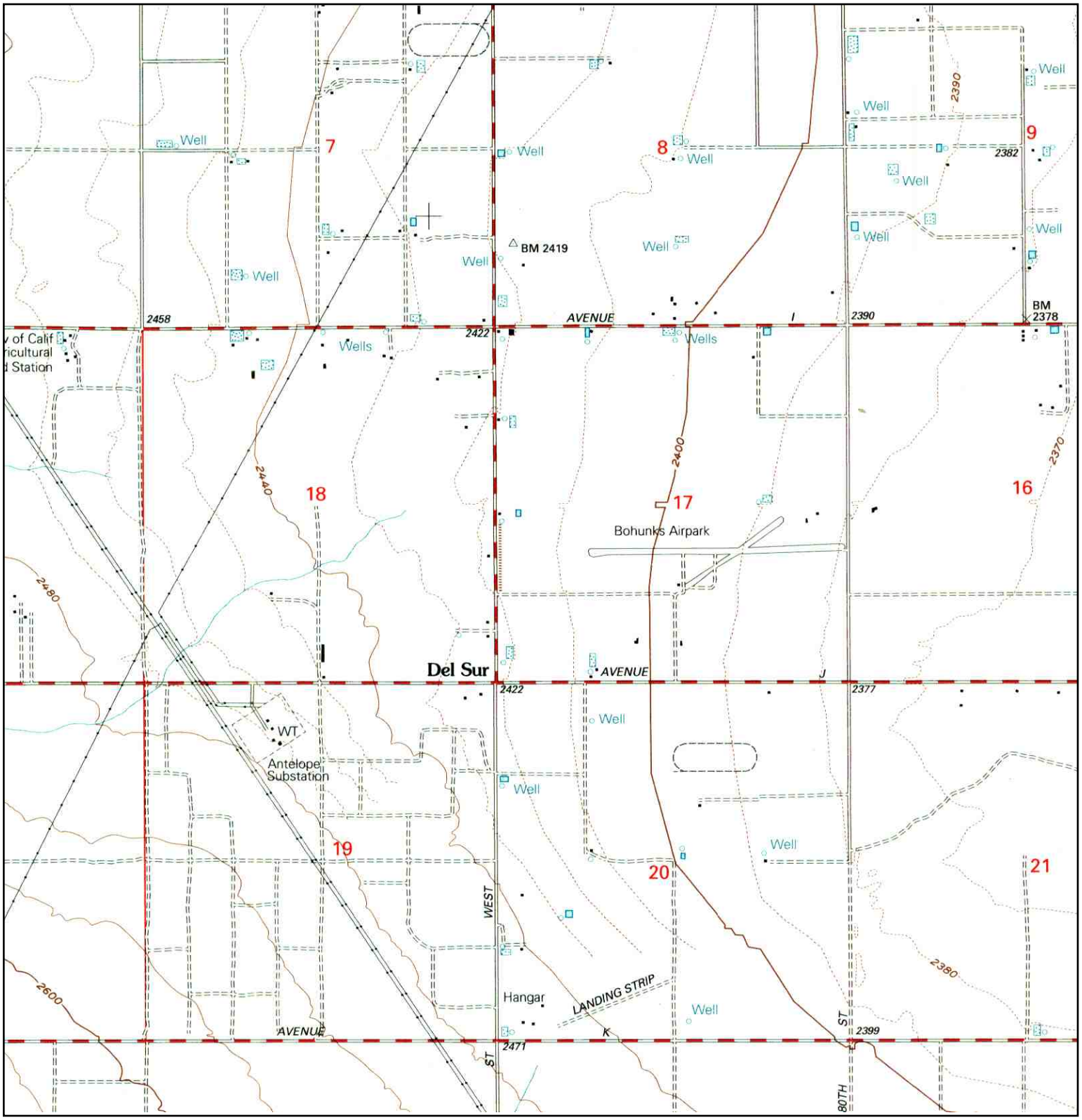
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1974 PHOTOREVISED:1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Halcyon Solar ADDRESS: 15 Lancaster, CA 93536 LAT/LONG: 34.6943 / -118.287	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.151 RESEARCH DATE: 06/08/2011

Historical Topographic Map



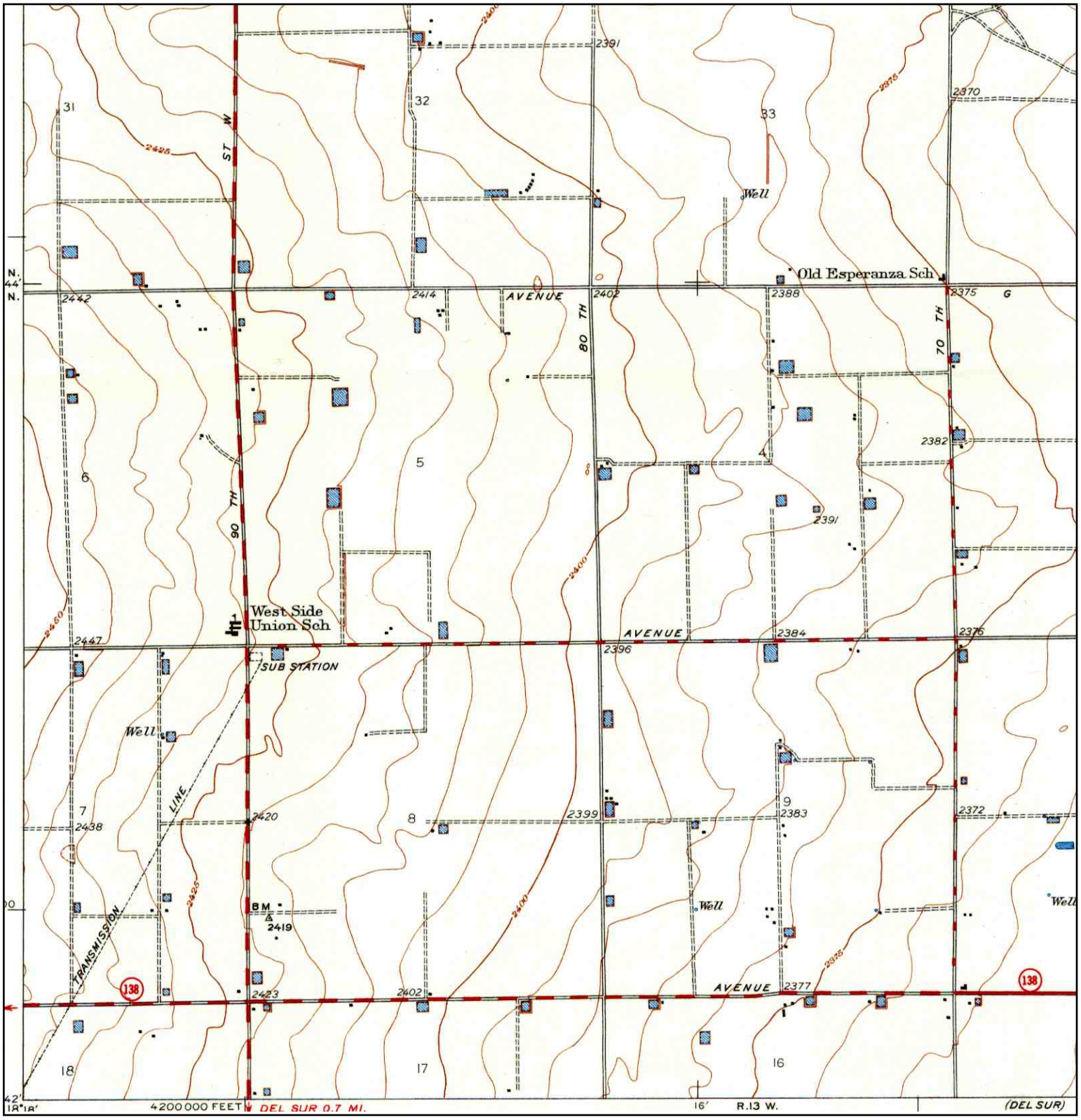
N	TARGET QUAD NAME: BOUQUET RESERVOIR MAP YEAR: 1987 SERIES: 15 SCALE: 1:50000	SITE NAME: Halcyon Solar ADDRESS: 15 Lancaster, CA 93536 LAT/LONG: 34.6943 / -118.287	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.151 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	TARGET QUAD		SITE NAME:	Halcyon Solar	CLIENT:	Tetra Tech Inc.
	NAME:	DEL SUR	ADDRESS:	15	CONTACT:	Garret Bean
	MAP YEAR:	1995		Lancaster, CA 93536	INQUIRY#:	3089735.151
			LAT/LONG:	34.6943 / -118.287	RESEARCH DATE:	06/08/2011
	SERIES:	7.5				
	SCALE:	1:24000				

Historical Topographic Map



N	ADJOINING QUAD NAME: ESPERANZA SCHOOL MAP YEAR: 1951 SERIES: 6 SCALE: 1:24000	SITE NAME: Halcyon Solar ADDRESS: 15 Lancaster, CA 93536 LAT/LONG: 34.6943 / -118.287	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.151 RESEARCH DATE: 06/08/2011

Halcyon Solar
15
Lancaster, CA 93536

Inquiry Number: 3089735.149s
June 08, 2011

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

15
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.694300 - 34° 41' 39.5''
Longitude (West):	118.287000 - 118° 17' 13.2''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	382117.8
UTM Y (Meters):	3839700.0
Elevation:	2415 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
SLIC ---------- Statewide SLIC Cases

INDIAN LUST - Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST - Active UST Facilities
AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - Underground Storage Tanks on Indian Land
FEMA UST - Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP - Voluntary Cleanup Program Properties
INDIAN VCP - Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI - Open Dump Inventory
DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT - Waste Management Unit Database
SWRCY - Recycler Database
HAULERS - Registered Waste Tire Haulers Listing
INDIAN ODI - Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL - Clandestine Drug Labs
HIST Cal-Sites - Historical Calsites Database
SCH - School Property Evaluation Program
Toxic Pits - Toxic Pits Cleanup Act Sites
AOCONCERN - San Gabriel Valley Areas of Concern
CDL - Clandestine Drug Labs
US HIST CDL - National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST - Facility Inventory Database
HIST UST - Hazardous Substance Storage Container Database
SWEEPS UST - SWEEPS UST Listing

Local Land Records

LIENS 2 - CERCLA Lien Information
LUCIS - Land Use Control Information System
LIENS - Environmental Liens Listing
DEED - Deed Restriction Listing

Records of Emergency Release Reports

HMIRS - Hazardous Materials Information Reporting System

CHMIRS California Hazardous Material Incident Report System
LDS Land Disposal Sites Listing
MCS Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen RCRA - Non Generators
DOT OPS Incident and Accident Data
DOD Department of Defense Sites
FUDS Formerly Used Defense Sites
CONSENT Superfund (CERCLA) Consent Decrees
ROD Records Of Decision
UMTRA Uranium Mill Tailings Sites
MINES Mines Master Index File
TRIS Toxic Chemical Release Inventory System
TSCA Toxic Substances Control Act
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
SSTS Section 7 Tracking Systems
ICIS Integrated Compliance Information System
PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database
FINDS Facility Index System/Facility Registry System
RAATS RCRA Administrative Action Tracking System
CA BOND EXP. PLAN Bond Expenditure Plan
NPDES NPDES Permits Listing
WDS Waste Discharge System
Cortese "Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE Hazardous Waste & Substance Site List
Notify 65 Proposition 65 Records
LA Co. Site Mitigation Site Mitigation List
DRYCLEANERS Cleaner Facilities
WIP Well Investigation Program Case List
LOS ANGELES CO. HMS HMS: Street Number List
HAZNET Facility and Manifest Data
EMI Emissions Inventory Data
INDIAN RESERV Indian Reservations
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
FINANCIAL ASSURANCE Financial Assurance Information Listing
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
PROC Certified Processors Database
MWMP Medical Waste Management Program Listing
COAL ASH DOE Sleam-Electric Plan Operation Data

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Historical Auto Stations EDR Proprietary Historic Gas Stations
EDR Historical Cleaners EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

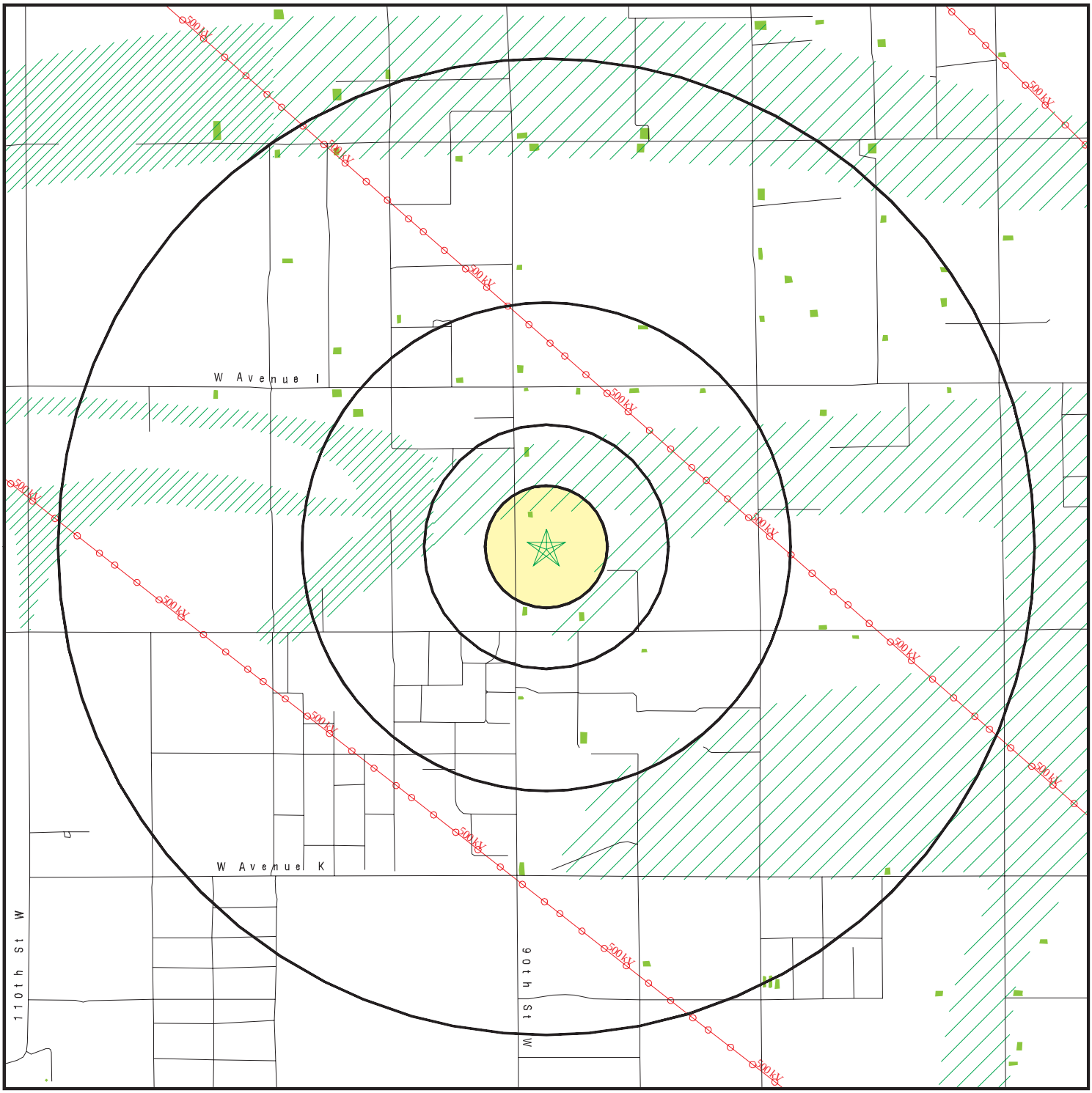
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 34 records.

Site Name	Database(s)
TRACT NO 060987	NPDES
GRANDIFLORA	NPDES
AVE E ETAL	NPDES
SO CALIF EDISON CO	NPDES, HAZNET
AVENUE K & 47TH STREET WEST	NPDES
D & D WELDING	NPDES
TRACT 060430	NPDES
SUNSET LANDING	NPDES
TRTP YARD 28 MATERIAL STORAGE	NPDES
HARSHFIELD TERRACE RETIREMENT HOUS	NPDES
CAL MAT	SWEEPS UST
ON AVENUE G, BETWEEN 100 WEST	CDL
ON NORTH 35TH STREET WEST AT A	CDL
85TH ST, W OF ALAMADA	CDL
28.15 MI.MARKER ON ANGELES CRE	CDL
90TH E / AVE J	AST
5 MI NW OF HWY 138 & 300TH ST	AST
PAR ELECTRICAL CONTRACTORS INC	HAZNET
SOUTHERN CAL EDISON /DEL SUR SUB S	HAZNET
SOUTHERN CALIFORNIA EDISON/ANTELOP	HAZNET
JMC TRANSPORTATION	HAZNET
OSO PUMPING PLANT	HAZNET
ILLEGAL DRUG LAB/OPERATOR UNKNOWN	HAZNET
LOS ANGELES COUNTY DEPT OF PUBLIC	HAZNET
CNTY LOS ANGELES/RD 551	HAZNET
3995 AVENUE H W	US CDL
VALUE CLEANERS, STUART MATROS	EMI
ANTELOPE VALLEY COLLEGE	EMI
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
CASTA DWR- CHECK SITE 59	EMI
JOE WALKER MIDDLE SCHOOL	EMI
BURGER KING	EMI
LACO RD 551 ROAD MAINTENANCE YARD	EMI

OVERVIEW MAP - 3089735.149s



0 1/2 1 2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Halcyon Solar ADDRESS: 15 Lancaster CA 93536 LAT/LONG: 34.6943 / 118.2870	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.149s DATE: June 08, 2011 1:02 pm

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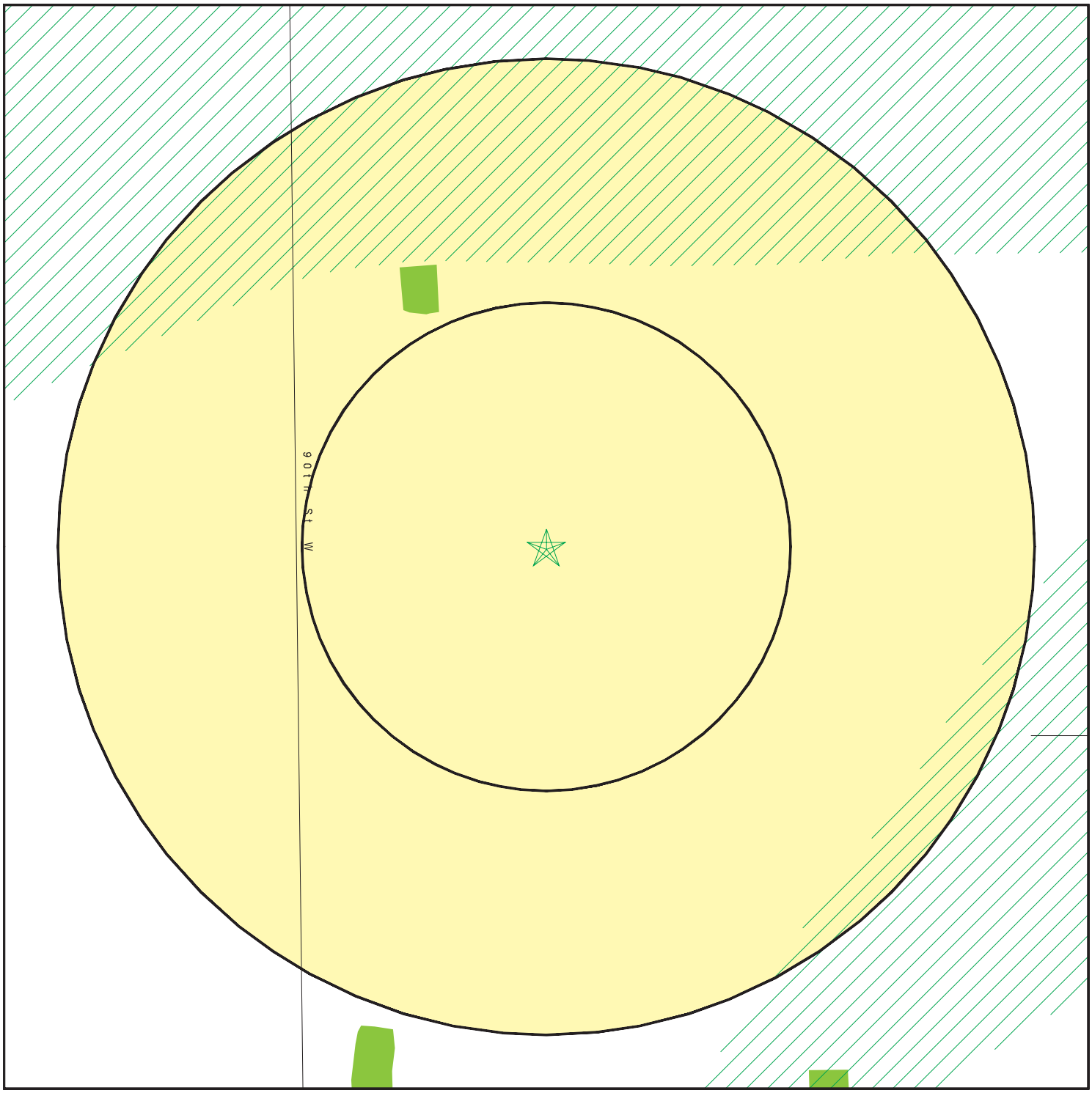
DETAIL MAP - 3089735.149s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Halcyon Solar ADDRESS: 15 Lancaster CA 93536 LAT/LONG: 34.6943 / 118.2870	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.149s DATE: June 08, 2011 1:04 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.250	0	0	0	0	0	0
Proposed NPL		1.250	0	0	0	0	0	0
NPL LIENS		0.250	0	0	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.250	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		0.750	0	0	0	0	NR	0
FEDERAL FACILITY		1.250	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.750	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.250	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.750	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.500	0	0	0	NR	NR	0
RCRA-SQG		0.500	0	0	0	NR	NR	0
RCRA-CESQG		0.500	0	0	0	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.750	0	0	0	0	NR	0
US INST CONTROL		0.750	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.250	0	0	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.250	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.250	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.750	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		0.750	0	0	0	0	NR	0
SLIC		0.750	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST		0.750	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.500	0	0	0	NR	NR	0
AST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.500	0	0	0	NR	NR	0
FEMA UST		0.500	0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.750	0	0	0	0	NR	0
INDIAN VCP		0.750	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.750	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		0.750	0	0	0	0	NR	0
DEBRIS REGION 9		0.750	0	0	0	0	NR	0
WMUDS/SWAT		0.750	0	0	0	0	NR	0
SWRCY		0.750	0	0	0	0	NR	0
HAULERS		0.250	0	0	NR	NR	NR	0
INDIAN ODI		0.750	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.250	0	0	NR	NR	NR	0
HIST Cal-Sites		1.250	0	0	0	0	0	0
SCH		0.500	0	0	0	NR	NR	0
Toxic Pits		1.250	0	0	0	0	0	0
AOCONCERN		1.250	0	0	0	0	0	0
CDL		0.250	0	0	NR	NR	NR	0
US HIST CDL		0.250	0	0	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.500	0	0	0	NR	NR	0
HIST UST		0.500	0	0	0	NR	NR	0
SWEEPS UST		0.500	0	0	0	NR	NR	0
Local Land Records								
LIENS 2		0.250	0	0	NR	NR	NR	0
LUCIS		0.750	0	0	0	0	NR	0
LIENS		0.250	0	0	NR	NR	NR	0
DEED		0.750	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.250	0	0	NR	NR	NR	0
CHMIRS		0.250	0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS		0.250	0	0	NR	NR	NR	0
MCS		0.250	0	0	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.500	0	0	0	NR	NR	0
DOT OPS		0.250	0	0	NR	NR	NR	0
DOD		1.250	0	0	0	0	0	0
FUDS		1.250	0	0	0	0	0	0
CONSENT		1.250	0	0	0	0	0	0
ROD		1.250	0	0	0	0	0	0
UMTRA		0.750	0	0	0	0	NR	0
MINES		0.500	0	0	0	NR	NR	0
TRIS		0.250	0	0	NR	NR	NR	0
TSCA		0.250	0	0	NR	NR	NR	0
FTTS		0.250	0	0	NR	NR	NR	0
HIST FTTS		0.250	0	0	NR	NR	NR	0
SSTS		0.250	0	0	NR	NR	NR	0
ICIS		0.250	0	0	NR	NR	NR	0
PADS		0.250	0	0	NR	NR	NR	0
MLTS		0.250	0	0	NR	NR	NR	0
RADINFO		0.250	0	0	NR	NR	NR	0
FINDS		0.250	0	0	NR	NR	NR	0
RAATS		0.250	0	0	NR	NR	NR	0
CA BOND EXP. PLAN		1.250	0	0	0	0	0	0
NPDES		0.250	0	0	NR	NR	NR	0
WDS		0.250	0	0	NR	NR	NR	0
Cortese		0.750	0	0	0	0	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.250	0	0	0	0	0	0
LA Co. Site Mitigation		0.250	0	0	NR	NR	NR	0
DRYCLEANERS		0.500	0	0	0	NR	NR	0
WIP		0.500	0	0	0	NR	NR	0
LOS ANGELES CO. HMS		0.250	0	0	NR	NR	NR	0
HAZNET		0.250	0	0	NR	NR	NR	0
EMI		0.250	0	0	NR	NR	NR	0
INDIAN RESERV		1.250	0	0	0	0	0	0
SCRD DRYCLEANERS		0.750	0	0	0	0	NR	0
FINANCIAL ASSURANCE		0.250	0	0	NR	NR	NR	0
HWP		1.250	0	0	0	0	0	0
HWT		0.500	0	0	0	NR	NR	0
COAL ASH EPA		0.750	0	0	0	0	NR	0
PCB TRANSFORMER		0.250	0	0	NR	NR	NR	0
PROC		0.750	0	0	0	0	NR	0
MWMP		0.500	0	0	0	NR	NR	0
COAL ASH DOE		0.250	0	0	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.250	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.500	0	0	0	NR	NR	0
EDR Historical Cleaners		0.500	0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 34 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
LANCASTER	S110374354	PAR ELECTRICAL CONTRACTORS INC	2866TH & 2 W AVENUE F	93536	HAZNET
LANCASTER	S109462558	TRACT NO 060987	52 52ND ST W / AVENUE J	93536	NPDES
LANCASTER	S109444838	GRANDIFLORA	60 60TH STREET WEST / AVENUE	93536	NPDES
LANCASTER	S105086048	SOUTHERN CAL EDISON /DEL SUR SUB S	90TH ST W & AVE H	93536	HAZNET
LANCASTER	A100345406		90TH E / AVE J	93536	AST
LANCASTER	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES
LANCASTER	S104568573	SO CALIF EDISON CO	9634 W AVENUE J	93536	NPDES, HAZNET
LANCASTER	S107143259	SOUTHERN CALIFORNIA EDISON/ANTELOP	9634 W AVENUE J	93536	HAZNET
LANCASTER	S106842034	VALUE CLEANERS, STUART MATROS	2849 W AVENUE L	93536	EMI
LANCASTER	S106826009	ANTELOPE VALLEY COLLEGE	3041 W AVENUE K	93536	EMI
LANCASTER	S107539709		ON AVENUE G, BETWEEN 100 WEST	93536	CDL
LANCASTER	S109436818	AVENUE K & 47TH STREET WEST	AVENUE K / 47TH STREET WEST		NPDES
LANCASTER	1012055833	3995 AVENUE H W	3995 AVENUE H W		US CDL
LANCASTER	S110367727	JMC TRANSPORTATION	W AVENUE L AT 30TH ST	93536	HAZNET
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 / 300TH S	93536	HAZNET
LANCASTER	S107539974		ON NORTH 35TH STREET WEST AT A	93536	CDL
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
LANCASTER	S109441193	D & D WELDING	NWC AVENUE L I2 / 7TH ST E		NPDES
LANCASTER	S109461420	TRACT 060430	SE OF 37TH STREET WEST / AVE		NPDES
LANCASTER	S109460024	SUNSET LANDING	SE OF INTERSECTION OF 45 ST W	93536	NPDES
LOS ANGELES	S110736984	TRTP YARD 28 MATERIAL STORAGE	W AVENUE I AND 73RD ST	93536	NPDES
LOS ANGELES COUNTY	S107536741		85TH ST, W OF ALAMADA	0	CDL
LOS ANGELES COUNTY	S107532211		28.15 MI.MARKER ON ANGELES CRE	0	CDL
PALMDALE	S103678194	ILLEGAL DRUG LAB/OPERATOR UNKNOWN	AVENUE T, 175TH ST EAST	93536	HAZNET
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HW	93536	EMI
QUARTZ HILL	S103975334	LOS ANGELES COUNTY DEPT OF PUBLIC	4859 W AVENUE L 12	93536	HAZNET
QUARTZ HILL	S103957875	CNTY LOS ANGELES/RD 551	4859 W AVENUE L 12	93536	HAZNET
QUARTZ HILL	S106920975	JOE WALKER MIDDLE SCHOOL	5632 W AVENUE L 8	93536	EMI
QUARTZ HILL	S106920186	BURGER KING	4107 W AVENUE L	93536	EMI
QUARTZ HILL	S108432323	LACO RD 551 ROAD MAINTENANCE YARD	4859 W AVENUE L 12	93536	EMI
QUARTZ HILL	S110042892	HARSHFIELD TERRACE RETIREMENT HOUS	6709 W AVENUE M	93536	NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPAa??s Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/15/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 05/25/2010
Date Data Arrived at EDR: 06/02/2010
Date Made Active in Reports: 10/04/2010
Number of Days to Update: 124

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/07/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 11/04/2009
Date Data Arrived at EDR: 05/04/2010
Date Made Active in Reports: 07/07/2010
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 12/02/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 57

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/03/2011
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/01/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 12/29/2010
Date Data Arrived at EDR: 12/30/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 02/24/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 46

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/07/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 03/04/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 05/02/2011
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/18/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 51

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/21/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 30

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2011
Date Data Arrived at EDR: 02/11/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/15/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 10/29/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 5

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/21/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 99

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/02/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/08/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/17/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 94

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/07/2011
Date Data Arrived at EDR: 01/21/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/11/2011
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Biennially

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/04/2011
Number of Days to Update: 29

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/15/2010
Date Data Arrived at EDR: 09/16/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 13

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/07/2010
Date Made Active in Reports: 08/12/2010
Number of Days to Update: 36

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/01/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 02/28/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/04/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/09/2010
Date Data Arrived at EDR: 08/11/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 9
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 04/26/2011
Number of Days to Update: 41

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 33

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 03/29/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COLUSA COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 12/01/2010
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/06/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/31/2011
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/25/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2011
Date Data Arrived at EDR: 02/09/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 23
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/18/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/12/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 30
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/26/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 22
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 04/25/2011
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/20/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/07/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/15/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 16

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/17/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 31

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 20

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 11/16/2010
Date Made Active in Reports: 01/25/2011
Number of Days to Update: 70

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/21/2010
Next Scheduled EDR Contact: 03/28/2011
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/16/2011
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/30/2011
Date Data Arrived at EDR: 03/31/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 22
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/22/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 29
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 36
Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/14/2011
Date Data Arrived at EDR: 03/15/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 9
Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/25/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 25
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/07/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 35
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/07/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/08/2011
Number of Days to Update: 28

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 30

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 01/25/2011
Date Data Arrived at EDR: 02/03/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 29

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/26/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/22/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 05/12/2011
Date Made Active in Reports: 05/24/2011
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/12/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/06/2011
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/19/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 38

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/06/2010
Date Made Active in Reports: 07/26/2010
Number of Days to Update: 20

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

HALCYON SOLAR
15
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.69430 - 34° 41' 39.5''
Longitude (West):	118.287 - 118° 17' 13.2''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	382117.8
UTM Y (Meters):	3839700.0
Elevation:	2415 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

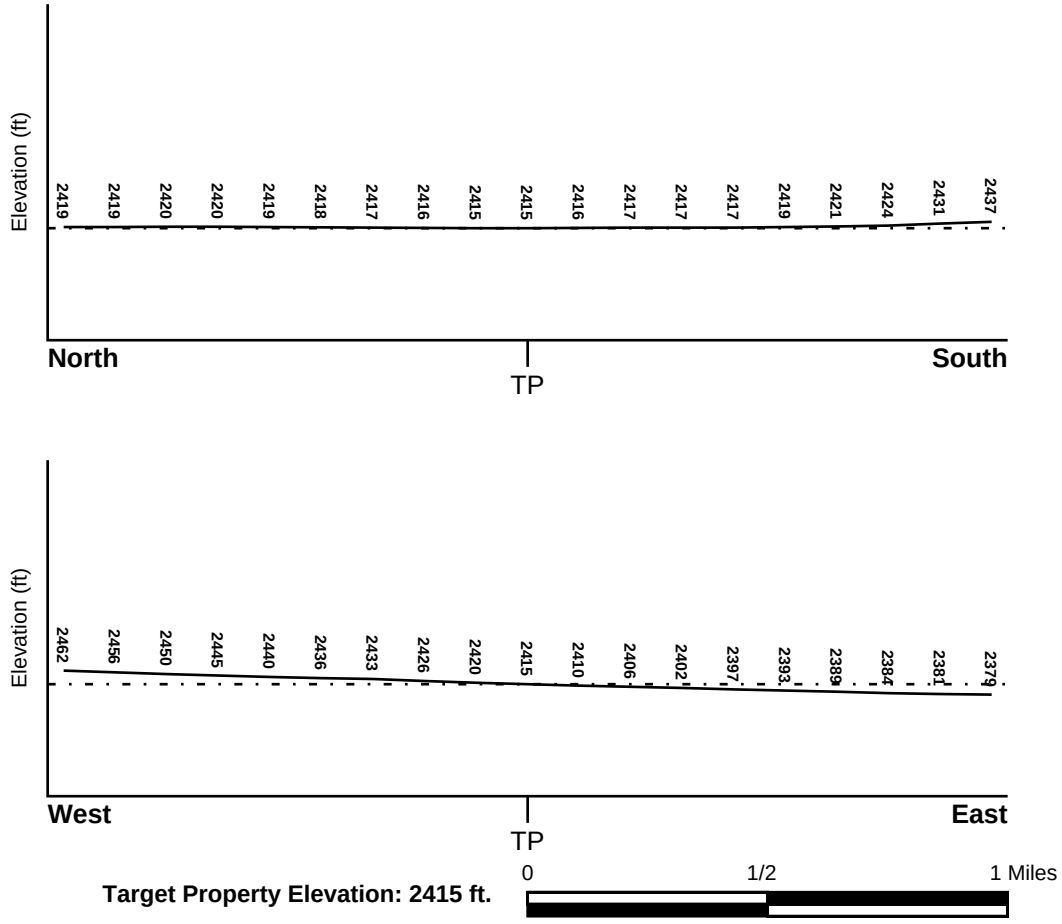
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General East

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
DEL SUR	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

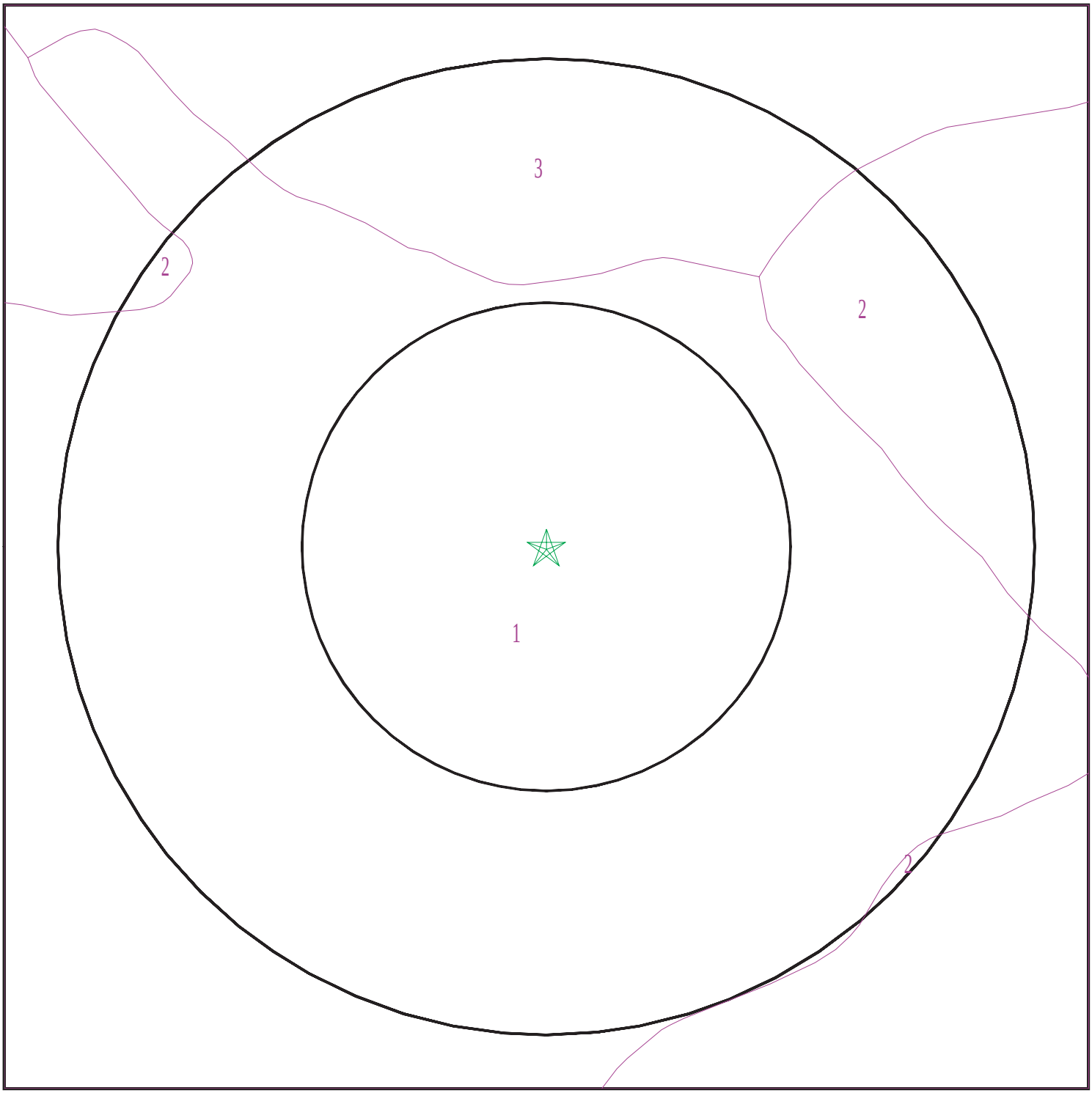
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3089735.149s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Halcyon Solar	CLIENT:	Tetra Tech Inc.
ADDRESS:	15 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.6943 / 118.2870	INQUIRY #:	3089735.149s
		DATE:	June 08, 2011 1:05 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 2

Soil Component Name: Sunrise

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
2	18 inches	31 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
3	31 inches	48 inches	cemented	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4
4	48 inches	64 inches	stratified gravelly sandy loam to loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 14 Min: 4	Max: 8.4 Min: 7.4

Soil Map ID: 3

Soil Component Name: Hesperia

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	3 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4
2	3 inches	53 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4
3	53 inches	77 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 7.4

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS3159281	1/8 - 1/4 Mile NW
A2	USGS3159289	1/8 - 1/4 Mile NW
B4	USGS3159448	1/4 - 1/2 Mile SW
5	USGS3159402	1/4 - 1/2 Mile SSW
6	USGS3159401	1/4 - 1/2 Mile SSE
7	USGS3159429	1/4 - 1/2 Mile SW
9	USGS3159603	1/4 - 1/2 Mile South
C10	USGS3159372	1/4 - 1/2 Mile NNW
C11	USGS3159371	1/4 - 1/2 Mile NNW
D13	USGS3159598	1/4 - 1/2 Mile SSW
14	USGS3159592	1/4 - 1/2 Mile SSE
D16	USGS3159593	1/2 - 1 Mile SSW
F19	USGS3159600	1/2 - 1 Mile SE
G22	USGS3159376	1/2 - 1 Mile NE
G23	USGS3159375	1/2 - 1 Mile NE
E24	USGS3159589	1/2 - 1 Mile SSW
25	USGS3159417	1/2 - 1 Mile WSW
F26	USGS3159595	1/2 - 1 Mile SE
H27	USGS3159192	1/2 - 1 Mile North
I28	USGS3159191	1/2 - 1 Mile NNE
31	USGS3159297	1/2 - 1 Mile ENE
J32	USGS3159474	1/2 - 1 Mile East
H33	USGS3159197	1/2 - 1 Mile North
I34	USGS3159196	1/2 - 1 Mile NNE
K36	USGS3159551	1/2 - 1 Mile South
K37	USGS3159552	1/2 - 1 Mile SSW
L41	USGS3159190	1/2 - 1 Mile NNE
M42	USGS3159403	1/2 - 1 Mile WSW
M43	USGS3159396	1/2 - 1 Mile WSW
L44	USGS3159195	1/2 - 1 Mile NNE
N45	USGS3159211	1/2 - 1 Mile NNW
N47	USGS3159212	1/2 - 1 Mile NNW
O49	USGS3159205	1/2 - 1 Mile NW
51	USGS3159094	1/2 - 1 Mile North
52	USGS3159540	1/2 - 1 Mile SSE
53	USGS3159500	1/2 - 1 Mile South

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
P54	USGS3159581	1/2 - 1 Mile SW
Q55	USGS3159206	1/2 - 1 Mile NW
R56	USGS3159512	1/2 - 1 Mile SSE
R58	USGS3159510	1/2 - 1 Mile SSE
60	USGS3159104	1/2 - 1 Mile NNE
S61	USGS3159700	1/2 - 1 Mile South
S62	USGS3159701	1/2 - 1 Mile South
64	USGS3159114	1/2 - 1 Mile NNW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

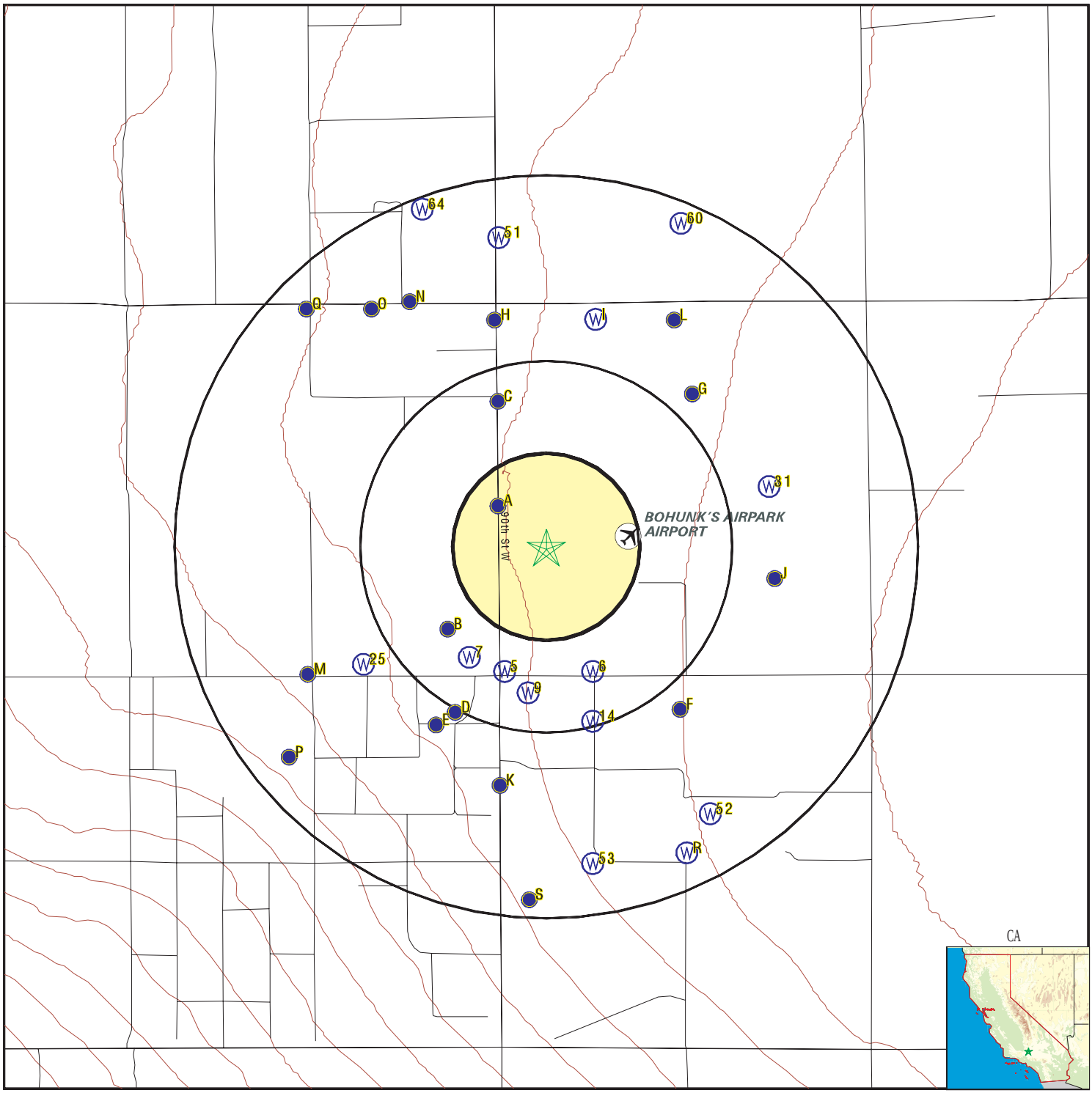
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A3	CADW40000013964	1/8 - 1/4 Mile WNW
B8	CADW40000013914	1/4 - 1/2 Mile SW
C12	CADW40000014007	1/4 - 1/2 Mile NNW
D15	CADW40000013852	1/2 - 1 Mile SSW
E17	CADW40000013835	1/2 - 1 Mile SSW
F18	CADW40000013849	1/2 - 1 Mile SE
G20	CADW40000014012	1/2 - 1 Mile NE
G21	CADW40000014011	1/2 - 1 Mile NE
J29	CADW40000013936	1/2 - 1 Mile East
H30	CADW40000014042	1/2 - 1 Mile NNW
H35	CADW40000014046	1/2 - 1 Mile NNW
K38	CADW40000013784	1/2 - 1 Mile SSW
L39	CADW40000014043	1/2 - 1 Mile NNE
L40	CADW40000014047	1/2 - 1 Mile NNE
M46	CADW40000013869	1/2 - 1 Mile WSW
N48	CADW40000014058	1/2 - 1 Mile NNW
O50	CADW40000014051	1/2 - 1 Mile NW
P57	CADW40000013802	1/2 - 1 Mile SW
Q59	CADW40000014050	1/2 - 1 Mile NW
S63	CADW40000013732	1/2 - 1 Mile South

PHYSICAL SETTING SOURCE MAP - 3089735.149s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: Halcyon Solar	CLIENT: Tetra Tech Inc.
ADDRESS: 15 Lancaster CA 93536	CONTACT: Garret Bean
LAT/LONG: 34.6943 / 118.2870	INQUIRY #: 3089735.149s DATE: June 08, 2011 1:05 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
NW
1/8 - 1/4 Mile
Higher

FED USGS **USGS3159281**

Agency cd:	USGS	Site no:	344145118171701
Site name:	007N013W17M001S		
Latitude:	344145	EDR Site id:	USGS3159281
Longitude:	1181717	Dec lat:	34.69581781
Dec lon:	-118.28896593	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19550125
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	601	Hole depth:	601
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1955-08-30	Ground water data end date:	1961-10-24
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1961-10-24	223.20		1960-09-16	258.00	
1959-10-25	244.40		1956-10-10	227.40	
1955-08-30	229.00				

Note: The site was being pumped.

A2
NW
1/8 - 1/4 Mile
Higher

FED USGS **USGS3159289**

Agency cd:	USGS	Site no:	344146118171701
Site name:	007N013W17M002S		
Latitude:	344146	EDR Site id:	USGS3159289
Longitude:	1181717	Dec lat:	34.69609557
Dec lon:	-118.28896593	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

A3
WNW
1/8 - 1/4 Mile
Higher

CA WELLS **CADW40000013964**

Longitude:	-118.289
Latiude:	34.6958
Stwellno:	07N13W17M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013964

B4
SW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159448**

Agency cd:	USGS	Site no:	344128118172501
Site name:	007N013W18R001S		
Latitude:	344128	EDR Site id:	USGS3159448
Longitude:	1181725	Dec lat:	34.69109578
Dec lon:	-118.29118825	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-28	Ground water data end date:	1963-05-28
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-28	266.18	

Note: The site had been pumped recently.

5
SSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159402**

Agency cd:	USGS	Site no:	344122118171701
Site name:	007N013W17N001S		
Latitude:	344122	EDR Site id:	USGS3159402
Longitude:	1181717	Dec lat:	34.68942918
Dec lon:	-118.28896597	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2422.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19521210
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	602	Hole depth:	602
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

6
SSE **FED USGS** **USGS3159401**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	344122118170201
Site name:	007N013W17P001S		
Latitude:	344122	EDR Site id:	USGS3159401
Longitude:	1181702	Dec lat:	34.68942919
Dec lon:	-118.28479917	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2408.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	19280101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

7
SW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159429**

Agency cd:	USGS	Site no:	344124118172301
Site name:	007N013W18R003S		
Latitude:	344124	EDR Site id:	USGS3159429
Longitude:	1181723	Dec lat:	34.68998471
Dec lon:	-118.29063268	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2426.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

B8
SW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000013914**

Longitude:	-118.2912
Latiude:	34.6911
Stwellno:	07N13W18R001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013914

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

9
South
1/4 - 1/2 Mile
Higher | **FED USGS** | **USGS3159603**

Agency cd:	USGS	Site no:	344119118171301
Site name:	007N013W20Z002S		
Latitude:	344119	EDR Site id:	USGS3159603
Longitude:	1181713	Dec lat:	34.68859589
Dec lon:	-118.28785483	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2415.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18900101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	560	Hole depth:	560
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

C10
NNW
1/4 - 1/2 Mile
Higher | **FED USGS** | **USGS3159372**

Agency cd:	USGS	Site no:	344200118171702
Site name:	007N013W17E002S		
Latitude:	344200	EDR Site id:	USGS3159372
Longitude:	1181717	Dec lat:	34.6999843
Dec lon:	-118.2889659	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19620101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	540	Hole depth:	540
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

C11
NNW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159371**

Agency cd:	USGS	Site no:	344200118171701
Site name:	007N013W17E001S		
Latitude:	344200	EDR Site id:	USGS3159371
Longitude:	1181717	Dec lat:	34.6999843
Dec lon:	-118.2889659	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 0000-00-00
Water quality data end date: 0000-00-00
Water quality data count: 0
Ground water data begin date: 1949-00-00
Ground water data end date: 1956-00-00
Ground water data count: 5

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel
1956	260.00	
Note: The site was being pumped.		
1955	248.00	
Note: The site was being pumped.		
1953	228.00	
Note: The site was being pumped.		
1950	200.00	
Note: The site was being pumped.		
1949	190.00	
Note: The site was being pumped.		

C12
NNW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014007**

Longitude: -118.289
Latiude: 34.7
Stwellno: 07N13W17E001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000014007

D13
SSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS3159598**

Agency cd:	USGS	Site no:	344117118172401
Site name:	007N013W19A001S		
Latitude:	344117	EDR Site id:	USGS3159598
Longitude:	1181724	Dec lat:	34.68804035
Dec lon:	-118.29091048	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2424.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19300101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-10-23	Ground water data end date:	1963-05-28
Ground water data count:	13		

Ground-water levels, Number of Measurements: 13

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-28	223.45		1963-04-01	219.20	
1962-11-07	210.70		1962-04-06	217.50	
1961-10-17	213.10		1960-10-24	204.90	
1960-03-07	193.50		1959-11-10	204.00	
1959-03-19	206.70		1958-11-28	194.70	
1958-03-12	184.70		1957-11-12	198.70	
1957-10-23	201.00				

14
SSE **FED USGS** **USGS3159592**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	344115118170201
Site name:	007N013W20C001S		
Latitude:	344115	EDR Site id:	USGS3159592
Longitude:	1181702	Dec lat:	34.68748482
Dec lon:	-118.28479918	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2409.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19350101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

D15
SSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000013852**

Longitude:	-118.2909
Latiude:	34.688
Stwellno:	07N13W19A001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013852

D16
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS3159593**

Agency cd:	USGS	Site no:	344115118172501
Site name:	007N013W19A004S		
Latitude:	344115	EDR Site id:	USGS3159593
Longitude:	1181725	Dec lat:	34.68748481
Dec lon:	-118.29118827	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2427.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18900101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	75.0	Hole depth:	75.0
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1908-01-01	Ground water data end date:	1908-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1908-01-01	59.00	

E17
SSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000013835**

Longitude:	-118.2912
Latiude:	34.6875
Stwellno:	07N13W19A004S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013835

F18
SE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000013849**

Longitude:	-118.2804
Latiude:	34.6878
Stwellno:	07N13W20B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013849

F19
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159600**

Agency cd:	USGS	Site no:	344118118164601
Site name:	007N013W20B001S		
Latitude:	344118	EDR Site id:	USGS3159600
Longitude:	1181646	Dec lat:	34.68831813
Dec lon:	-118.28035459	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2398.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	307	Hole depth:	307
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

G20
NE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014012**

Longitude:	-118.2792
Latiude:	34.7003
Stwellno:	07N13W17Z004S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014012

G21
NE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014011**

Longitude:	-118.2792
Latiude:	34.7003
Stwellno:	07N13W17Z003S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014011

G22
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159376**

Agency cd:	USGS	Site no:	344201118164502
Site name:	007N013W17Z004S		
Latitude:	344201	EDR Site id:	USGS3159376
Longitude:	1181645	Dec lat:	34.70026208
Dec lon:	-118.28007673	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2401.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	600	Hole depth:	600
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1920-01-01	Ground water data end date:	1920-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1920-01-01	23.00	

G23
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159375**

Agency cd:	USGS	Site no:	344201118164501
Site name:	007N013W17Z003S		
Latitude:	344201	EDR Site id:	USGS3159375
Longitude:	1181645	Dec lat:	34.70026208
Dec lon:	-118.28007673	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2401.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	270	Hole depth:	270
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1920-01-01	Ground water data end date:	1920-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1920-01-01	27.00	

E24
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS3159589**

Agency cd:	USGS	Site no:	344114118172901
Site name:	007N013W19A002S		
Latitude:	344114	EDR Site id:	USGS3159589
Longitude:	1181729	Dec lat:	34.68720705
Dec lon:	-118.29229942	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19510101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

25
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3159417**

Agency cd:	USGS	Site no:	344123118174101
Site name:	007N013W18Q003S		
Latitude:	344123	EDR Site id:	USGS3159417
Longitude:	1181741	Dec lat:	34.68970694
Dec lon:	-118.29563284	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2441.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

F26
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159595**

Agency cd:	USGS	Site no:	344116118164601
Site name:	007N013W20B002S		
Latitude:	344116	EDR Site id:	USGS3159595
Longitude:	1181646	Dec lat:	34.6877626
Dec lon:	-118.2803546	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2398.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19560101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-04-09	Ground water data end date:	1956-04-09
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1956-04-09	168.60	

Note: The site was being pumped.

H27
North
1/2 - 1 Mile
Higher

FED USGS **USGS3159192**

Agency cd:	USGS	Site no:	344211118171701
Site name:	007N013W17D002S		
Latitude:	344211	EDR Site id:	USGS3159192
Longitude:	1181717	Dec lat:	34.70303973
Dec lon:	-118.28896588	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2421.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	19450806
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	505	Hole depth:	505
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data end date: 0000-00-00
Ground water data begin date: 1945-08-06
Ground water data count: 26
Water quality data begin date: 0000-00-00
Water quality data count: 0
Ground water data end date: 1965-11-09

Ground-water levels, Number of Measurements: 26

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1965-11-09	225.24				
1963-04-04	247.20				
Note: The site had been pumped recently.					
1963-04-01	247.70		1962-11-07	216.30	
1962-08-02	228.50				
Note: The site had been pumped recently.					
1962-04-09	228.50		1961-10-19	204.10	
1961-04-05	217.40		1960-11-21	207.00	
1960-10-24	223.60		1960-04-12	216.50	
1959-10-21	214.00		1959-03-19	197.20	
1958-11-28	193.70		1958-11-13	196.70	
1958-06	285.00				
Note: The site was being pumped.					
1958-03-12	177.00		1957-11-12	190.70	
1957-03-08	183.60		1956-11-28	184.70	
1956	284.00				
Note: The site was being pumped.					
1954	271.00				
Note: The site was being pumped.					
1952	255.00				
Note: The site was being pumped.					
1948	197.00				
Note: The site was being pumped.					
1947	179.00				
Note: The site was being pumped.					
1945-08-06	144.00				

I28
NNE
1/2 - 1 Mile
Higher

FED USGS **USGS3159191**

Agency cd:	USGS	Site no:	344211118170201
Site name:	007N013W17C001S		
Latitude:	344211	EDR Site id:	USGS3159191
Longitude:	1181702	Dec lat:	34.70303974
Dec lon:	-118.28479908	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2412.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19000101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

J29
East
1/2 - 1 Mile
Lower

CA WELLS **CADW40000013936**

Longitude:	-118.2753
Latiude:	34.6931
Stwellno:	07N13W17Z002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013936

H30
NNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014042**

Longitude:	-118.289
Latiude:	34.703
Stwellno:	07N13W17D002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014042

31
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3159297**

Agency cd:	USGS	Site no:	344148118163201
Site name:	007N013W17Z001S		
Latitude:	344148	EDR Site id:	USGS3159297
Longitude:	1181632	Dec lat:	34.69665113
Dec lon:	-118.27646553	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2391.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

J32
East
1/2 - 1 Mile
Lower

FED USGS **USGS3159474**

Agency cd:	USGS	Site no:	344135118163101
Site name:	007N013W17Z002S		
Latitude:	344135	EDR Site id:	USGS3159474
Longitude:	1181631	Dec lat:	34.69304016
Dec lon:	-118.27618777	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2389.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18900101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	300	Hole depth:	300
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1908-01-01	Ground water data end date:	1908-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1908-01-01	30.00	

H33
North
1/2 - 1 Mile
Higher

FED USGS **USGS3159197**

Agency cd:	USGS	Site no:	344212118171701
Site name:	007N013W17D001S		
Latitude:	344212	EDR Site id:	USGS3159197
Longitude:	1181717	Dec lat:	34.7033175
Dec lon:	-118.28896588	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2420.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	162	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1927-00-00	Ground water data end date:	1957-10-29
Ground water data count:	24		

Ground-water levels, Number of Measurements: 24

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1957-10-29	156.5		1956-11-21	157.90	
1955-10-24	161.55		1955-05-18	153.89	
1954-11-15	155.30		1954-03-26	146.90	
1953-12-01	152.20		1952-11-20	147.10	
1951-12-07	144.00		1950-11-28	138.50	
1950-01-04	135.40		1948-11-30	124.10	
1947-12-09	113.50		1945-11-13	107.10	
1945-03-05	93.40		1944-12-06	99.60	
1941-12-02	95.80		1941-04-25	99.50	
1940-12-05	95.90		1940-03-13	91.50	
1939-11-17	98.70		1939-03-08	84.40	
1937-11-09	91.50		1927	55.00	

I34
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3159196**

Agency cd:	USGS	Site no:	344212118170101
Site name:	007N013W17C002S		
Latitude:	344212	EDR Site id:	USGS3159196
Longitude:	1181701	Dec lat:	34.70331751
Dec lon:	-118.28452129	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2412.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19000101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	414	Hole depth:	414
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
H35 **NNW** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CADW40000014046**

Longitude:	-118.289
Latiude:	34.7033
Stwellno:	07N13W17D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014046

	Database	EDR ID Number
K36 **South** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS3159551**

Agency cd:	USGS	Site no:	344106118171601
Site name:	007N013W20E002S		
Latitude:	344106	EDR Site id:	USGS3159551
Longitude:	1181716	Dec lat:	34.68498492
Dec lon:	-118.28868821	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2424.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19560201
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	605	Hole depth:	605
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-06-13	Ground water data end date:	1956-06-13
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1956-06-13	274.35	

K37
SSW
1/2 - 1 Mile
Higher

FED USGS **USGS3159552**

Agency cd:	USGS	Site no:	344106118171801
Site name:	007N013W20E001S		
Latitude:	344106	EDR Site id:	USGS3159552
Longitude:	1181718	Dec lat:	34.68498492
Dec lon:	-118.28924378	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2425.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19320101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

K38
SSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000013784**

Longitude:	-118.2887
Latiude:	34.685
Stwellno:	07N13W20E002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013784

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
L39 **NNE** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADW40000014043**

Longitude:	-118.2806
Latiude:	34.703
Stwellno:	07N13W17B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014043

	Database	EDR ID Number
L40 **NNE** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADW40000014047**

Longitude:	-118.2804
Latiude:	34.7033
Stwellno:	07N13W17B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014047

	Database	EDR ID Number
L41 **NNE** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS3159190**

Agency cd:	USGS	Site no:	344211118164701
Site name:	007N013W17B002S		
Latitude:	344211	EDR Site id:	USGS3159190
Longitude:	1181647	Dec lat:	34.70303975
Dec lon:	-118.28063228	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2402.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19480101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	606	Hole depth:	606
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 0000-00-00
Water quality data end date: 0000-00-00
Water quality data count: 0
Ground water data begin date: 1953-10-01
Ground water data end date: 1956-05-07
Ground water data count: 4

Ground-water levels, Number of Measurements: 4

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956-05-07	217.00		1955-06-17	227.90	
1954-10-15	197.20		1953-10-01	200.00	

M42
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3159403**

Agency cd: USGS
Site no: 344122118174901
Site name: 007N013W18Q001S
Latitude: 344122
EDR Site id: USGS3159403
Longitude: 1181749
Dec lat: 34.68942917
Dec lon: -118.29785514
Coor meth: M
Coor accr: S
Latlong datum: NAD27
Dec latlong datum: NAD83
District: 06
State: 06
County: 037
Country: US
Land net: Not Reported
Location map: DEL SUR
Map scale: 24000
Altitude: 2450.00
Altitude method: Interpolated from topographic map
Altitude accuracy: 010
Altitude datum: National Geodetic Vertical Datum of 1929
Hydrologic: AntelopeFremont Valleys. California. Area = 3310 sq.mi.
Topographic: Not Reported
Site type: Ground-water other than Spring
Date construction: Not Reported
Date inventoried: Not Reported
Mean greenwich time offset: PST
Local standard time flag: Y
Type of ground water site: Single well, other than collector or Ranney type
Aquifer Type: Not Reported
Aquifer: Not Reported
Well depth: 450
Hole depth: 450
Source of depth data: Not Reported
Project number: 479381106
Real time data flag: 0
Daily flow data begin date: 0000-00-00
Daily flow data end date: 0000-00-00
Daily flow data count: 0
Peak flow data begin date: 0000-00-00
Peak flow data end date: 0000-00-00
Peak flow data count: 0
Water quality data begin date: 0000-00-00
Water quality data end date: 0000-00-00
Water quality data count: 0
Ground water data begin date: 1963-05-28
Ground water data end date: 1963-05-28
Ground water data count: 1

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-28	235.58	

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

M43
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3159396**

Agency cd:	USGS	Site no:	344121118175001
Site name:	007N013W18Q002S		
Latitude:	344121	EDR Site id:	USGS3159396
Longitude:	1181750	Dec lat:	34.6891514
Dec lon:	-118.29813293	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2450.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	200	Hole depth:	200
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

L44
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3159195**

Agency cd:	USGS	Site no:	344212118164601
Site name:	007N013W17B001S		
Latitude:	344212	EDR Site id:	USGS3159195
Longitude:	1181646	Dec lat:	34.70331751
Dec lon:	-118.2803545	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2401.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19191222
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	502	Hole depth:	502
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1919-12-22	Ground water data end date:	1919-12-22
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1919-12-22	38.00	

N45
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159211**

Agency cd:	USGS	Site no:	344214118173101
Site name:	007N013W07R001S		
Latitude:	344214	EDR Site id:	USGS3159211
Longitude:	1181731	Dec lat:	34.70387302
Dec lon:	-118.29285489	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19460606
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 0000-00-00
Water quality data end date: 0000-00-00
Water quality data count: 0
Ground water data begin date: 1946-09-15
Ground water data end date: 1957-06-10
Ground water data count: 3

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel
1957-06-10	232.00	
1946-09-15	163.00	
1952-04-12	210.00	

M46
WSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000013869**

Longitude: -118.2979
Latiude: 34.6894
Stwellno: 07N13W18Q001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000013869

N47
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159212**

Agency cd: USGS
Site no: 344214118173401
Site name: 007N013W07R002S
Latitude: 344214
EDR Site id: USGS3159212
Longitude: 1181734
Dec lat: 34.70387302
Dec lon: -118.29368825
Coor meth: M
Coor accr: S
Latlong datum: NAD27
Dec latlong datum: NAD83
District: 06
State: 06
County: 037
Country: US
Land net: Not Reported
Location map: DEL SUR
Map scale: 24000
Altitude: 2431.00
Altitude method: Interpolated from topographic map
Altitude accuracy: 010
Altitude datum: National Geodetic Vertical Datum of 1929
Hydrologic: AntelopeFremont Valleys. California. Area = 3310 sq.mi.
Topographic: Not Reported
Site type: Ground-water other than Spring
Date construction: Not Reported
Date inventoried: Not Reported
Mean greenwich time offset: PST
Local standard time flag: Y
Type of ground water site: Single well, other than collector or Ranney type
Aquifer Type: Not Reported
Aquifer: Not Reported
Well depth: 450
Hole depth: 450
Source of depth data: Not Reported
Project number: 479381106
Real time data flag: Not Reported
Daily flow data begin date: Not Reported
Daily flow data end date: Not Reported
Daily flow data count: Not Reported
Peak flow data begin date: Not Reported
Peak flow data end date: Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

N48
NNW **CA WELLS** **CADW40000014058**
1/2 - 1 Mile
Higher

Longitude:	-118.2929
Latiude:	34.7039
Stwellno:	07N13W07R001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014058

O49
NW **FED USGS** **USGS3159205**
1/2 - 1 Mile
Higher

Agency cd:	USGS	Site no:	344213118173801
Site name:	007N013W18B001S		
Latitude:	344213	EDR Site id:	USGS3159205
Longitude:	1181738	Dec lat:	34.70359525
Dec lon:	-118.2947994	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2434.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	700	Hole depth:	700
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-10-00	Ground water data end date:	1956-10-00
Ground water data count:	6		

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956-10	205.00		1953-10	185.00	
1951-10	175.00		1950-10	170.00	
1948-10	165.00		1946-10	160.00	

O50
NW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014051**

Longitude:	-118.2948
Latiude:	34.7036
Stwellno:	07N13W18B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014051

51
North
1/2 - 1 Mile
Higher

FED USGS **USGS3159094**

Agency cd:	USGS	Site no:	344223118171801
Site name:	007N013W08N001S		
Latitude:	344223	EDR Site id:	USGS3159094
Longitude:	1181718	Dec lat:	34.70637293
Dec lon:	-118.28924365	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19380101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

52
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS3159540**

Agency cd:	USGS	Site no:	344102118164201
Site name:	007N013W20G003S		
Latitude:	344102	EDR Site id:	USGS3159540
Longitude:	1181642	Dec lat:	34.68387387
Dec lon:	-118.27924348	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2396.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	0.5	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

53
South
1/2 - 1 Mile
Higher

FED USGS **USGS3159500**

Agency cd:	USGS	Site no:	344055118170201
Site name:	007N013W20F001S		
Latitude:	344055	EDR Site id:	USGS3159500
Longitude:	1181702	Dec lat:	34.6819295
Dec lon:	-118.28479922	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2413.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19290301
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	455	Hole depth:	455
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

P54
SW
1/2 - 1 Mile
Higher

FED USGS **USGS3159581**

Agency cd:	USGS	Site no:	344111118175701
Site name:	007N013W19D001S		
Latitude:	344110	EDR Site id:	USGS3159581
Longitude:	1181752	Dec lat:	34.68609597
Dec lon:	-118.29868852	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2470.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19520815
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	driller		
Project number:	9479335800		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	1973-05-15
Water quality data end date:	1992-08-04	Water quality data count:	17
Ground water data begin date:	1952-08-13	Ground water data end date:	1963-05-13
Ground water data count:	20		

Ground-water levels, Number of Measurements: 20

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-13	278.00		1963-04-01	269.00	
1963-03-05	262.00		1963-02-01	257.00	
1963-01-02	258.00		1962-12-03	268.00	
1962-11-02	272.00		1962-10-01	278.00	
1962-09-04	276.00		1962-08-06	277.00	
1962-05-17	269.00		1962-04-02	244.00	
1962-03-01	244.00		1962-02-02	248.00	
1962-01-03	249.60		1961-10-06	272.00	
1961-09-13	272.00		1961-08-03	272.00	
1956-09	237.00		1952-08-13	160.00	

Q55
NW
1/2 - 1 Mile
Higher

FED USGS **USGS3159206**

Agency cd:	USGS	Site no:	344213118174901
Site name:	007N013W18B002S		
Latitude:	344213	EDR Site id:	USGS3159206
Longitude:	1181749	Dec lat:	34.70359525
Dec lon:	-118.29785505	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2439.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	700	Hole depth:	700
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-10-00	Ground water data end date:	1956-10-00
Ground water data count:	6		

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956-10	210.00		1953-10	190.00	
1951-10	180.00		1950-10	175.00	
1948-10	165.00		1946-10	163.00	

R56
SSE **FED USGS** **USGS3159512**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344057118164601
Site name:	007N013W20G002S		
Latitude:	344057	EDR Site id:	USGS3159512
Longitude:	1181646	Dec lat:	34.68248504
Dec lon:	-118.28035463	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2400.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19481101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

P57
SW **CA WELLS** **CADW40000013802**
1/2 - 1 Mile
Higher

Longitude:	-118.2987
Latiude:	34.6861
Stwellno:	07N13W19D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013802

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

R58
SSE
1/2 - 1 Mile
Lower

FED USGS **USGS3159510**

Agency cd:	USGS	Site no:	344056118164601
Site name:	007N013W20G001S		
Latitude:	344056	EDR Site id:	USGS3159510
Longitude:	1181646	Dec lat:	34.68220727
Dec lon:	-118.28035463	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2400.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	111	Hole depth:	111
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

Q59
NW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014050**

Longitude:	-118.2979
Latiude:	34.7036
Stwellno:	07N13W18B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014050

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

60
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3159104**

Agency cd:	USGS	Site no:	344225118164701
Site name:	007N013W08Q001S		
Latitude:	344225	EDR Site id:	USGS3159104
Longitude:	1181647	Dec lat:	34.70692847
Dec lon:	-118.28063226	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2404.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	640	Hole depth:	640
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

S61
South
1/2 - 1 Mile
Higher

FED USGS **USGS3159700**

Agency cd:	USGS	Site no:	344050118171101
Site name:	007N013W20M002S		
Latitude:	344050	EDR Site id:	USGS3159700
Longitude:	1181711	Dec lat:	34.68054066
Dec lon:	-118.28729931	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2435.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19620701
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	350	Hole depth:	350
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

S62
South
1/2 - 1 Mile
Higher

FED USGS **USGS3159701**

Agency cd:	USGS	Site no:	344050118171201
Site name:	007N013W20M001S		
Latitude:	344050	EDR Site id:	USGS3159701
Longitude:	1181712	Dec lat:	34.68054066
Dec lon:	-118.28757709	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2432.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19500101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	256	Hole depth:	256
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 0000-00-00
Water quality data end date: 0000-00-00
Water quality data count: 0
Ground water data begin date: 1957-10-23
Ground water data end date: 1961-10-17
Ground water data count: 3

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1961-10-17	208.80		1961-04-03	204.80	
1957-10-23	210.80				

S63
South
1/2 - 1 Mile
Higher

CA WELLS **CADW40000013732**

Longitude: -118.2876
Latiude: 34.6805
Stwellno: 07N13W20M001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000013732

64
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159114**

Agency cd:	USGS	Site no:	344227118173101
Site name:	007N013W07J001S		
Latitude:	344227	EDR Site id:	USGS3159114
Longitude:	1181731	Dec lat:	34.70748398
Dec lon:	-118.29285487	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2426.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19620312
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	451	Hole depth:	451
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Peak flow data count: 0
Water quality data end date: 1963-05-27
Ground water data begin date: 0000-00-00
Ground water data count: 0

Water quality data begin date: 1963-05-27
Water quality data count: 1
Ground water data end date: 0000-00-00

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Halcyon Solar
15
Lancaster, CA 93536

Inquiry Number: 3089735.150
June 08, 2011

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
Halcyon Solar
15
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089735.150

Contact: Garret Bean

EDR® Environmental Data Resources Inc

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Certified Sanborn Results:

Site Name: Halcyon Solar
Address: 15
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 10
Certification # ACE0-4CA3-B2DA

Sanborn® Library search results
Certification # ACE0-4CA3-B2DA

UNMAPPED PROPERTY

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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Lancaster Blue Sky Ranch
17
Lancaster, CA 93536

Inquiry Number: 3089735.158
June 08, 2011

EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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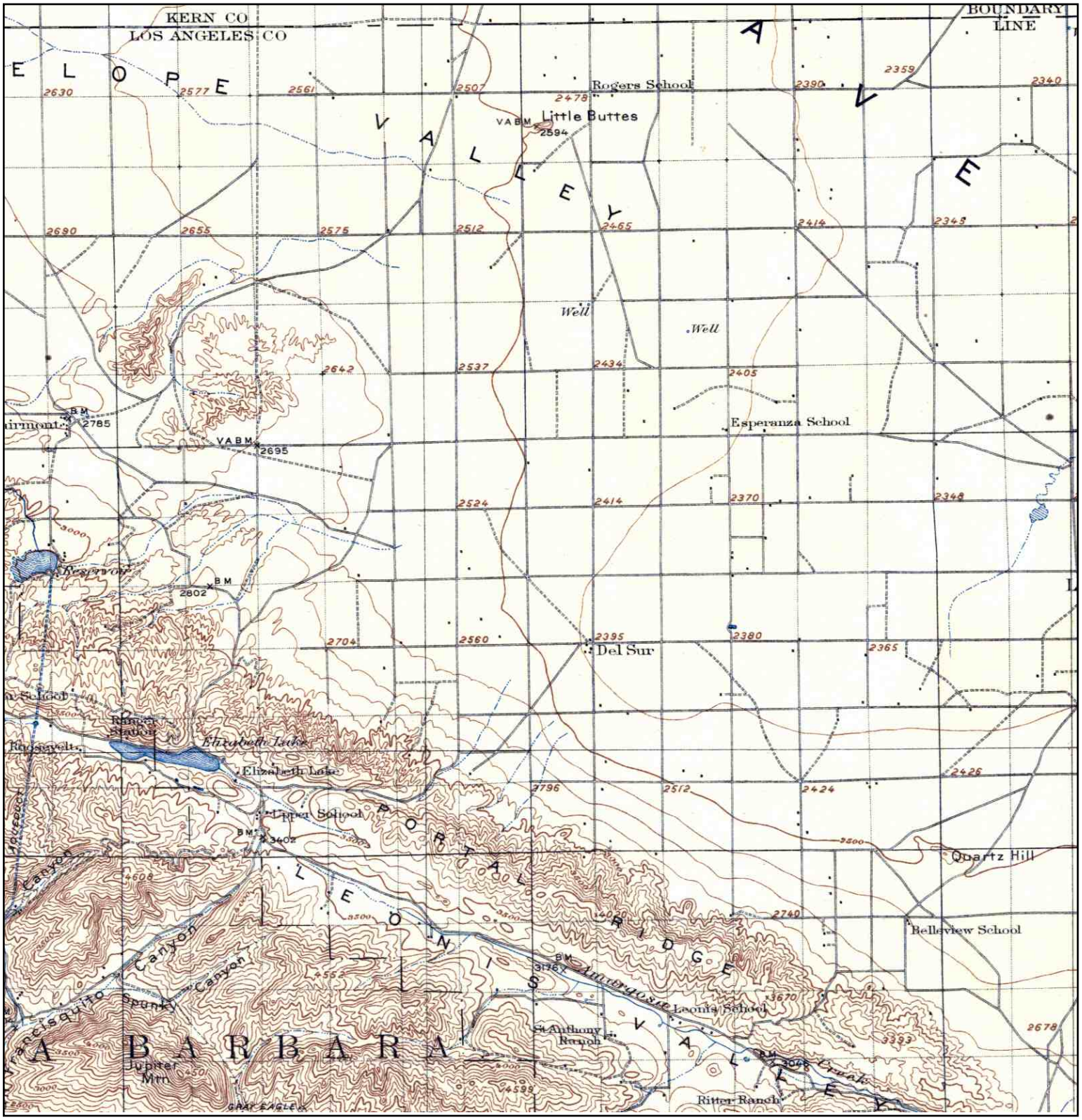
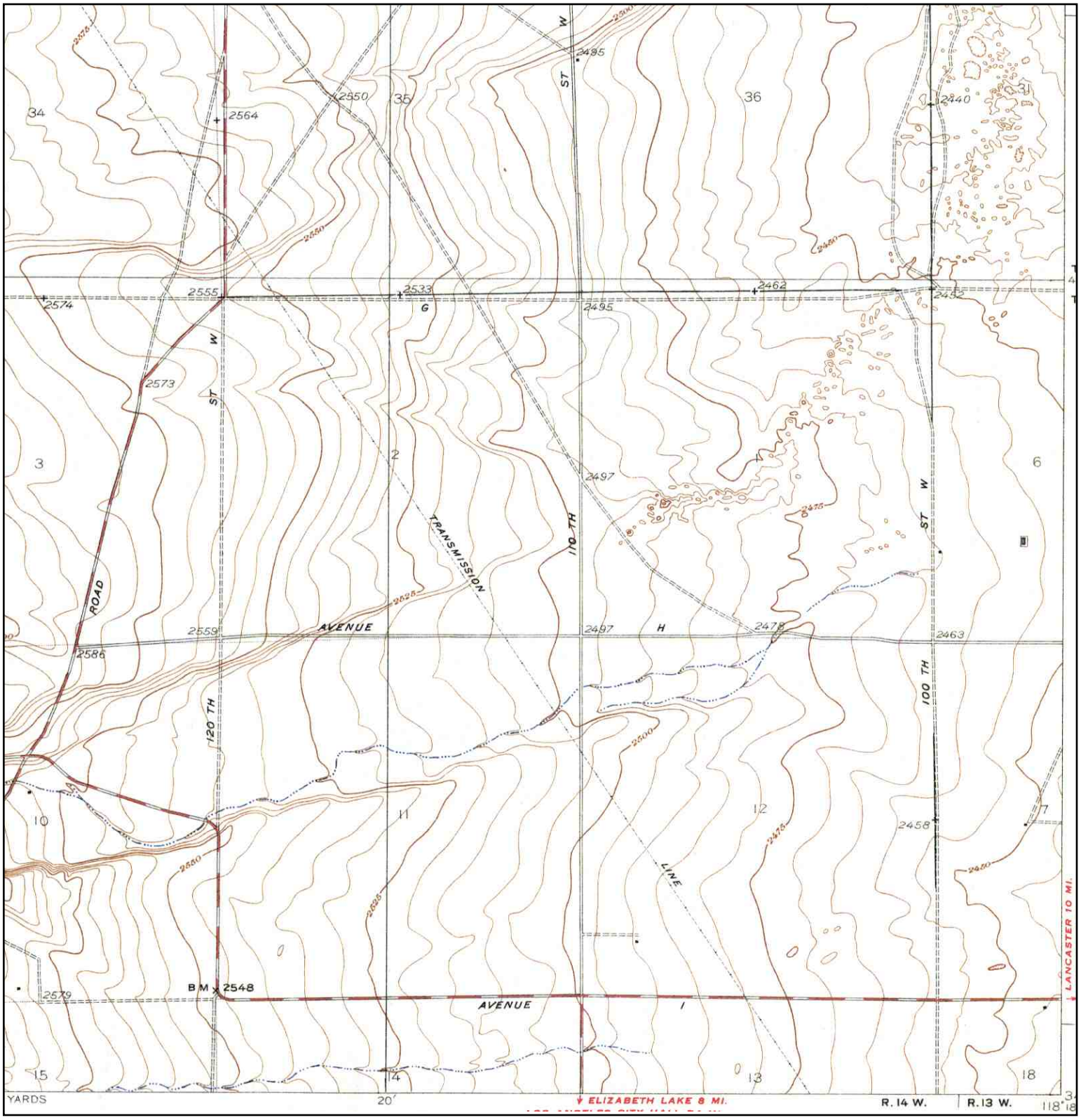
Historical Topographic Map



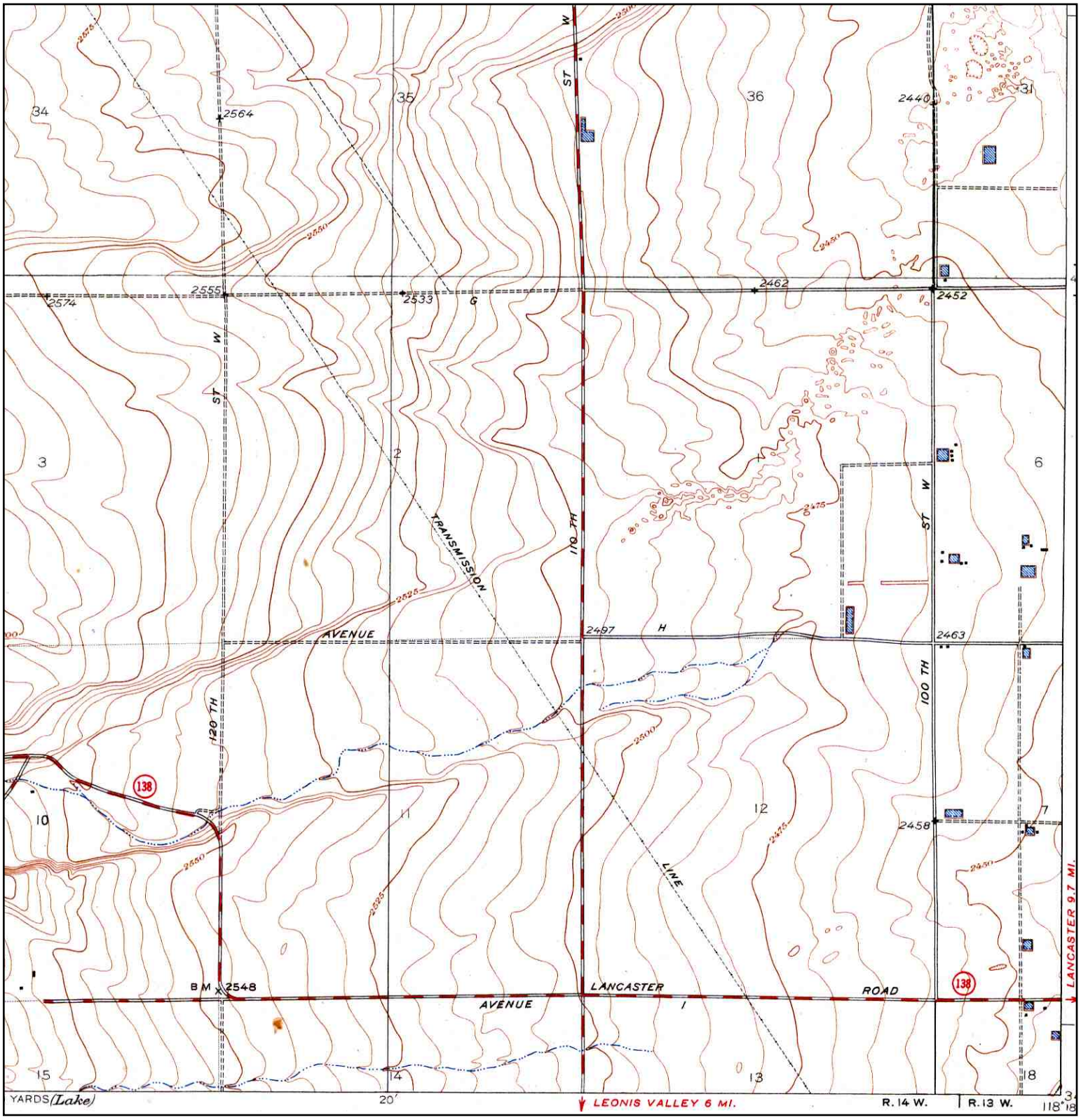
N	TARGET QUAD NAME: ELIZABETH LAKE MAP YEAR: 1917 SERIES: 30 SCALE: 1:125000	SITE NAME: Lancaster Blue Sky Ranch ADDRESS: 17 Lancaster, CA 93536 LAT/LONG: 34.7056 / -118.3015	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.158 RESEARCH DATE: 06/08/2011

Historical Topographic Map



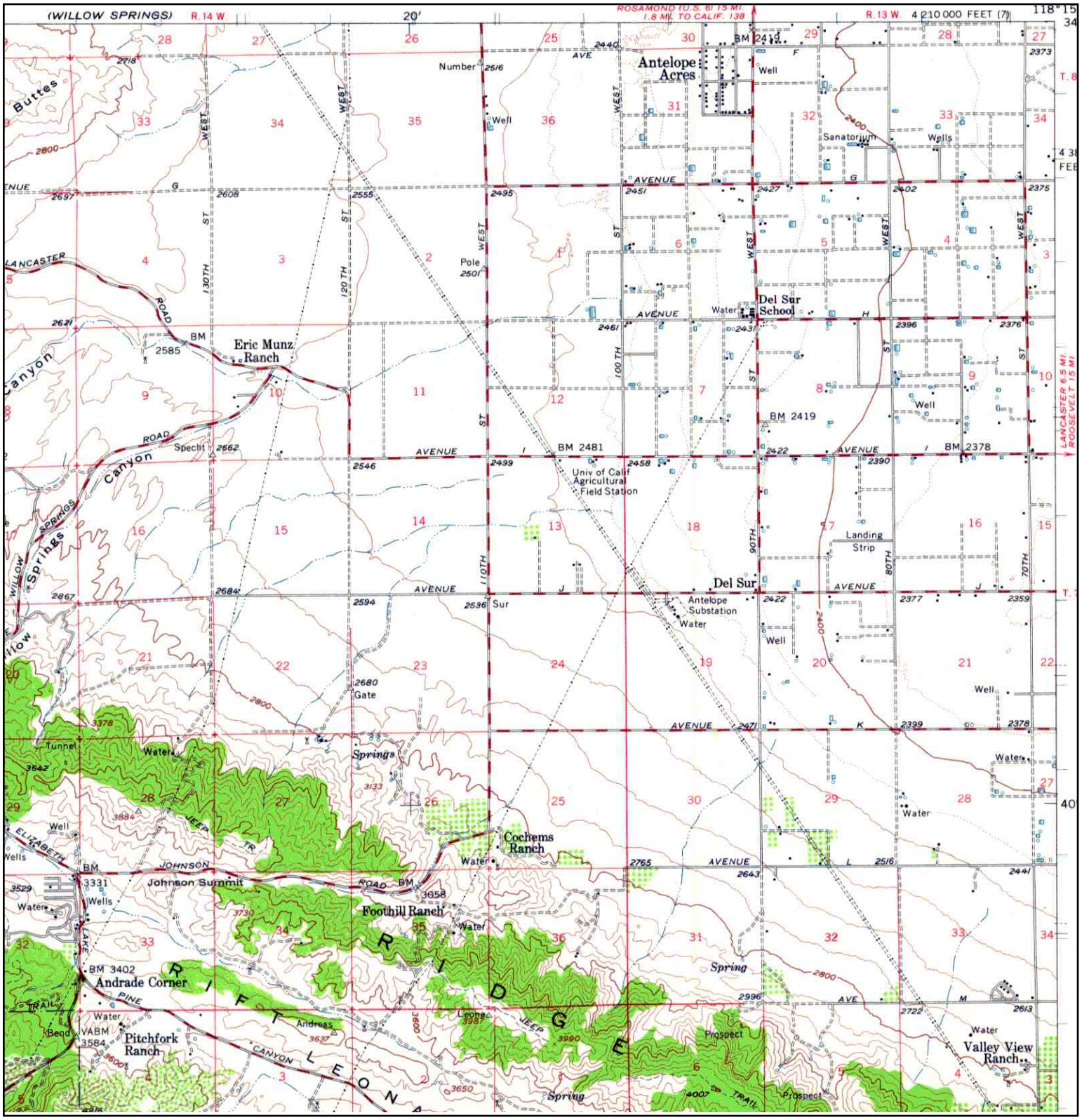
N	TARGET QUAD NAME: LITTLE BUTTES MAP YEAR: 1934 SERIES: 6 SCALE: 1:24000	SITE NAME: Lancaster Blue Sky Ranch ADDRESS: 17 Lancaster, CA 93536 LAT/LONG: 34.7056 / -118.3015	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.158 RESEARCH DATE: 06/08/2011

Historical Topographic Map



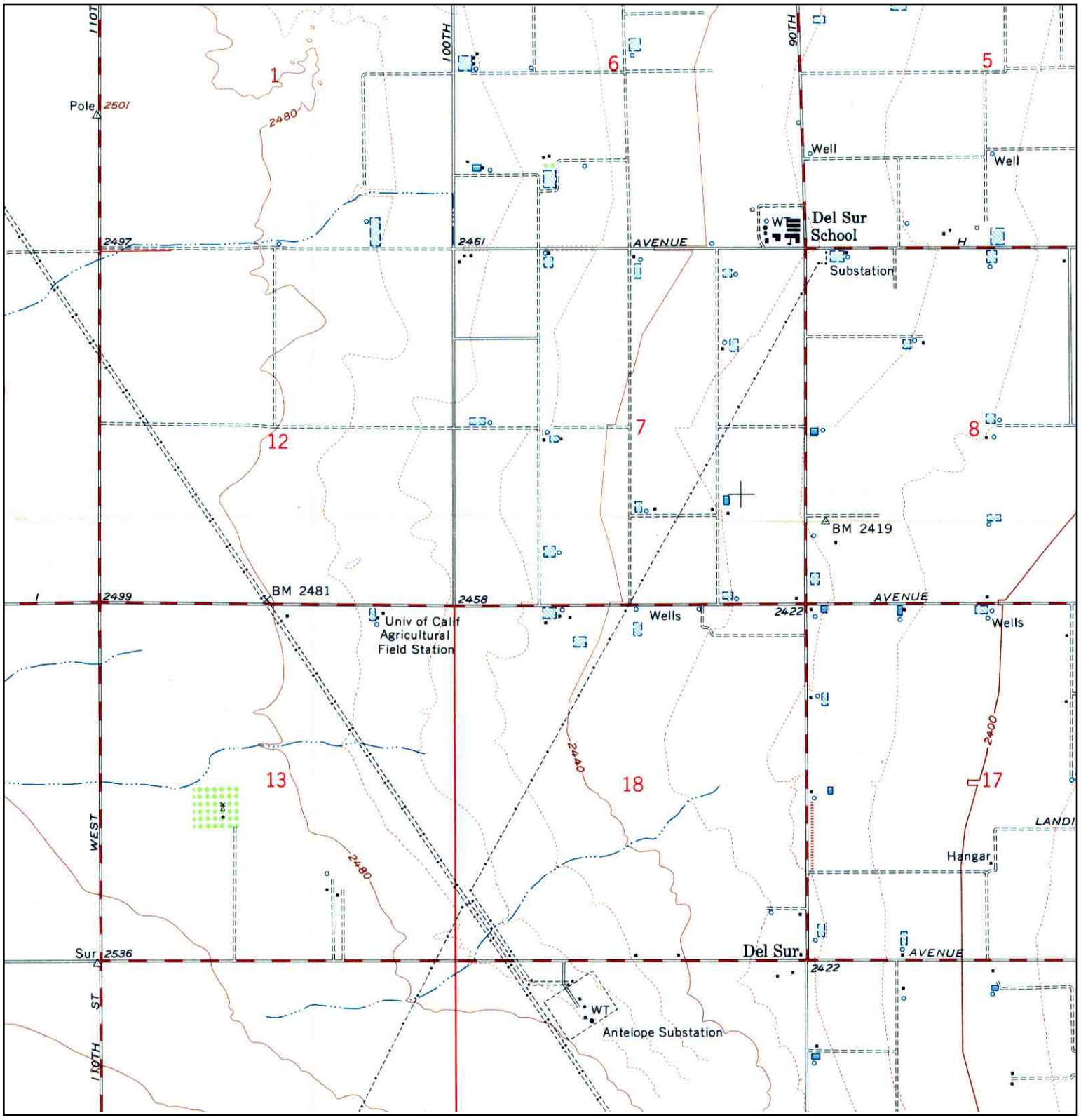
N	TARGET QUAD NAME: LITTLE BUTTES MAP YEAR: 1951 REVISED:1934 SERIES: 6 SCALE: 1:24000	SITE NAME: Lancaster Blue Sky Ranch ADDRESS: 17 Lancaster, CA 93536 LAT/LONG: 34.7056 / -118.3015	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.158 RESEARCH DATE: 06/08/2011

Historical Topographic Map



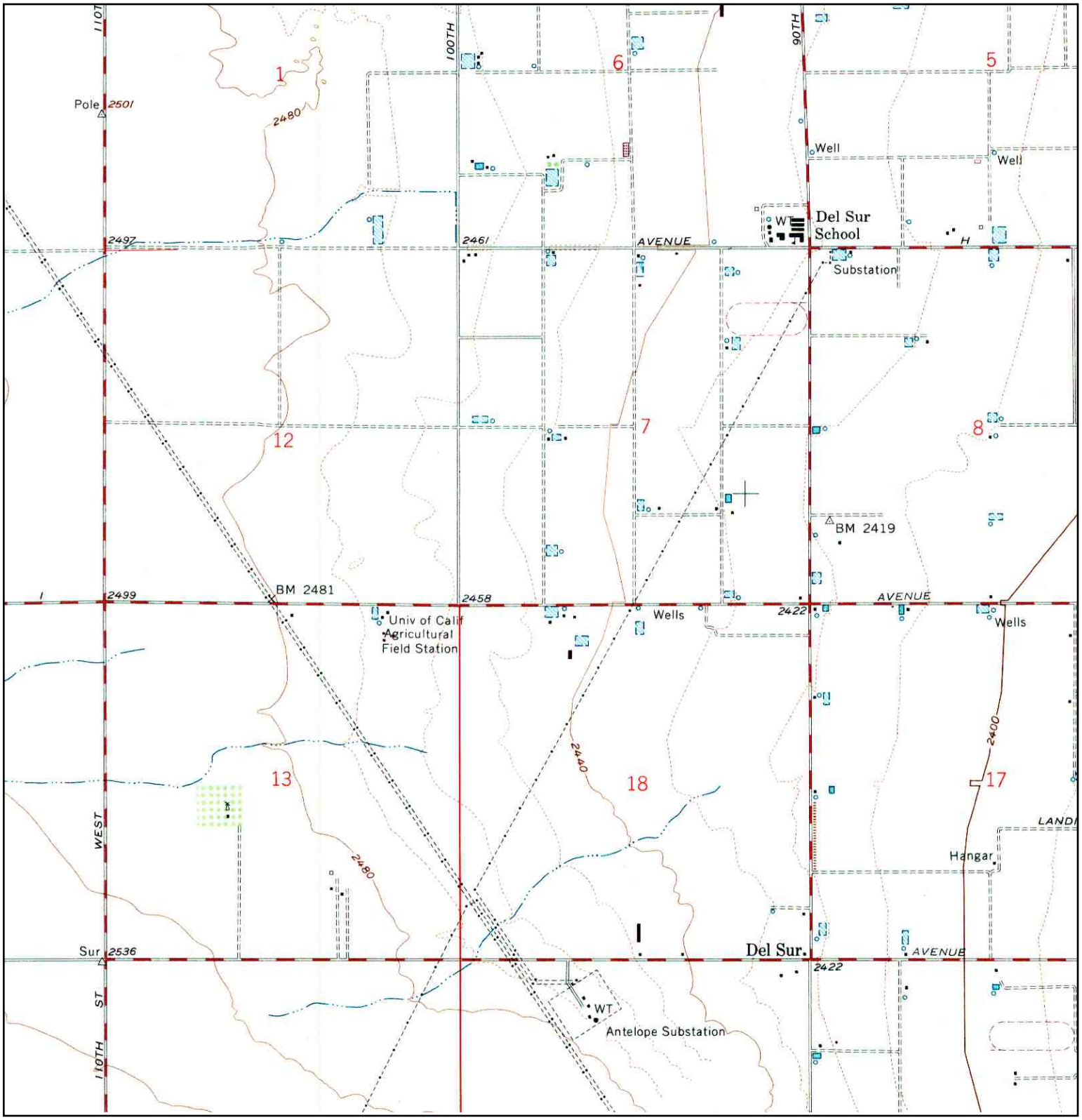
N	TARGET QUAD		SITE NAME:	Lancaster Blue Sky Ranch	CLIENT:	Tetra Tech Inc.
	NAME:	BOUQUET RESERVOIR			CONTACT:	Garret Bean
	MAP YEAR:	1958	ADDRESS:	17	INQUIRY#:	3089735.158
				Lancaster, CA 93536	RESEARCH DATE:	06/08/2011
	SERIES:	15	LAT/LONG:	34.7056 / -118.3015		
	SCALE:	1:62500				

Historical Topographic Map



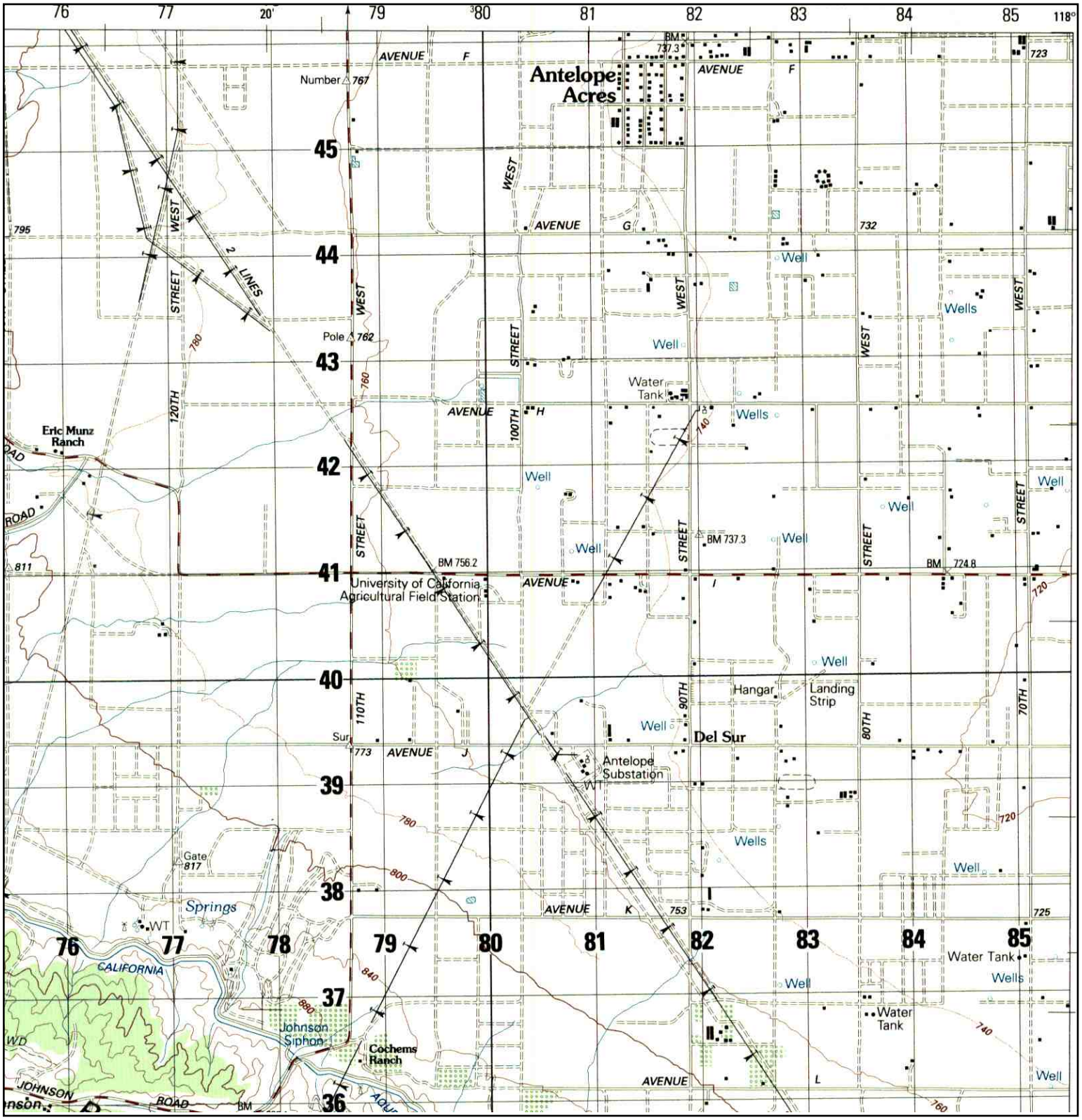
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Lancaster Blue Sky Ranch ADDRESS: 17 Lancaster, CA 93536 LAT/LONG: 34.7056 / -118.3015	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.158 RESEARCH DATE: 06/08/2011

Historical Topographic Map



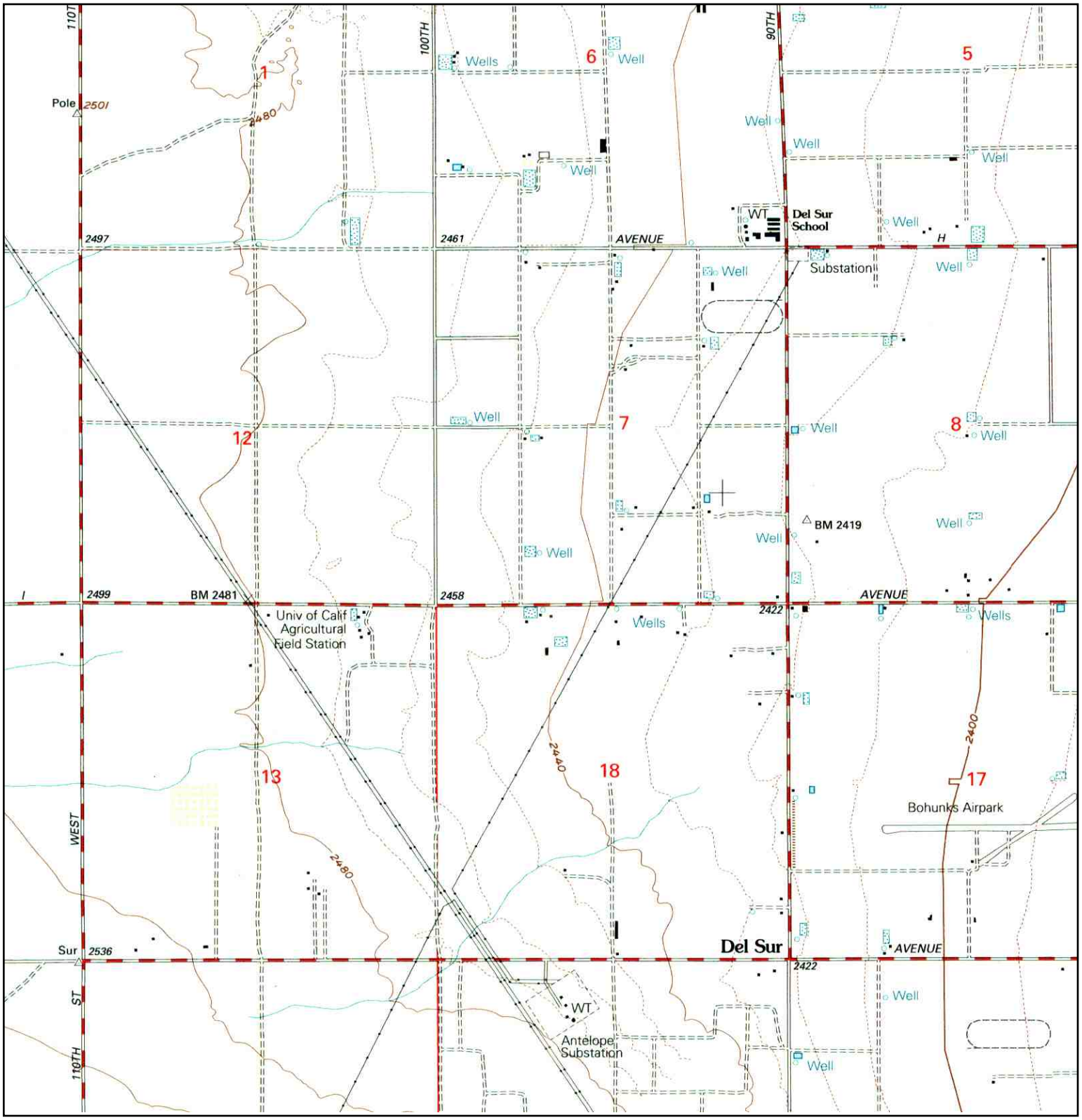
N	TARGET QUAD				
	NAME:	DEL SUR	SITE NAME:	Lancaster Blue Sky Ranch	CLIENT: Tetra Tech Inc.
	MAP YEAR:	1974			CONTACT: Garret Bean
	PHOTOREVISED:	1958	ADDRESS:	17	INQUIRY#: 3089735.158
	SERIES:	7.5		Lancaster, CA 93536	RESEARCH DATE: 06/08/2011
	SCALE:	1:24000	LAT/LONG:	34.7056 / -118.3015	

Historical Topographic Map



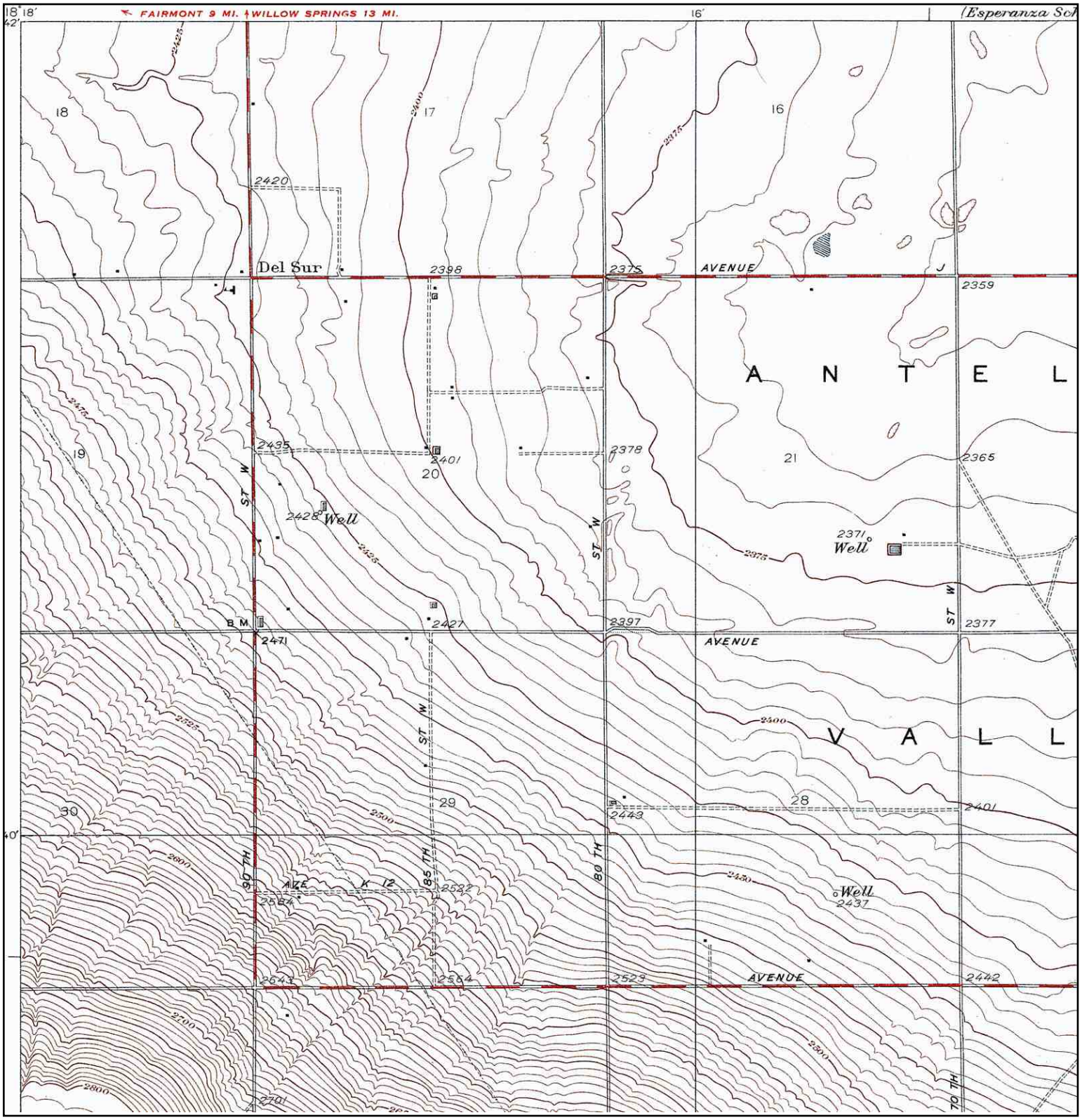
N	TARGET QUAD NAME: BOUQUET RESERVOIR MAP YEAR: 1987 SERIES: 15 SCALE: 1:50000	SITE NAME: Lancaster Blue Sky Ranch ADDRESS: 17 Lancaster, CA 93536 LAT/LONG: 34.7056 / -118.3015	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.158 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1995 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Lancaster Blue Sky Ranch ADDRESS: 17 Lancaster, CA 93536 LAT/LONG: 34.7056 / -118.3015	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.158 RESEARCH DATE: 06/08/2011

Historical Topographic Map

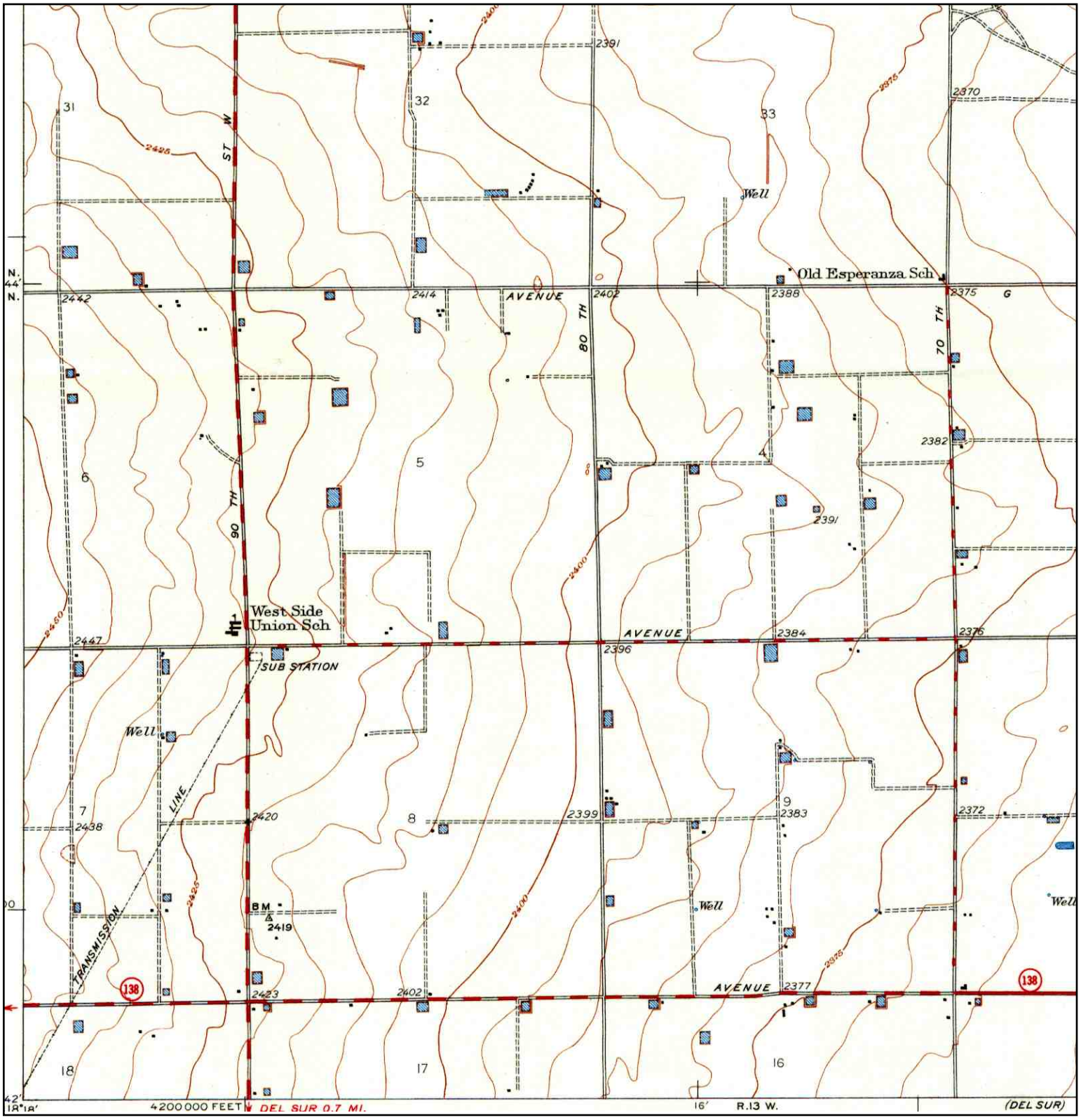


N	ADJOINING QUAD NAME: DEL SUR MAP YEAR: 1936 SERIES: 6 SCALE: 1:24000	SITE NAME: Lancaster Blue Sky Ranch ADDRESS: 17 Lancaster, CA 93536 LAT/LONG: 34.7056 / -118.3015	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.158 RESEARCH DATE: 06/08/2011

Historical Topographic Map

N	ADJOINING QUAD NAME: LAKE MAP YEAR: 1937 SERIES: 6 SCALE: 1:24000	SITE NAME: Lancaster Blue Sky Ranch ADDRESS: 17 Lancaster, CA 93536 LAT/LONG: 34.7056 / -118.3015	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.158 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	ADJOINING QUAD NAME: ESPERANZA SCHOOL MAP YEAR: 1951 SERIES: 6 SCALE: 1:24000	SITE NAME: Lancaster Blue Sky Ranch ADDRESS: 17 Lancaster, CA 93536 LAT/LONG: 34.7056 / -118.3015	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.158 RESEARCH DATE: 06/08/2011

Historical Topographic Map

N	ADJOINING QUAD NAME: DEL SUR MAP YEAR: 1951 REVISED:1936 SERIES: 6 SCALE: 1:24000	SITE NAME: Lancaster Blue Sky Ranch ADDRESS: 17 Lancaster, CA 93536 LAT/LONG: 34.7056 / -118.3015	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.158 RESEARCH DATE: 06/08/2011

Lancaster Blue Sky Ranch
17
Lancaster, CA 93536

Inquiry Number: 3089735.156s
June 08, 2011

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

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Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

17
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.705600 - 34° 42' 20.2''
Longitude (West):	118.301500 - 118° 18' 5.4''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	380805.8
UTM Y (Meters):	3840970.2
Elevation:	2448 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
SLIC ---------- Statewide SLIC Cases

INDIAN LUST - Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST - Active UST Facilities
AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - Underground Storage Tanks on Indian Land
FEMA UST - Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP - Voluntary Cleanup Program Properties
INDIAN VCP - Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI - Open Dump Inventory
DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT - Waste Management Unit Database
SWRCY - Recycler Database
HAULERS - Registered Waste Tire Haulers Listing
INDIAN ODI - Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL - Clandestine Drug Labs
HIST Cal-Sites - Historical Calsites Database
SCH - School Property Evaluation Program
Toxic Pits - Toxic Pits Cleanup Act Sites
AOCONCERN - San Gabriel Valley Areas of Concern
US HIST CDL - National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST - Facility Inventory Database
HIST UST - Hazardous Substance Storage Container Database
SWEEPS UST - SWEEPS UST Listing

Local Land Records

LIENS 2 - CERCLA Lien Information
LUCIS - Land Use Control Information System
LIENS - Environmental Liens Listing
DEED - Deed Restriction Listing

Records of Emergency Release Reports

HMIRS - Hazardous Materials Information Reporting System

CHMIRS California Hazardous Material Incident Report System
LDS Land Disposal Sites Listing
MCS Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen RCRA - Non Generators
DOT OPS Incident and Accident Data
DOD Department of Defense Sites
FUDS Formerly Used Defense Sites
CONSENT Superfund (CERCLA) Consent Decrees
ROD Records Of Decision
UMTRA Uranium Mill Tailings Sites
MINES Mines Master Index File
TRIS Toxic Chemical Release Inventory System
TSCA Toxic Substances Control Act
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
SSTS Section 7 Tracking Systems
ICIS Integrated Compliance Information System
PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database
FINDS Facility Index System/Facility Registry System
RAATS RCRA Administrative Action Tracking System
CA BOND EXP. PLAN Bond Expenditure Plan
NPDES NPDES Permits Listing
WDS Waste Discharge System
Cortese "Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE Hazardous Waste & Substance Site List
Notify 65 Proposition 65 Records
LA Co. Site Mitigation Site Mitigation List
DRYCLEANERS Cleaner Facilities
WIP Well Investigation Program Case List
LOS ANGELES CO. HMS HMS: Street Number List
HAZNET Facility and Manifest Data
EMI Emissions Inventory Data
INDIAN RESERV Indian Reservations
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
FINANCIAL ASSURANCE Financial Assurance Information Listing
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
PROC Certified Processors Database
MWMP Medical Waste Management Program Listing
COAL ASH DOE Sleam-Electric Plan Operation Data

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Historical Auto Stations EDR Proprietary Historic Gas Stations
EDR Historical Cleaners EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

CDL: A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

A review of the CDL list, as provided by EDR, and dated 12/31/2010 has revealed that there is 1 CDL site within approximately 0.25 miles of the target property.

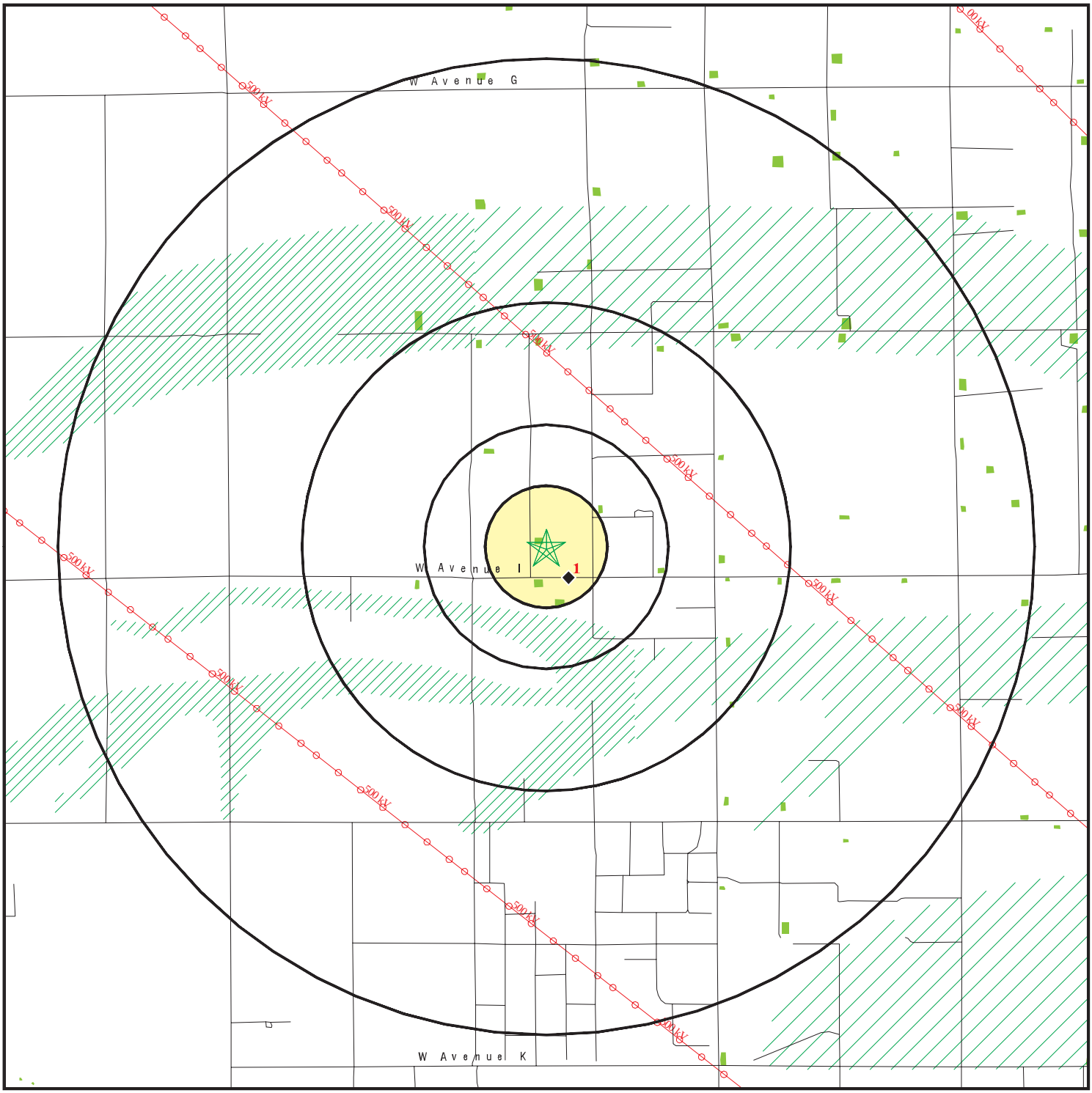
Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	9626 WEST AVE I	SE 1/8 - 1/4 (0.157 mi.)	1	8

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 20 records.

Site Name	Database(s)
AVE E ETAL	NPDES
TEHACHAPI RENEWABLE TRANSMISSION P	HAZNET,NPDES
CAL MAT	SWEEPS UST
RETLAW WEST RANCH	FID,SWEEPS UST
STEVEN KOSTECKY	FID,SWEEPS UST
28.15 MI.MARKER ON ANGELES CRE	CDL
5 MI NW OF HWY 138 & 300TH ST	AST
OSO PUMPING PLANT	HAZNET
ILLEGAL DRUG LAB/OPERATOR UNKNOWN	HAZNET
LOS ANGELES COUNTY DEPT OF PUBLIC	HAZNET
CNTY LOS ANGELES/RD 551	HAZNET
NR: LANCASTER, CA	ERNS
205 ST WEST NEAREST CROSS ST WAS L	ERNS
MANHOLE #11 BLUE FLAX ST	ERNS
LANCASTER SD, WRP	FINDS
INVESTIGATIONS-AREA4	HMS LOS ANGELES
3995 AVENUE H W	CDL
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
CASTA DWR- CHECK SITE 59	EMI

OVERVIEW MAP - 3089735.156s



0 1/2 1 2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Lancaster Blue Sky Ranch ADDRESS: 17 Lancaster CA 93536 LAT/LONG: 34.7056 / 118.3015	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.156s DATE: June 08, 2011 1:02 pm

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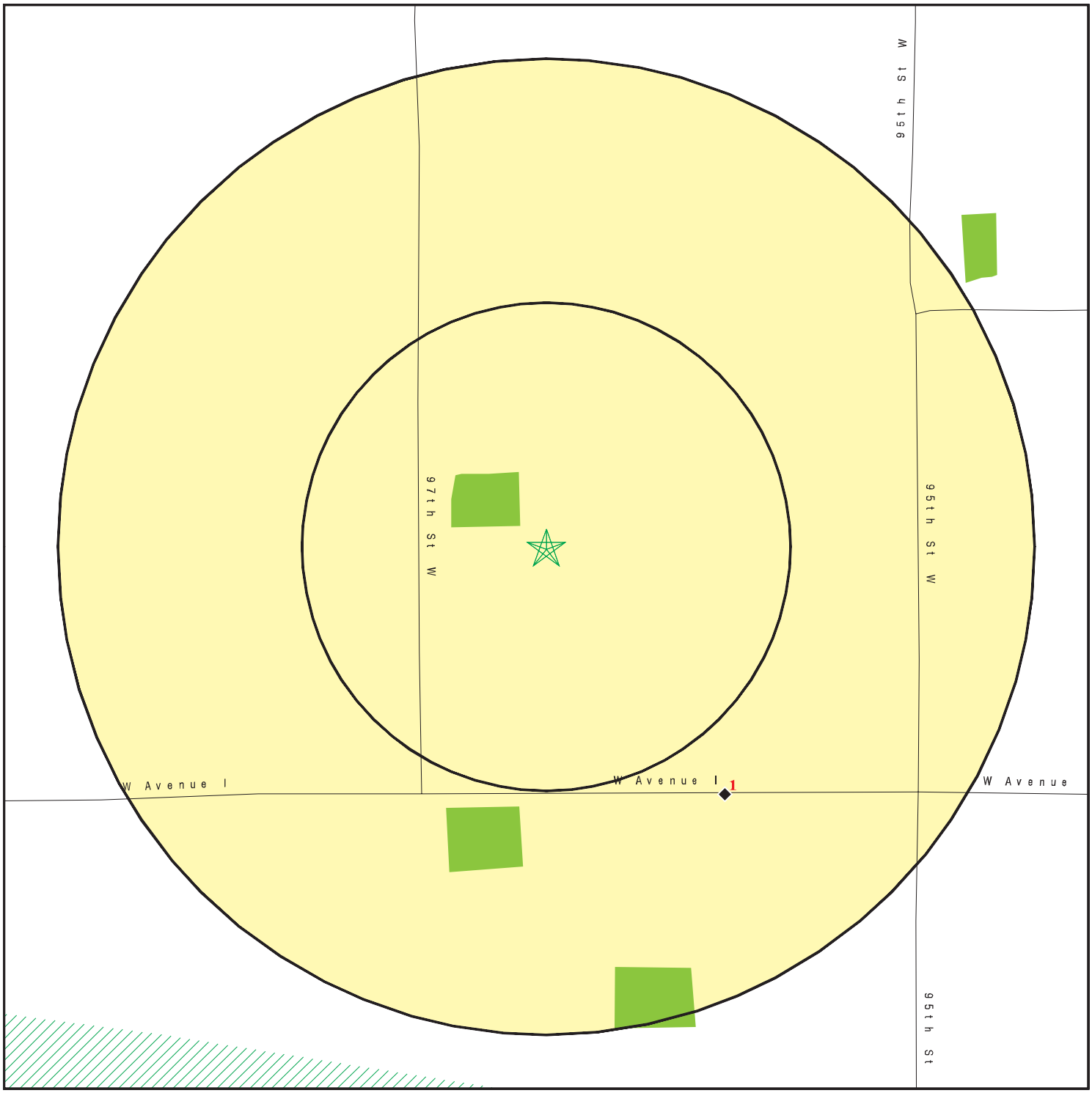
DETAIL MAP - 3089735.156s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Lancaster Blue Sky Ranch ADDRESS: 17 Lancaster CA 93536 LAT/LONG: 34.7056 / 118.3015	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.156s DATE: June 08, 2011 1:04 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.250	0	0	0	0	0	0
Proposed NPL		1.250	0	0	0	0	0	0
NPL LIENS		0.250	0	0	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.250	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		0.750	0	0	0	0	NR	0
FEDERAL FACILITY		1.250	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.750	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.250	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.750	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.500	0	0	0	NR	NR	0
RCRA-SQG		0.500	0	0	0	NR	NR	0
RCRA-CESQG		0.500	0	0	0	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.750	0	0	0	0	NR	0
US INST CONTROL		0.750	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.250	0	0	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.250	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.250	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.750	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		0.750	0	0	0	0	NR	0
SLIC		0.750	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST		0.750	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.500	0	0	0	NR	NR	0
AST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.500	0	0	0	NR	NR	0
FEMA UST		0.500	0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.750	0	0	0	0	NR	0
INDIAN VCP		0.750	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.750	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		0.750	0	0	0	0	NR	0
DEBRIS REGION 9		0.750	0	0	0	0	NR	0
WMUDS/SWAT		0.750	0	0	0	0	NR	0
SWRCY		0.750	0	0	0	0	NR	0
HAULERS		0.250	0	0	NR	NR	NR	0
INDIAN ODI		0.750	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.250	0	0	NR	NR	NR	0
HIST Cal-Sites		1.250	0	0	0	0	0	0
SCH		0.500	0	0	0	NR	NR	0
Toxic Pits		1.250	0	0	0	0	0	0
AOCONCERN		1.250	0	0	0	0	0	0
CDL		0.250	0	1	NR	NR	NR	1
US HIST CDL		0.250	0	0	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.500	0	0	0	NR	NR	0
HIST UST		0.500	0	0	0	NR	NR	0
SWEEPS UST		0.500	0	0	0	NR	NR	0
Local Land Records								
LIENS 2		0.250	0	0	NR	NR	NR	0
LUCIS		0.750	0	0	0	0	NR	0
LIENS		0.250	0	0	NR	NR	NR	0
DEED		0.750	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.250	0	0	NR	NR	NR	0
CHMIRS		0.250	0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS		0.250	0	0	NR	NR	NR	0
MCS		0.250	0	0	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.500	0	0	0	NR	NR	0
DOT OPS		0.250	0	0	NR	NR	NR	0
DOD		1.250	0	0	0	0	0	0
FUDS		1.250	0	0	0	0	0	0
CONSENT		1.250	0	0	0	0	0	0
ROD		1.250	0	0	0	0	0	0
UMTRA		0.750	0	0	0	0	NR	0
MINES		0.500	0	0	0	NR	NR	0
TRIS		0.250	0	0	NR	NR	NR	0
TSCA		0.250	0	0	NR	NR	NR	0
FTTS		0.250	0	0	NR	NR	NR	0
HIST FTTS		0.250	0	0	NR	NR	NR	0
SSTS		0.250	0	0	NR	NR	NR	0
ICIS		0.250	0	0	NR	NR	NR	0
PADS		0.250	0	0	NR	NR	NR	0
MLTS		0.250	0	0	NR	NR	NR	0
RADINFO		0.250	0	0	NR	NR	NR	0
FINDS		0.250	0	0	NR	NR	NR	0
RAATS		0.250	0	0	NR	NR	NR	0
CA BOND EXP. PLAN		1.250	0	0	0	0	0	0
NPDES		0.250	0	0	NR	NR	NR	0
WDS		0.250	0	0	NR	NR	NR	0
Cortese		0.750	0	0	0	0	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.250	0	0	0	0	0	0
LA Co. Site Mitigation		0.250	0	0	NR	NR	NR	0
DRYCLEANERS		0.500	0	0	0	NR	NR	0
WIP		0.500	0	0	0	NR	NR	0
LOS ANGELES CO. HMS		0.250	0	0	NR	NR	NR	0
HAZNET		0.250	0	0	NR	NR	NR	0
EMI		0.250	0	0	NR	NR	NR	0
INDIAN RESERV		1.250	0	0	0	0	0	0
SCRD DRYCLEANERS		0.750	0	0	0	0	NR	0
FINANCIAL ASSURANCE		0.250	0	0	NR	NR	NR	0
HWP		1.250	0	0	0	0	0	0
HWT		0.500	0	0	0	NR	NR	0
COAL ASH EPA		0.750	0	0	0	0	NR	0
PCB TRANSFORMER		0.250	0	0	NR	NR	NR	0
PROC		0.750	0	0	0	0	NR	0
MWMP		0.500	0	0	0	NR	NR	0
COAL ASH DOE		0.250	0	0	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.250	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.500	0	0	0	NR	NR	0
EDR Historical Cleaners		0.500	0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
SE
1/8-1/4
0.157 mi.
827 ft.

9626 WEST AVE I
LANCASTER, CA 93536

CDL **S107537281**
N/A

Relative:
Lower

Actual:
2445 ft.

CDL:
Facility ID: 199905136
Lab Type: Illegal Drug Lab (L) - location where an illegal drug lab was operated or drug lab equipment and/or materials were stored.

Count: 20 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LANCASTER	1005584611	LANCASTER SD, WRP	11043 CLARIBELL RD	93536	FINDS
LANCASTER	1012055833	3995 AVENUE H W	3995 AVENUE H W		CDL
LANCASTER	87463949	NR: LANCASTER, CA	NR: LANCASTER, CA		ERNS
QUARTZ HILL	90188846	MANHOLE #11 BLUE FLAX ST	MANHOLE #11 BLUE FLAX ST	93536	ERNS
LANCASTER	93468078	205 ST WEST NEAREST CROSS ST WAS L	205 ST WEST NEAREST CROSS ST W	93536	ERNS
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
LANCASTER	S101620943	RETLAW WEST RANCH	44040 E N 110TH ST		FID,SWEEPS UST
LANCASTER	S101620945	STEVEN KOSTECKY	44000 E N 100TH ST		FID,SWEEPS UST
LANCASTER	S102056126	INVESTIGATIONS-AREA4	46204 W 97TH ST		HMS LOS ANGELES
PALMDALE	S103678194	ILLEGAL DRUG LAB/OPERATOR UNKNOWN	AVENUE T, 175TH ST EAST	93536	HAZNET
QUARTZ HILL	S103957875	CNTY LOS ANGELES/RD 551	4859 W AVE L-12	93534	HAZNET
QUARTZ HILL	S103975334	LOS ANGELES COUNTY DEPT OF PUBLIC	4859 W AVE L-12	93534	HAZNET
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 & 300TH ST	93536	HAZNET
LOS ANGELES	S104568573	TEHACHAPI RENEWABLE TRANSMISSION P	9634 W AVE J	93536	HAZNET,NPDES
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
	S107532211		28.15 MI.MARKER ON ANGELES CRE		CDL
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HW	93536	EMI
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HW	93536	EMI
LOS ANGELES	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPAa??s Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/15/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 05/25/2010
Date Data Arrived at EDR: 06/02/2010
Date Made Active in Reports: 10/04/2010
Number of Days to Update: 124

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/07/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 11/04/2009
Date Data Arrived at EDR: 05/04/2010
Date Made Active in Reports: 07/07/2010
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 12/02/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 57

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/03/2011
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/01/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 12/29/2010
Date Data Arrived at EDR: 12/30/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 02/24/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 46

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/07/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 03/04/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 05/02/2011
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/18/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 51

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/21/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 30

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

Other Ascertainable Records

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2011
Date Data Arrived at EDR: 02/11/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/15/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 10/29/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 5

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/21/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 99

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/02/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/08/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/17/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 94

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/07/2011
Date Data Arrived at EDR: 01/21/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/11/2011
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Biennially

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/04/2011
Number of Days to Update: 29

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/15/2010
Date Data Arrived at EDR: 09/16/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 13

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/07/2010
Date Made Active in Reports: 08/12/2010
Number of Days to Update: 36

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/01/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 02/28/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/04/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/09/2010
Date Data Arrived at EDR: 08/11/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 9
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 04/26/2011
Number of Days to Update: 41

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 33

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 03/29/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COLUSA COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 12/01/2010
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/06/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/31/2011
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/25/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2011
Date Data Arrived at EDR: 02/09/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 23
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/18/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/12/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 30
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/26/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 22
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 04/25/2011
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/20/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/07/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/15/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 16

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/17/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 31

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 20

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 11/16/2010
Date Made Active in Reports: 01/25/2011
Number of Days to Update: 70

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/21/2010
Next Scheduled EDR Contact: 03/28/2011
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/16/2011
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/30/2011
Date Data Arrived at EDR: 03/31/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 22
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/22/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 29
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 36
Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/14/2011
Date Data Arrived at EDR: 03/15/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 9
Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/25/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 25
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/07/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 35
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/07/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/08/2011
Number of Days to Update: 28
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 30
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 01/25/2011
Date Data Arrived at EDR: 02/03/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 29
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16
Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/26/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/22/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 05/12/2011
Date Made Active in Reports: 05/24/2011
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/12/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/06/2011
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/19/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 38

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/06/2010
Date Made Active in Reports: 07/26/2010
Number of Days to Update: 20

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

LANCASTER BLUE SKY RANCH
17
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.70560 - 34° 42' 20.2''
Longitude (West):	118.3015 - 118° 18' 5.4''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	380805.8
UTM Y (Meters):	3840970.2
Elevation:	2448 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

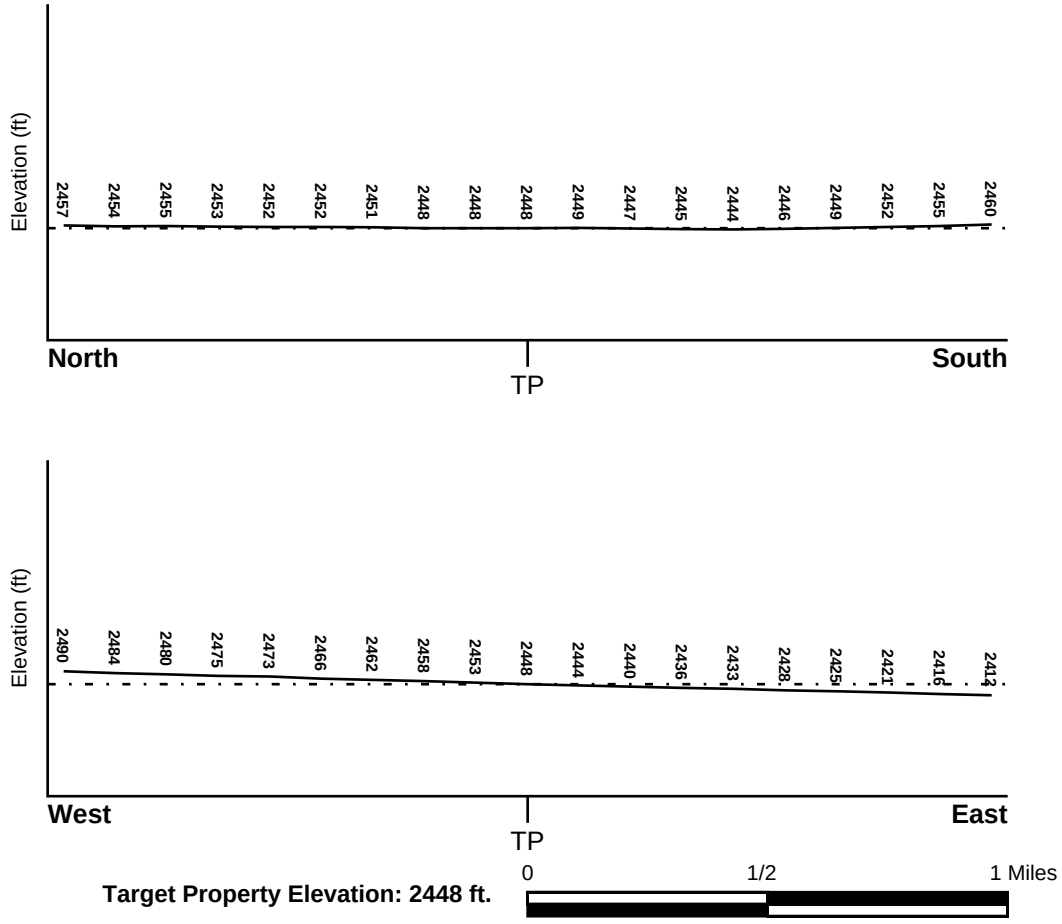
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General East

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
DEL SUR	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

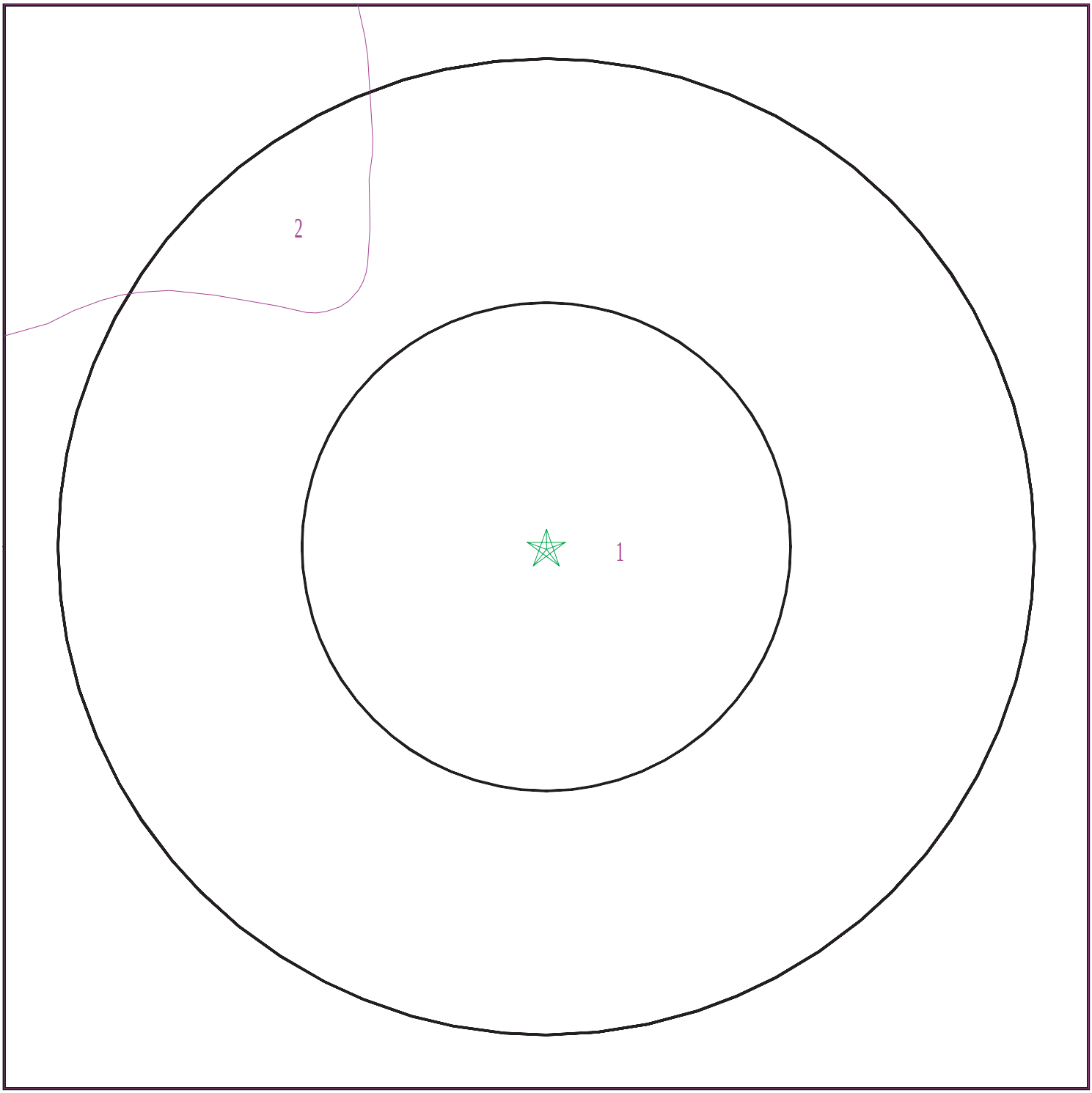
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3089735.156s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Lancaster Blue Sky Ranch	CLIENT:	Tetra Tech Inc.
ADDRESS:	17 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.7056 / 118.3015	INQUIRY #:	3089735.156s
		DATE:	June 08, 2011 1:04 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 2

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS3159083	0 - 1/8 Mile NW
B3	USGS3159207	1/8 - 1/4 Mile South
B4	USGS3159208	1/8 - 1/4 Mile South
C9	USGS3159206	1/8 - 1/4 Mile ESE
D10	USGS3159115	1/4 - 1/2 Mile ENE
F12	USGS3158961	1/4 - 1/2 Mile North
E14	USGS3159205	1/4 - 1/2 Mile ESE
G16	USGS3159212	1/4 - 1/2 Mile ESE
H17	USGS3159132	1/4 - 1/2 Mile ENE
G18	USGS3159211	1/2 - 1 Mile ESE
H19	USGS3159114	1/2 - 1 Mile ENE
I20	USGS3159181	1/2 - 1 Mile WSW
24	USGS3159094	1/2 - 1 Mile East
J26	USGS3159197	1/2 - 1 Mile ESE
J29	USGS3159192	1/2 - 1 Mile ESE
K30	USGS3159018	1/2 - 1 Mile NE
31	USGS3159017	1/2 - 1 Mile NE
L33	USGS3158930	1/2 - 1 Mile ENE
34	USGS3159193	1/2 - 1 Mile WSW
M35	USGS3159372	1/2 - 1 Mile ESE
M36	USGS3159371	1/2 - 1 Mile ESE
N37	USGS3158836	1/2 - 1 Mile NNW
P39	USGS3158864	1/2 - 1 Mile North
O40	USGS3158850	1/2 - 1 Mile NNE
O42	USGS3158849	1/2 - 1 Mile NNE
N43	USGS3158851	1/2 - 1 Mile NNW
Q45	USGS3158835	1/2 - 1 Mile NNE
S47	USGS3159191	1/2 - 1 Mile East
R48	USGS3159289	1/2 - 1 Mile SE
S49	USGS3159196	1/2 - 1 Mile East
R50	USGS3159281	1/2 - 1 Mile SE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

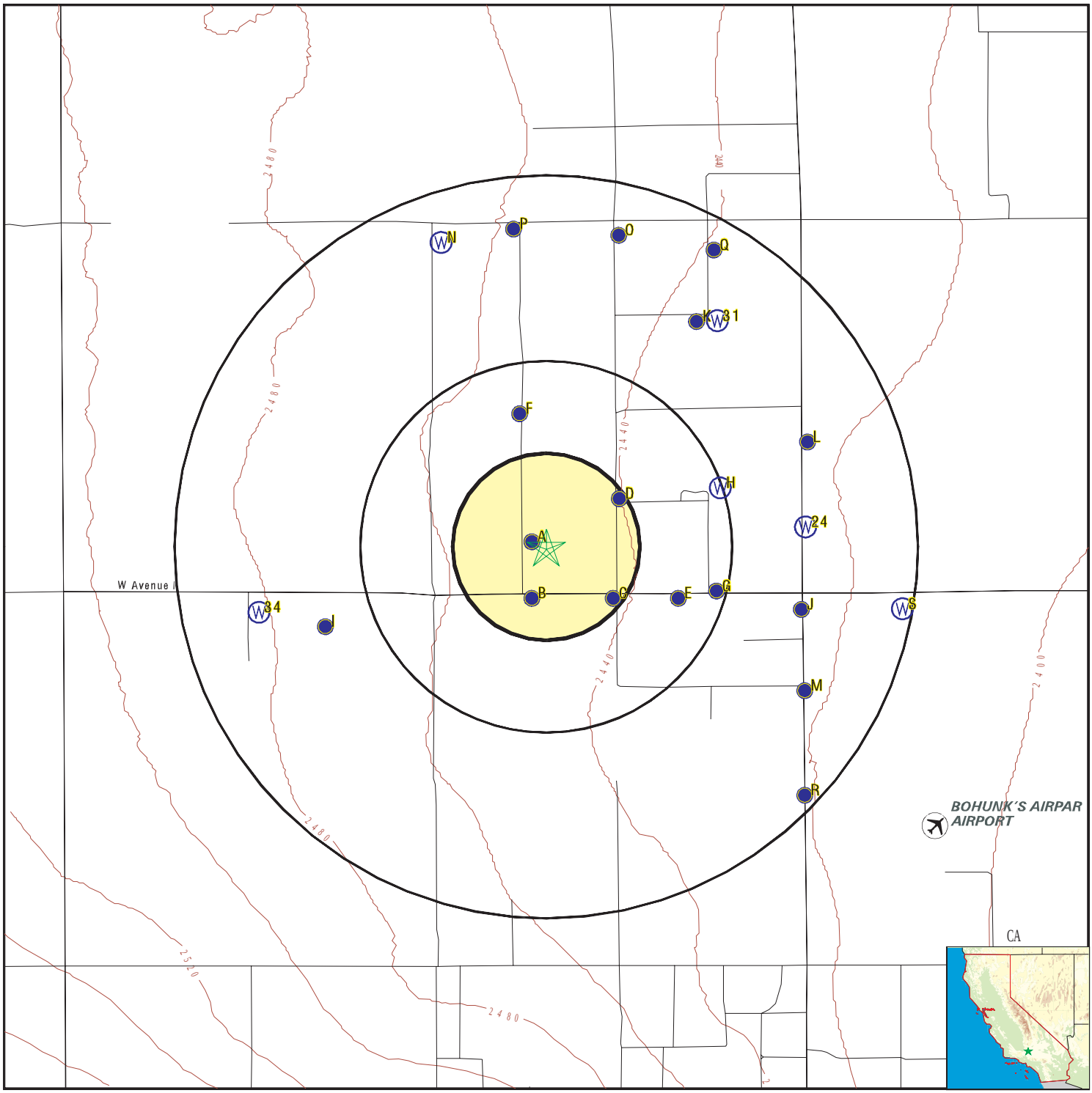
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	CADW40000014105	0 - 1/8 Mile WNW
B5	CADW40000014048	1/8 - 1/4 Mile SSW
B6	CADW40000014049	1/8 - 1/4 Mile SSW
C7	CADW40000014050	1/8 - 1/4 Mile SE
D8	CADW40000014117	1/8 - 1/4 Mile NE
E11	CADW40000014051	1/4 - 1/2 Mile ESE
F13	CADW40000014152	1/4 - 1/2 Mile NNW
G15	CADW40000014058	1/4 - 1/2 Mile ESE
I21	CADW40000014037	1/2 - 1 Mile WSW
J22	CADW40000014046	1/2 - 1 Mile ESE
J23	CADW40000014042	1/2 - 1 Mile ESE
K25	CADW40000014206	1/2 - 1 Mile NNE
K27	CADW40000014207	1/2 - 1 Mile NE
L28	CADW40000014144	1/2 - 1 Mile ENE
M32	CADW40000014007	1/2 - 1 Mile ESE
O38	CADW40000014249	1/2 - 1 Mile NNE
P41	CADW40000014256	1/2 - 1 Mile North
Q44	CADW40000014246	1/2 - 1 Mile NNE
R46	CADW40000013964	1/2 - 1 Mile SE

PHYSICAL SETTING SOURCE MAP - 3089735.156s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: Lancaster Blue Sky Ranch	CLIENT: Tetra Tech Inc.
ADDRESS: 17 Lancaster CA 93536	CONTACT: Garret Bean
LAT/LONG: 34.7056 / 118.3015	INQUIRY #: 3089735.156s DATE: June 08, 2011 1:04 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
NW
0 - 1/8 Mile
Higher | **FED USGS** | **USGS3159083**

Agency cd:	USGS	Site no:	344221118180301
Site name:	007N013W07P001S		
Latitude:	344221	EDR Site id:	USGS3159083
Longitude:	1181803	Dec lat:	34.70581737
Dec lon:	-118.30174405	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2447.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19471030
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	600	Hole depth:	600
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-23	Ground water data end date:	1967-03-15
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1967-03-15	282.75		1963-05-23	269.45	

A2
WNW
0 - 1/8 Mile
Higher | **CA WELLS** | **CADW40000014105**

Longitude:	-118.3017
Latiude:	34.7058
Stwellno:	07N13W07P001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014105

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

B3
South
1/8 - 1/4 Mile
Higher

FED USGS **USGS3159207**

Agency cd:	USGS	Site no:	344213118180301
Site name:	007N013W18C001S		
Latitude:	344213	EDR Site id:	USGS3159207
Longitude:	1181803	Dec lat:	34.70359524
Dec lon:	-118.30174406	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2445.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	479	Hole depth:	512
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-09-12	Ground water data end date:	1963-09-12
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-09-12	140.00	

B4
South
1/8 - 1/4 Mile
Higher

FED USGS **USGS3159208**

Agency cd:	USGS	Site no:	344213118180302
Site name:	007N013W18C002S		
Latitude:	344213	EDR Site id:	USGS3159208
Longitude:	1181803	Dec lat:	34.70359524
Dec lon:	-118.30174406	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2445.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19610628
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	600	Hole depth:	600
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-27	Ground water data end date:	1963-05-27
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-27	298.00	

Note: The site was being pumped.

B5
SSW
1/8 - 1/4 Mile
Higher

CA WELLS **CADW40000014048**

Longitude:	-118.3017
Latiude:	34.7036
Stwellno:	07N13W18C001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014048

B6
SSW
1/8 - 1/4 Mile
Higher

CA WELLS **CADW40000014049**

Longitude:	-118.3017
Latiude:	34.7036
Stwellno:	07N13W18C002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014049

C7
SE
1/8 - 1/4 Mile
Lower

CA WELLS **CADW40000014050**

Longitude:	-118.2979
Latiude:	34.7036
Stwellno:	07N13W18B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014050

D8
NE
1/8 - 1/4 Mile
Lower

CA WELLS **CADW40000014117**

Longitude:	-118.2976
Latiude:	34.7075
Stwellno:	07N13W07K001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014117

C9
ESE
1/8 - 1/4 Mile
Lower

FED USGS **USGS3159206**

Agency cd:	USGS	Site no:	344213118174901
Site name:	007N013W18B002S		
Latitude:	344213	EDR Site id:	USGS3159206
Longitude:	1181749	Dec lat:	34.70359525
Dec lon:	-118.29785505	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2439.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	700	Hole depth:	700
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-10-00	Ground water data end date:	1956-10-00
Ground water data count:	6		

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956-10	210.00		1953-10	190.00	
1951-10	180.00		1950-10	175.00	
1948-10	165.00		1946-10	163.00	

D10
ENE **FED USGS** **USGS3159115**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	344227118174801
Site name:	007N013W07K001S		
Latitude:	344227	EDR Site id:	USGS3159115
Longitude:	1181748	Dec lat:	34.70748398
Dec lon:	-118.29757724	Coor meth:	M
Coor accr:	M	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2437.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19550701
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	603	Hole depth:	603
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-23	Ground water data end date:	1963-05-23
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-23	287.96	

E11
ESE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000014051**

Longitude:	-118.2948
Latiude:	34.7036
Stwellno:	07N13W18B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014051

F12
North
1/4 - 1/2 Mile
Higher

FED USGS **USGS3158961**

Agency cd:	USGS	Site no:	344239118180501
Site name:	007N013W07L001S		
Latitude:	344239	EDR Site id:	USGS3158961
Longitude:	1181805	Dec lat:	34.71081716
Dec lon:	-118.30229959	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2450.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-05-23	Ground water data end date:	1963-05-23
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-23	300.00	

F13
NNW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000014152**

Longitude:	-118.3023
Latiude:	34.7108
Stwellno:	07N13W07L001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014152

E14
ESE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3159205**

Agency cd:	USGS	Site no:	344213118173801
Site name:	007N013W18B001S		
Latitude:	344213	EDR Site id:	USGS3159205
Longitude:	1181738	Dec lat:	34.70359525
Dec lon:	-118.2947994	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2434.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	700	Hole depth:	700
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 0000-00-00
Water quality data end date: 0000-00-00
Water quality data count: 0
Ground water data begin date: 1946-10-00
Ground water data end date: 1956-10-00
Ground water data count: 6

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1956-10	205.00		1953-10	185.00	
1951-10	175.00		1950-10	170.00	
1948-10	165.00		1946-10	160.00	

G15
ESE
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000014058**

Longitude: -118.2929
Latiude: 34.7039
Stwellno: 07N13W07R001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000014058

G16
ESE
1/4 - 1/2 Mile
Lower

FED USGS **USGS3159212**

Agency cd: USGS
Site no: 344214118173401
Site name: 007N013W07R002S
Latitude: 344214
EDR Site id: USGS3159212
Longitude: 1181734
Dec lat: 34.70387302
Dec lon: -118.29368825
Coor meth: M
Coor accr: S
Latlong datum: NAD27
Dec latlong datum: NAD83
District: 06
State: 06
County: 037
Country: US
Land net: Not Reported
Location map: DEL SUR
Map scale: 24000
Altitude: 2431.00
Altitude method: Interpolated from topographic map
Altitude accuracy: 010
Altitude datum: National Geodetic Vertical Datum of 1929
Hydrologic: AntelopeFremont Valleys. California. Area = 3310 sq.mi.
Topographic: Not Reported
Site type: Ground-water other than Spring
Date construction: Not Reported
Date inventoried: Not Reported
Mean greenwich time offset: PST
Local standard time flag: Y
Type of ground water site: Single well, other than collector or Ranney type
Aquifer Type: Not Reported
Aquifer: Not Reported
Well depth: 450
Hole depth: 450
Source of depth data: Not Reported
Project number: 479381106
Real time data flag: Not Reported
Daily flow data begin date: Not Reported
Daily flow data end date: Not Reported
Daily flow data count: Not Reported
Peak flow data begin date: Not Reported
Peak flow data end date: Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

H17
ENE **FED USGS** **USGS3159132**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	344230118173401
Site name:	007N013W07J002S		
Latitude:	344230	EDR Site id:	USGS3159132
Longitude:	1181734	Dec lat:	34.70831728
Dec lon:	-118.29368822	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2428.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19470101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

G18
ESE **FED USGS** **USGS3159211**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344214118173101
Site name:	007N013W07R001S		
Latitude:	344214	EDR Site id:	USGS3159211
Longitude:	1181731	Dec lat:	34.70387302
Dec lon:	-118.29285489	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2430.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19460606
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	400	Hole depth:	400
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1946-09-15	Ground water data end date:	1957-06-10
Ground water data count:	3		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1957-06-10	232.00		1952-04-12	210.00	
1946-09-15	163.00				

H19
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3159114**

Agency cd:	USGS	Site no:	344227118173101
Site name:	007N013W07J001S		
Latitude:	344227	EDR Site id:	USGS3159114
Longitude:	1181731	Dec lat:	34.70748398
Dec lon:	-118.29285487	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2426.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19620312
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	451	Hole depth:	451
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1963-05-27
Water quality data end date:	1963-05-27	Water quality data count:	1
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

I20
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3159181**

Agency cd:	USGS	Site no:	344209118183801
Site name:	007N014W13A001S		
Latitude:	344209	EDR Site id:	USGS3159181
Longitude:	1181838	Dec lat:	34.70248416
Dec lon:	-118.3114666	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2467.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	10		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19521212
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	519	Hole depth:	519
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data begin date: 1992-08-20
Water quality data end date: 2003-08-19
Water quality data count: 12
Ground water data begin date: 1953-10-14
Ground water data end date: 2004-08-17
Ground water data count: 47

Ground-water levels, Number of Measurements: 47

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-08-17	250.76		2004-03-30	240.25	
2003-03-27	238.45		2002-03-26	237.39	
2001-03-14	233.94		2000-03-22	234.78	
1999-06-08	238.56				
1999-04-01					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1998-03-17	232.97		1997-03-05	233.34	
1996-04-19	234.22		1995-04-19	232.77	
1994-04-15	233.41		1993-04-20	232.75	
1992-04-14	234.41		1991-03-18	235.98	
1990-03-13	237.95				
Note: A nearby site that taps the same aquifer was being pumped.					
1989-03-23	240.10				
1988-03-29	242.89				
Note: A nearby site that taps the same aquifer was being pumped.					
1987-02-25	258.80		1986-03-18	271.02	
1985-03-26	270.99		1984-03-06	257.40	
1983-04-15	276.09		1982-02-09	271.37	
1980-03-24	270.28		1979-02-13	272.78	
1978-03-29	273.73		1977-03-09	276.21	
1976-03-08	275.04		1975-02-12	277.53	
1974-02-11	289.10		1973-02-14	280.22	
1972-03-15	286.77				
1971-03-17	299.95				
Note: A nearby site that taps the same aquifer was being pumped.					
1970-10-22	307.23		1970-03-17	291.70	
1968-03-12	289.24		1967-12-27	287.74	
1963-05-10	279.78		1962-05-22	275.20	
1960-11-02	249.60		1959-11-03	238.00	
1957-08-28	251.70		1956-05-23	238.10	
1955-09-21	239.30		1953-10-14	219.00	

I21
WSW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014037**

Longitude: -118.3115
Latiude: 34.7025
Stwellno: 07N14W13A001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000014037

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

J22
ESE
1/2 - 1 Mile
Lower | **CA WELLS** | **CADW40000014046**

Longitude:	-118.289
Latiude:	34.7033
Stwellno:	07N13W17D001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014046

J23
ESE
1/2 - 1 Mile
Lower | **CA WELLS** | **CADW40000014042**

Longitude:	-118.289
Latiude:	34.703
Stwellno:	07N13W17D002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014042

24
East
1/2 - 1 Mile
Lower | **FED USGS** | **USGS3159094**

Agency cd:	USGS	Site no:	344223118171801
Site name:	007N013W08N001S		
Latitude:	344223	EDR Site id:	USGS3159094
Longitude:	1181718	Dec lat:	34.70637293
Dec lon:	-118.28924365	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19380101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

K25
NNE **CA WELLS** **CADW40000014206**
1/2 - 1 Mile
Lower

Longitude:	-118.294
Latiude:	34.7144
Stwellno:	07N13W07H002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014206

J26
ESE **FED USGS** **USGS3159197**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344212118171701
Site name:	007N013W17D001S		
Latitude:	344212	EDR Site id:	USGS3159197
Longitude:	1181717	Dec lat:	34.7033175
Dec lon:	-118.28896588	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2420.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	162	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1927-00-00	Ground water data end date:	1957-10-29
Ground water data count:	24		

Ground-water levels, Number of Measurements: 24

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1957-10-29	156.5		1956-11-21	157.90	
1955-10-24	161.55		1955-05-18	153.89	
1954-11-15	155.30		1954-03-26	146.90	
1953-12-01	152.20		1952-11-20	147.10	
1951-12-07	144.00		1950-11-28	138.50	
1950-01-04	135.40		1948-11-30	124.10	
1947-12-09	113.50		1945-11-13	107.10	
1945-03-05	93.40		1944-12-06	99.60	
1941-12-02	95.80		1941-04-25	99.50	
1940-12-05	95.90		1940-03-13	91.50	
1939-11-17	98.70		1939-03-08	84.40	
1937-11-09	91.50		1927	55.00	

K27
NE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014207**

Longitude:	-118.2934
Latiude:	34.7144
Stwellno:	07N13W07H001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014207

L28
ENE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014144**

Longitude:	-118.2887
Latiude:	34.7097
Stwellno:	07N13W08M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014144

J29
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS3159192**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency cd:	USGS	Site no:	344211118171701
Site name:	007N013W17D002S		
Latitude:	344211	EDR Site id:	USGS3159192
Longitude:	1181717	Dec lat:	34.70303973
Dec lon:	-118.28896588	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2421.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	19450806
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	505	Hole depth:	505
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1945-08-06	Ground water data end date:	1965-11-09
Ground water data count:	26		

Ground-water levels, Number of Measurements: 26

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1965-11-09	225.24				
1963-04-04	247.20				
Note: The site had been pumped recently.					
1963-04-01	247.70		1962-11-07	216.30	
1962-08-02	228.50				
Note: The site had been pumped recently.					
1962-04-09	228.50		1961-10-19	204.10	
1961-04-05	217.40		1960-11-21	207.00	
1960-10-24	223.60		1960-04-12	216.50	
1959-10-21	214.00		1959-03-19	197.20	
1958-11-28	193.70		1958-11-13	196.70	
1958-06	285.00				
Note: The site was being pumped.					
1958-03-12	177.00		1957-11-12	190.70	
1957-03-08	183.60		1956-11-28	184.70	
1956	284.00				
Note: The site was being pumped.					
1954	271.00				
Note: The site was being pumped.					
1952	255.00				
Note: The site was being pumped.					
1948	197.00				
Note: The site was being pumped.					

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1947	179.00				
Note: The site was being pumped.					
1945-08-06	144.00				

K30
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159018**

Agency cd:	USGS	Site no:	344252118173501
Site name:	007N013W07H002S		
Latitude:	344252	EDR Site id:	USGS3159018
Longitude:	1181735	Dec lat:	34.71442814
Dec lon:	-118.29396597	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2432.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1944-09-12
Water quality data end date:	1944-09-12	Water quality data count:	1
Ground water data begin date:	1944-09-12	Ground water data end date:	1944-09-12
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1944-09-12	92.00	

31
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159017**

Agency cd:	USGS	Site no:	344252118173301
Site name:	007N013W07H001S		
Latitude:	344252	EDR Site id:	USGS3159017
Longitude:	1181733	Dec lat:	34.71442814
Dec lon:	-118.2934104	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2432.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	195401
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	605	Hole depth:	605
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1960-08-24	Ground water data end date:	1962-07-09
Ground water data count:	2		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1962-07-09	305.40		1960-08-24	282.20	

M32
ESE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014007**

Longitude:	-118.289
Latiude:	34.7
Stwellno:	07N13W17E001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014007

L33
ENE
1/2 - 1 Mile
Lower

FED USGS **USGS3158930**

Agency cd:	USGS	Site no:	344235118171601
Site name:	007N013W08M001S		
Latitude:	344235	EDR Site id:	USGS3158930
Longitude:	1181716	Dec lat:	34.70970612
Dec lon:	-118.28868805	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2420.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19520128
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	752	Hole depth:	752
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1952-01-00	Ground water data end date:	1961-07-10
Ground water data count:	6		

Ground-water levels, Number of Measurements: 6

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1961-07-10	283.00		1960-07-13	272.40	
1957-08-19	240.00		1957-02-01	143.00	
1957-02	143.00		1952-01	150.00	

34
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS3159193**

Agency cd:	USGS	Site no:	344211118185101
Site name:	007N014W13B001S		
Latitude:	344211	EDR Site id:	USGS3159193
Longitude:	1181851	Dec lat:	34.70303968
Dec lon:	-118.31507782	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2478.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	21.3	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

M35
ESE **FED USGS** **USGS3159372**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344200118171702
Site name:	007N013W17E002S		
Latitude:	344200	EDR Site id:	USGS3159372
Longitude:	1181717	Dec lat:	34.6999843
Dec lon:	-118.2889659	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19620101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	540	Hole depth:	540
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

M36
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS3159371**

Agency cd:	USGS	Site no:	344200118171701
Site name:	007N013W17E001S		
Latitude:	344200	EDR Site id:	USGS3159371
Longitude:	1181717	Dec lat:	34.6999843
Dec lon:	-118.2889659	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Pediment		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1949-00-00	Ground water data end date:	1956-00-00
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel
1956	260.00	
Note: The site was being pumped.		
1955	248.00	
Note: The site was being pumped.		
1953	228.00	
Note: The site was being pumped.		
1950	200.00	
Note: The site was being pumped.		
1949	190.00	
Note: The site was being pumped.		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

N37
NNW
1/2 - 1 Mile
Higher | **FED USGS** | **USGS3158836**

Agency cd:	USGS	Site no:	344302118182001
Site name:	007N013W07D001S		
Latitude:	344302	EDR Site id:	USGS3158836
Longitude:	1181820	Dec lat:	34.71720578
Dec lon:	-118.30646635	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2463.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

O38
NNE
1/2 - 1 Mile
Higher | **CA WELLS** | **CADW40000014249**

Longitude:	-118.2976
Latiude:	34.7178
Stwellno:	07N13W07B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014249

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

P39
North
1/2 - 1 Mile
Higher

FED USGS **USGS3158864**

Agency cd:	USGS	Site no:	344305118180601
Site name:	007N013W07C001S		
Latitude:	344305	EDR Site id:	USGS3158864
Longitude:	1181806	Dec lat:	34.71803908
Dec lon:	-118.30257733	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2454.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19470101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	665	Hole depth:	665
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1947-00-00	Ground water data end date:	1963-05-23
Ground water data count:	11		

Ground-water levels, Number of Measurements: 11

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-05-23	236.63		1956-04-21	205.00	
1955	195.00		1954	185.00	
1953	175.00		1952	165.00	
1951	155.00		1950	155.00	
1949	135.00		1948	125.00	
1947	115				

O40
NNE
1/2 - 1 Mile
Higher

FED USGS **USGS3158850**

Agency cd:	USGS	Site no:	344304118175001
Site name:	007N013W07B002S		
Latitude:	344304	EDR Site id:	USGS3158850
Longitude:	1181750	Dec lat:	34.71776133
Dec lon:	-118.29813275	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2447.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19410101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

P41
North
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014256**

Longitude:	-118.3026
Latiude:	34.718
Stwellno:	07N13W07C001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014256

O42
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3158849**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency cd:	USGS	Site no:	344304118174801
Site name:	007N013W07B001S		
Latitude:	344304	EDR Site id:	USGS3158849
Longitude:	1181748	Dec lat:	34.71776133
Dec lon:	-118.29757717	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2446.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19370101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	610	Hole depth:	610
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1947-00-00	Ground water data end date:	1955-04-22
Ground water data count:	10		

Ground-water levels, Number of Measurements: 10

Date	Feet below Surface	Feet to Sealevel
1955-04-22	367.00	
Note: The site was being pumped.		
1954	355.00	
Note: The site was being pumped.		
1953	345.00	
Note: The site was being pumped.		
1952	335.00	
Note: The site was being pumped.		
1951	325.00	
Note: The site was being pumped.		
1950	315.00	
Note: The site was being pumped.		
1949	305.00	
Note: The site was being pumped.		
1948	295.00	
Note: The site was being pumped.		
1947-01-01	285.00	
Note: The site was being pumped.		
1947	285.00	
Note: The site was being pumped.		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

N43
NNW
1/2 - 1 Mile
Higher | **FED USGS** | **USGS3158851**

Agency cd:	USGS	Site no:	344304118182001
Site name:	007N013W07D002S		
Latitude:	344304	EDR Site id:	USGS3158851
Longitude:	1181820	Dec lat:	34.71776131
Dec lon:	-118.30646635	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2463.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	174	Hole depth:	174
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

Q44
NNE
1/2 - 1 Mile
Lower | **CA WELLS** | **CADW40000014246**

Longitude:	-118.2931
Latiude:	34.7172
Stwellno:	07N13W07A001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014246

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

Q45
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS3158835**

Agency cd:	USGS	Site no:	344302118173201
Site name:	007N013W07A001S		
Latitude:	344302	EDR Site id:	USGS3158835
Longitude:	1181732	Dec lat:	34.7172058
Dec lon:	-118.29313259	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2436.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19560725
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1956-08-20	Ground water data end date:	2004-08-25
Ground water data count:	4		

Ground-water levels, Number of Measurements: 4

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-08-25	240.18		1967-03-17	273.97	
1963-05-23	330.55		1956-08-20	268.00	

R46
SE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000013964**

Longitude:	-118.289
Latiude:	34.6958
Stwellno:	07N13W17M001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013964

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

S47
East
1/2 - 1 Mile
Lower

FED USGS **USGS3159191**

Agency cd:	USGS	Site no:	344211118170201
Site name:	007N013W17C001S		
Latitude:	344211	EDR Site id:	USGS3159191
Longitude:	1181702	Dec lat:	34.70303974
Dec lon:	-118.28479908	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2412.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19000101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

R48
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159289**

Agency cd:	USGS	Site no:	344146118171701
Site name:	007N013W17M002S		
Latitude:	344146	EDR Site id:	USGS3159289
Longitude:	1181717	Dec lat:	34.69609557
Dec lon:	-118.28896593	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	450	Hole depth:	450
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

S49
East **FED USGS** **USGS3159196**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344212118170101
Site name:	007N013W17C002S		
Latitude:	344212	EDR Site id:	USGS3159196
Longitude:	1181701	Dec lat:	34.70331751
Dec lon:	-118.28452129	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2412.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19000101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	414	Hole depth:	414
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

R50
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159281**

Agency cd:	USGS	Site no:	344145118171701
Site name:	007N013W17M001S		
Latitude:	344145	EDR Site id:	USGS3159281
Longitude:	1181717	Dec lat:	34.69581781
Dec lon:	-118.28896593	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2418.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19550125
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	601	Hole depth:	601
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1955-08-30	Ground water data end date:	1961-10-24
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1961-10-24	223.20		1960-09-16	258.00	
1959-10-25	244.40		1956-10-10	227.40	
1955-08-30	229.00				

Note: The site was being pumped.

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Lancaster Blue Sky Ranch
17
Lancaster, CA 93536

Inquiry Number: 3089735.157
June 08, 2011

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
Lancaster Blue Sky Ranch
17
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089735.157

Contact: Garret Bean

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Tetra Tech Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Lancaster Blue Sky Ranch
Address: 17
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 10
Certification # 4321-4493-94A5

Sanborn® Library search results
Certification # 4321-4493-94A5

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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APPENDIX B-6.5

PROJECT 5 SILVER SUN GREENWORKS ENVIRONMENTAL DATA RESOURCES

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Silver Sun Greenworks
26
Lancaster, CA 93536

Inquiry Number: 3089735.172
June 08, 2011

EDR Historical Topographic Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

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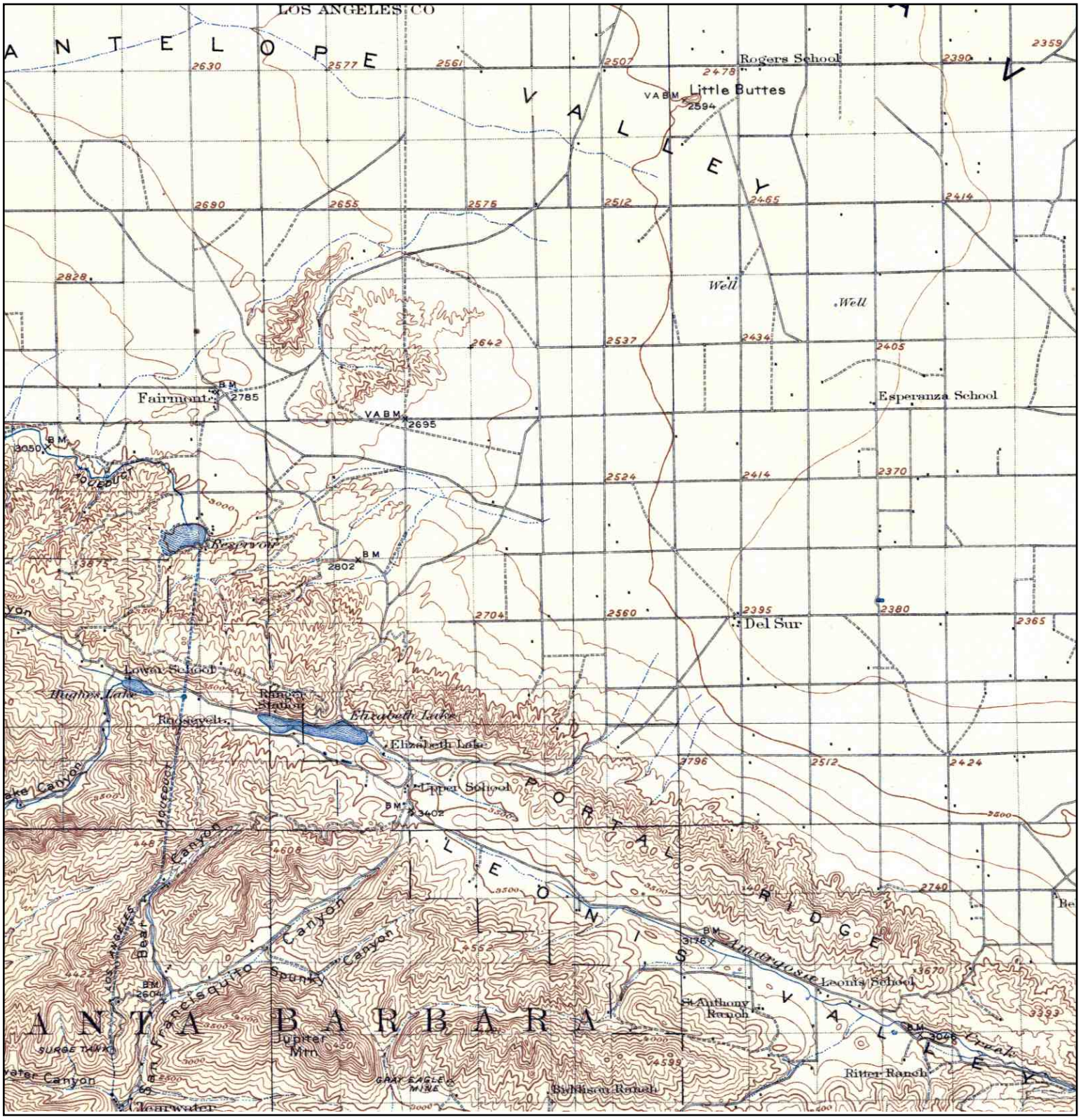
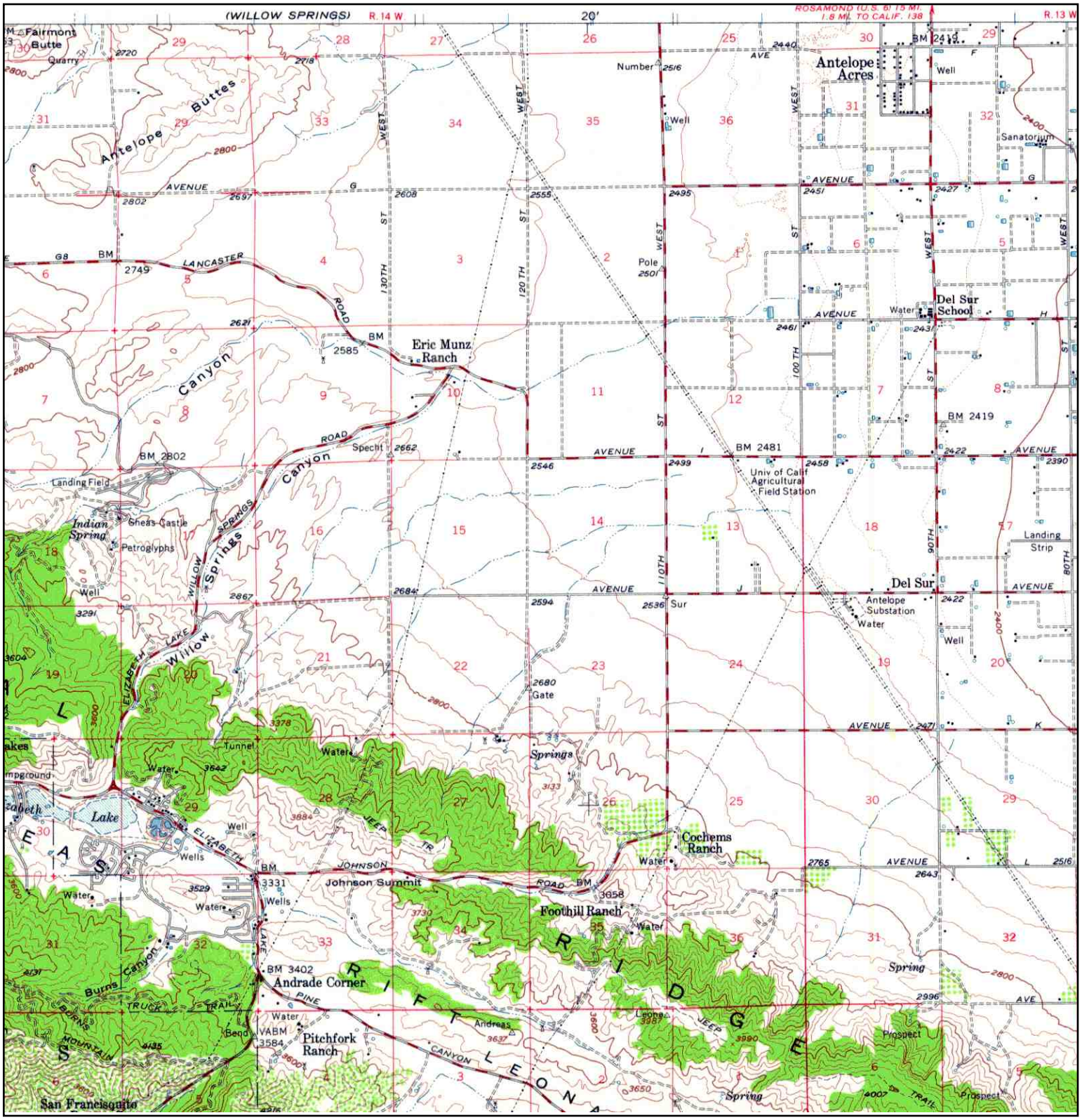
Historical Topographic Map



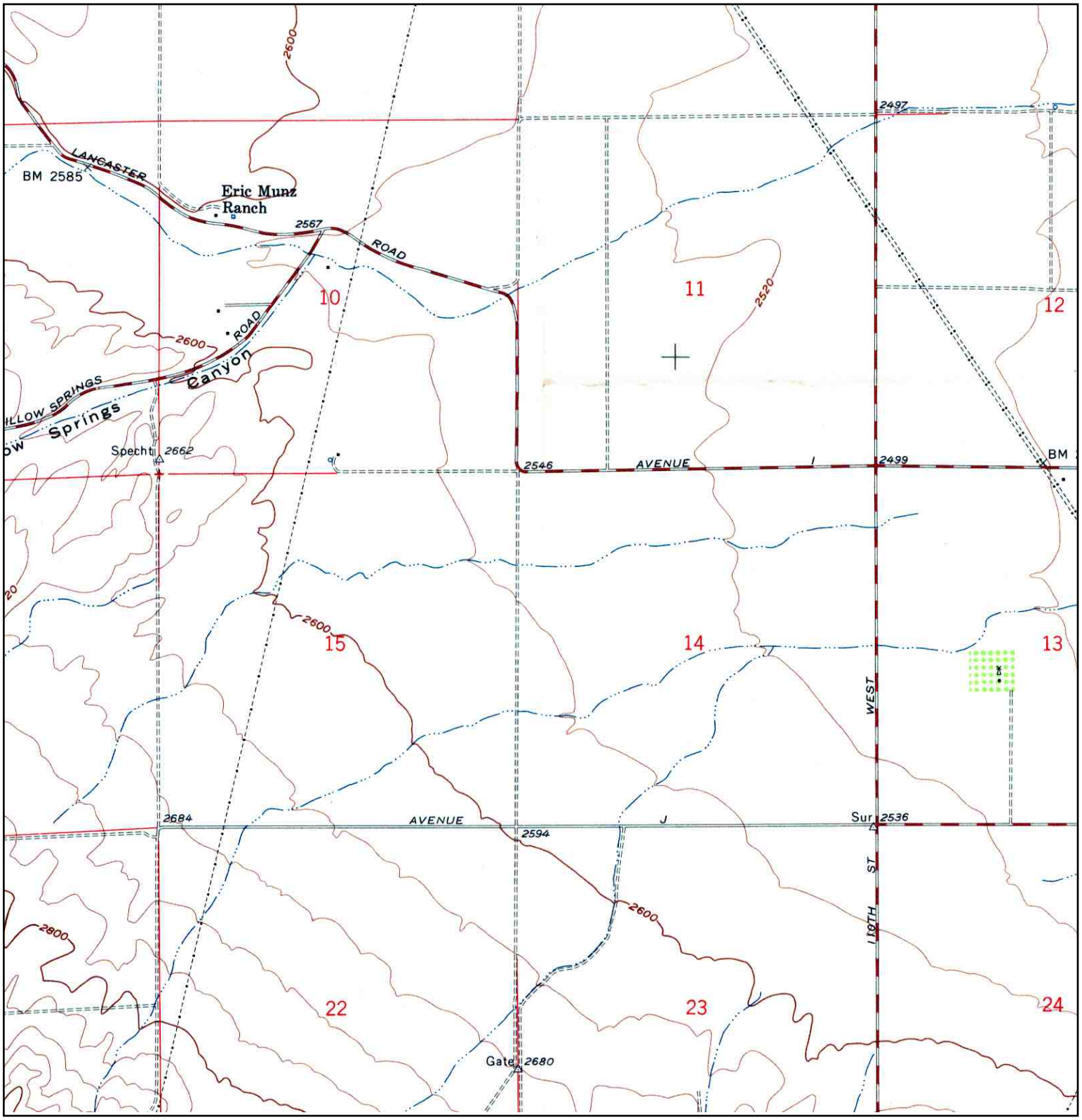
N	TARGET QUAD NAME: ELIZABETH LAKE MAP YEAR: 1917 SERIES: 30 SCALE: 1:125000	SITE NAME: Silver Sun Greenworks ADDRESS: 26 Lancaster, CA 93536 LAT/LONG: 34.7 / -118.3398	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.172 RESEARCH DATE: 06/08/2011

Historical Topographic Map



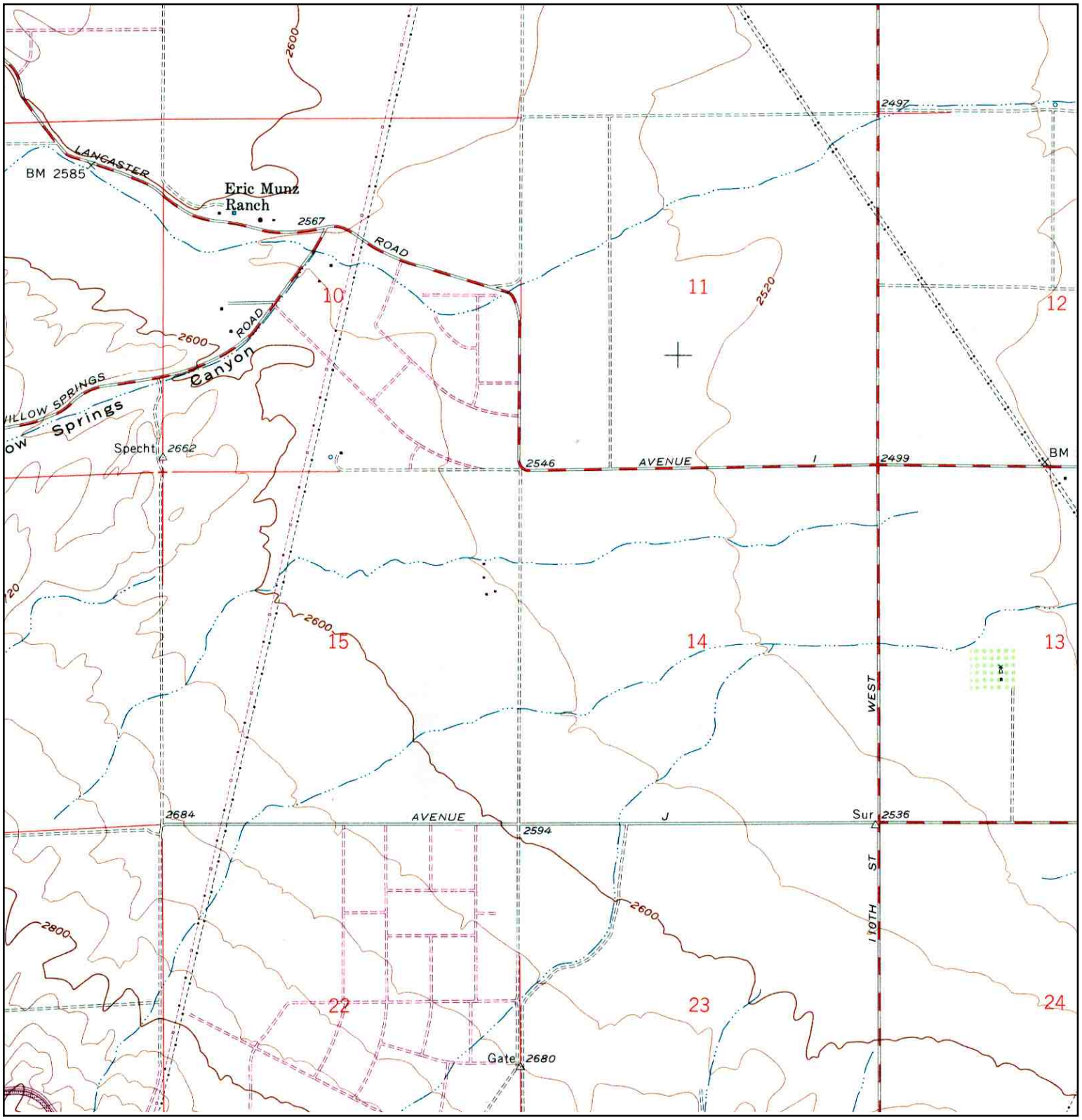
N	TARGET QUAD		SITE NAME:	Silver Sun Greenworks	CLIENT:	Tetra Tech Inc.
	NAME:	BOUQUET RESERVOIR	ADDRESS:	26	CONTACT:	Garret Bean
	MAP YEAR:	1958		Lancaster, CA 93536	INQUIRY#:	3089735.172
			LAT/LONG:	34.7 / -118.3398	RESEARCH DATE:	06/08/2011
	SERIES:	15				
	SCALE:	1:62500				

Historical Topographic Map



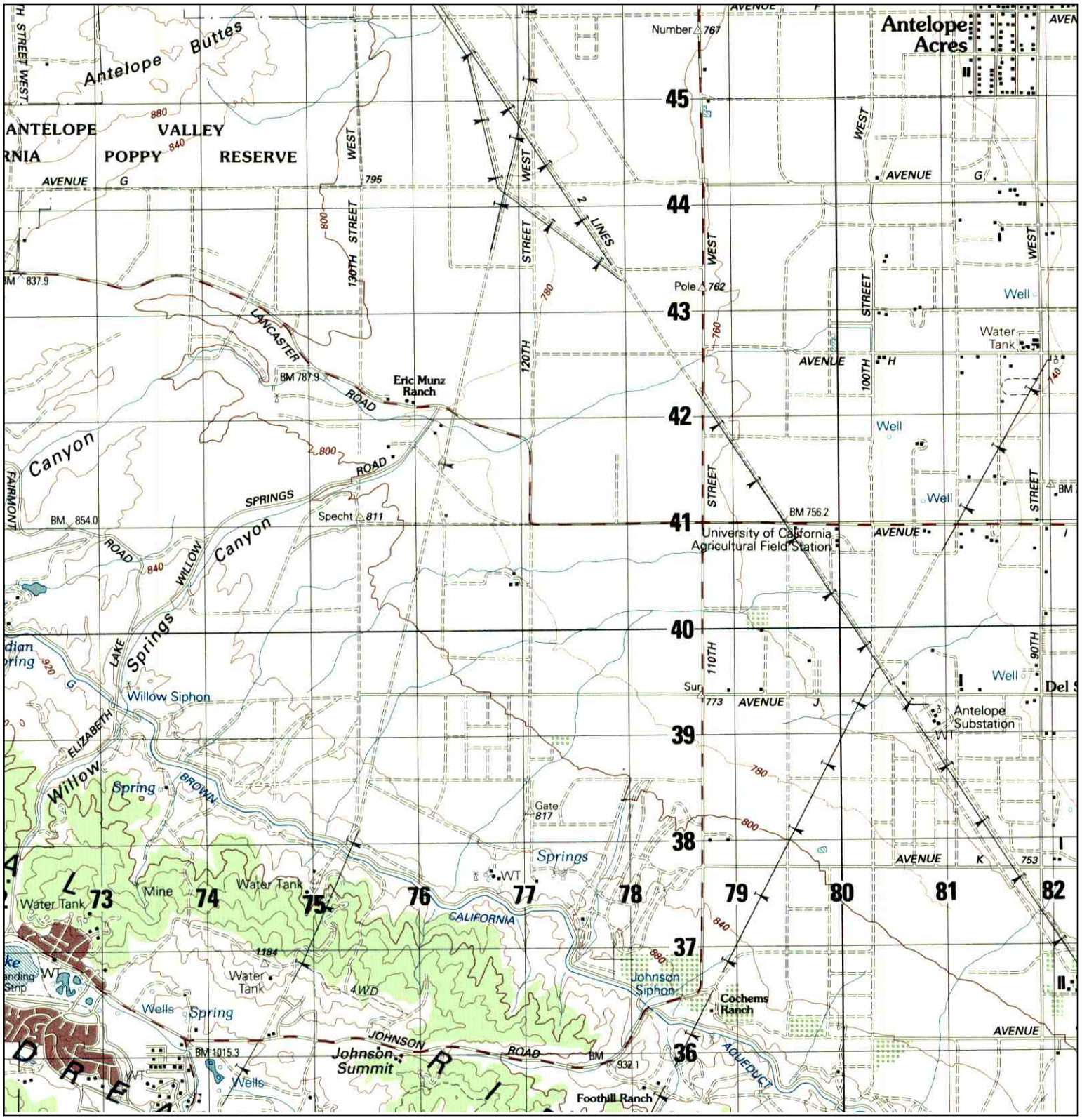
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Silver Sun Greenworks ADDRESS: 26 Lancaster, CA 93536 LAT/LONG: 34.7 / -118.3398	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.172 RESEARCH DATE: 06/08/2011

Historical Topographic Map



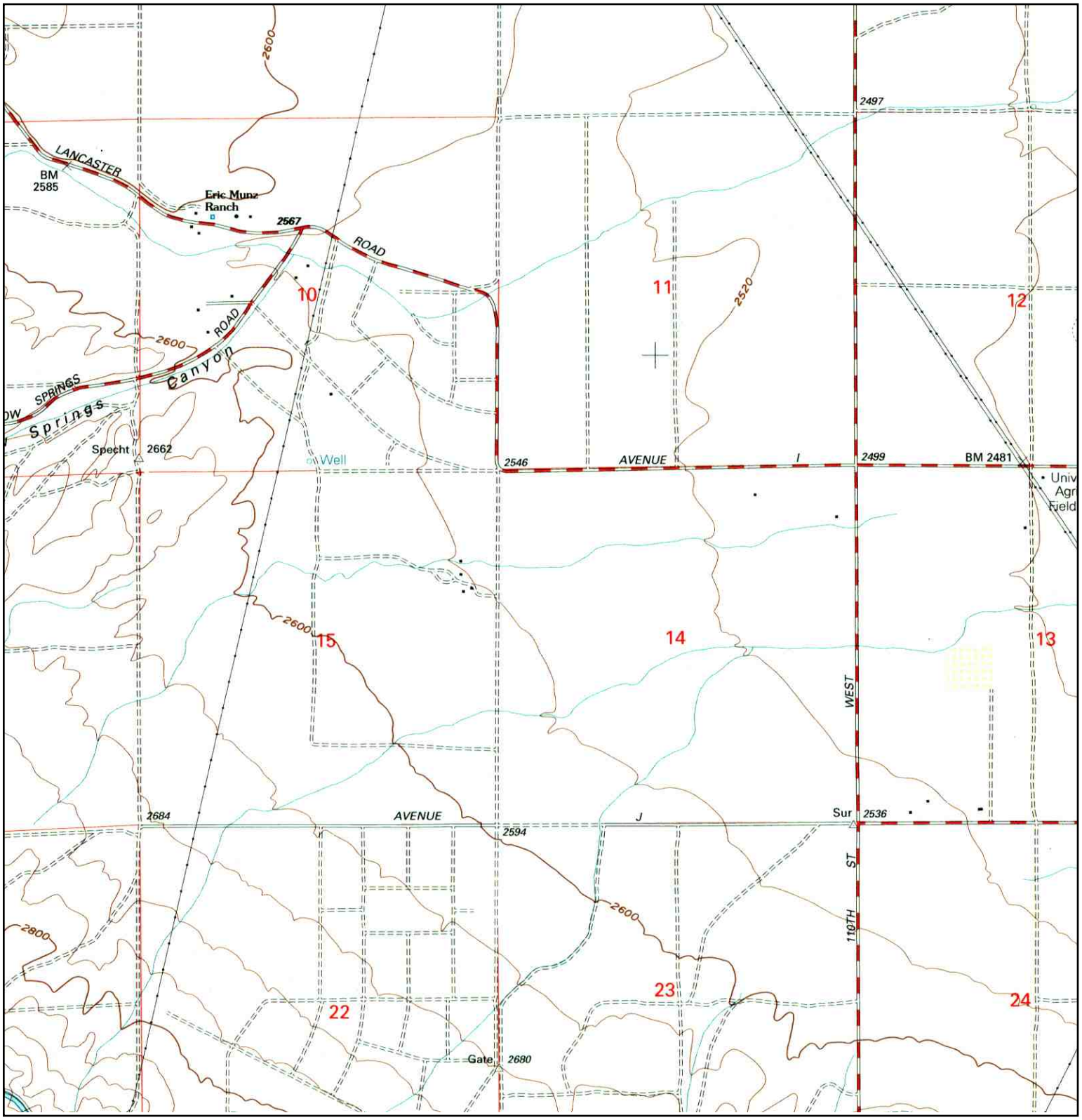
N	TARGET QUAD			
	NAME:	DEL SUR	SITE NAME: Silver Sun Greenworks	CLIENT: Tetra Tech Inc.
	MAP YEAR:	1974	ADDRESS: 26	CONTACT: Garret Bean
	PHOTOREVISED:	1958	Lancaster, CA 93536	INQUIRY#: 3089735.172
	SERIES:	7.5	LAT/LONG: 34.7 / -118.3398	RESEARCH DATE: 06/08/2011
	SCALE:	1:24000		

Historical Topographic Map



N	TARGET QUAD NAME: BOUQUET RESERVOIR MAP YEAR: 1987 SERIES: 15 SCALE: 1:50000	SITE NAME: Silver Sun Greenworks ADDRESS: 26 Lancaster, CA 93536 LAT/LONG: 34.7 / -118.3398	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.172 RESEARCH DATE: 06/08/2011

Historical Topographic Map



N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1995 SERIES: 7.5 SCALE: 1:24000	SITE NAME: Silver Sun Greenworks ADDRESS: 26 Lancaster, CA 93536 LAT/LONG: 34.7 / -118.3398	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY#: 3089735.172 RESEARCH DATE: 06/08/2011

Silver Sun Greenworks
26
Lancaster, CA 93536

Inquiry Number: 3089735.170s
June 08, 2011

The EDR Radius Map™ Report with GeoCheck®

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

26
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.700000 - 34° 42' 0.0''
Longitude (West):	118.339800 - 118° 20' 23.3''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	377289.7
UTM Y (Meters):	3840395.2
Elevation:	2553 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
SLIC ---------- Statewide SLIC Cases

INDIAN LUST - Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST - Active UST Facilities
AST - Aboveground Petroleum Storage Tank Facilities
INDIAN UST - Underground Storage Tanks on Indian Land
FEMA UST - Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP - Voluntary Cleanup Program Properties
INDIAN VCP - Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI - Open Dump Inventory
DEBRIS REGION 9 - Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT - Waste Management Unit Database
SWRCY - Recycler Database
HAULERS - Registered Waste Tire Haulers Listing
INDIAN ODI - Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL - Clandestine Drug Labs
HIST Cal-Sites - Historical Calsites Database
SCH - School Property Evaluation Program
Toxic Pits - Toxic Pits Cleanup Act Sites
AOCONCERN - San Gabriel Valley Areas of Concern
CDL - Clandestine Drug Labs
US HIST CDL - National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST - Facility Inventory Database
HIST UST - Hazardous Substance Storage Container Database
SWEEPS UST - SWEEPS UST Listing

Local Land Records

LIENS 2 - CERCLA Lien Information
LUCIS - Land Use Control Information System
LIENS - Environmental Liens Listing
DEED - Deed Restriction Listing

Records of Emergency Release Reports

HMIRS - Hazardous Materials Information Reporting System

CHMIRS California Hazardous Material Incident Report System
LDS Land Disposal Sites Listing
MCS Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen RCRA - Non Generators
DOT OPS Incident and Accident Data
DOD Department of Defense Sites
FUDS Formerly Used Defense Sites
CONSENT Superfund (CERCLA) Consent Decrees
ROD Records Of Decision
UMTRA Uranium Mill Tailings Sites
MINES Mines Master Index File
TRIS Toxic Chemical Release Inventory System
TSCA Toxic Substances Control Act
FTTS FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS FIFRA/TSCA Tracking System Administrative Case Listing
SSTS Section 7 Tracking Systems
ICIS Integrated Compliance Information System
PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database
FINDS Facility Index System/Facility Registry System
RAATS RCRA Administrative Action Tracking System
CA BOND EXP. PLAN Bond Expenditure Plan
NPDES NPDES Permits Listing
WDS Waste Discharge System
Cortese "Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE Hazardous Waste & Substance Site List
Notify 65 Proposition 65 Records
LA Co. Site Mitigation Site Mitigation List
DRYCLEANERS Cleaner Facilities
WIP Well Investigation Program Case List
LOS ANGELES CO. HMS HMS: Street Number List
HAZNET Facility and Manifest Data
EMI Emissions Inventory Data
INDIAN RESERV Indian Reservations
SCRD DRYCLEANERS State Coalition for Remediation of Drycleaners Listing
FINANCIAL ASSURANCE Financial Assurance Information Listing
HWP EnviroStor Permitted Facilities Listing
HWT Registered Hazardous Waste Transporter Database
COAL ASH EPA Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER PCB Transformer Registration Database
PROC Certified Processors Database
MWMP Medical Waste Management Program Listing
COAL ASH DOE Sleam-Electric Plan Operation Data

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Historical Auto Stations EDR Proprietary Historic Gas Stations
EDR Historical Cleaners EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

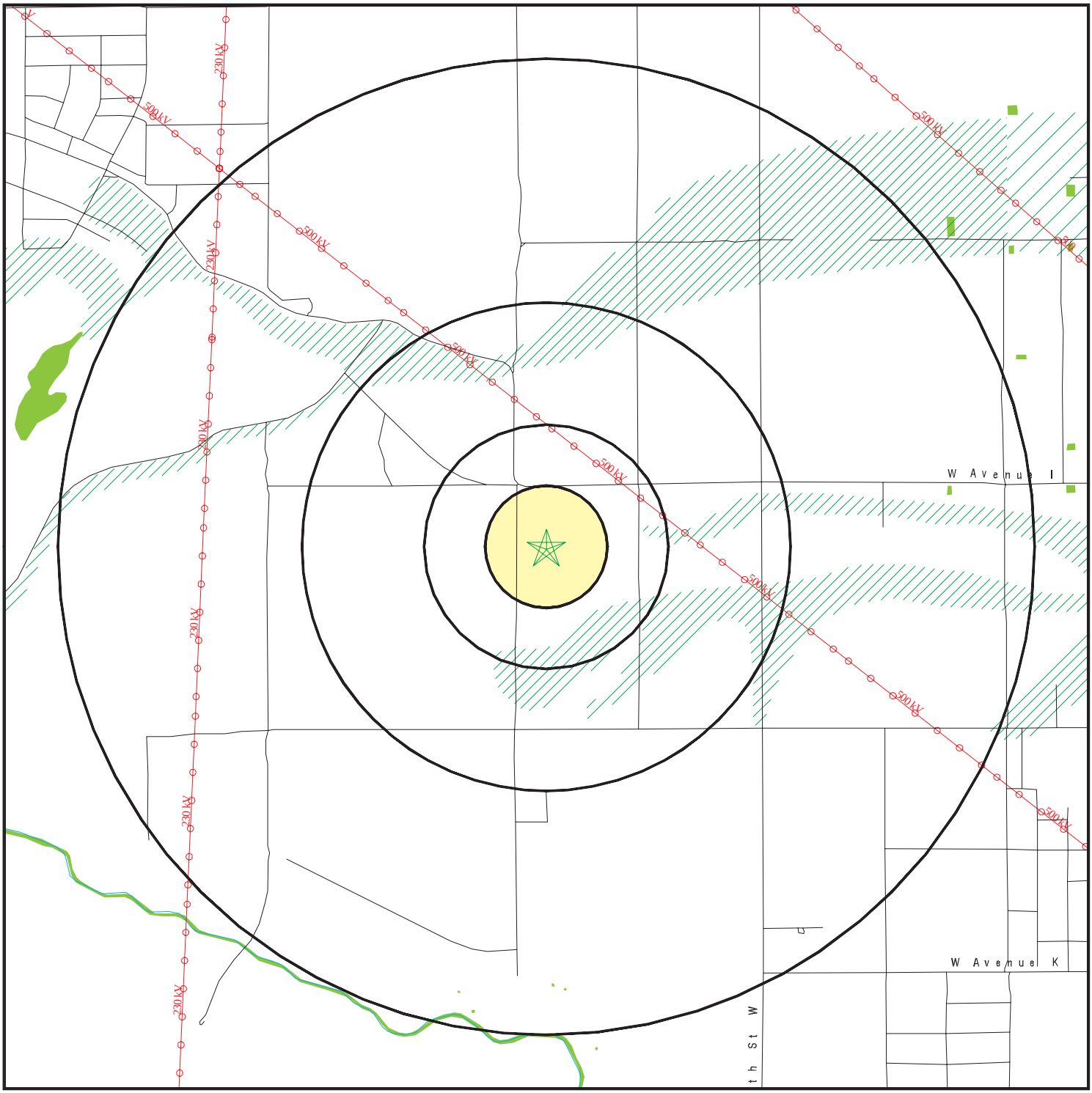
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 38 records.

Site Name	Database(s)
TRACT NO 060987	NPDES
GRANDIFLORA	NPDES
AVE E ETAL	NPDES
SO CALIF EDISON CO	NPDES, HAZNET
AVENUE K & 47TH STREET WEST	NPDES
TRACT NO 060238	NPDES
D & D WELDING	NPDES
TRACT 060430	NPDES
SUNSET LANDING	NPDES
TRTP YARD 28 MATERIAL STORAGE	NPDES
SILVER LEAF 2	NPDES
HARSHFIELD TERRACE RETIREMENT HOUS	NPDES
CAL MAT	SWEEPS UST
ON AVENUE G, BETWEEN 100 WEST	CDL
ON NORTH 35TH STREET WEST AT A	CDL
28.15 MI.MARKER ON ANGELES CRE	CDL
5 MI NW OF HWY 138 & 300TH ST	AST
PAR ELECTRICAL CONTRACTORS INC	HAZNET
SOUTHERN CALIFORNIA EDISON/ANTELOP	HAZNET
JMC TRANSPORTATION	HAZNET
OSO PUMPING PLANT	HAZNET
ILLEGAL DRUG LAB/OPERATOR UNKNOWN	HAZNET
LOS ANGELES COUNTY DEPT OF PUBLIC	HAZNET
CNTY LOS ANGELES/RD 551	HAZNET
3995 AVENUE H W	US CDL
CASTA DWR- CHECK SITE 44	EMI
VALUE CLEANERS, STUART MATROS	EMI
ANTELOPE VALLEY COLLEGE	EMI
CASTA DWR- CHECK SITE 45	EMI
CASTA DWR- CHECK SITE 48	EMI
CASTA DWR- CHECK SITE 51	EMI
CASTA DWR- CHECK SITE 53	EMI
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
CASTA DWR- CHECK SITE 59	EMI
JOE WALKER MIDDLE SCHOOL	EMI
BURGER KING	EMI
LACO RD 551 ROAD MAINTENANCE YARD	EMI

OVERVIEW MAP - 3089735.170s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Silver Sun Greenworks ADDRESS: 26 Lancaster CA 93536 LAT/LONG: 34.7000 / 118.3398	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.170s DATE: June 08, 2011 1:03 pm

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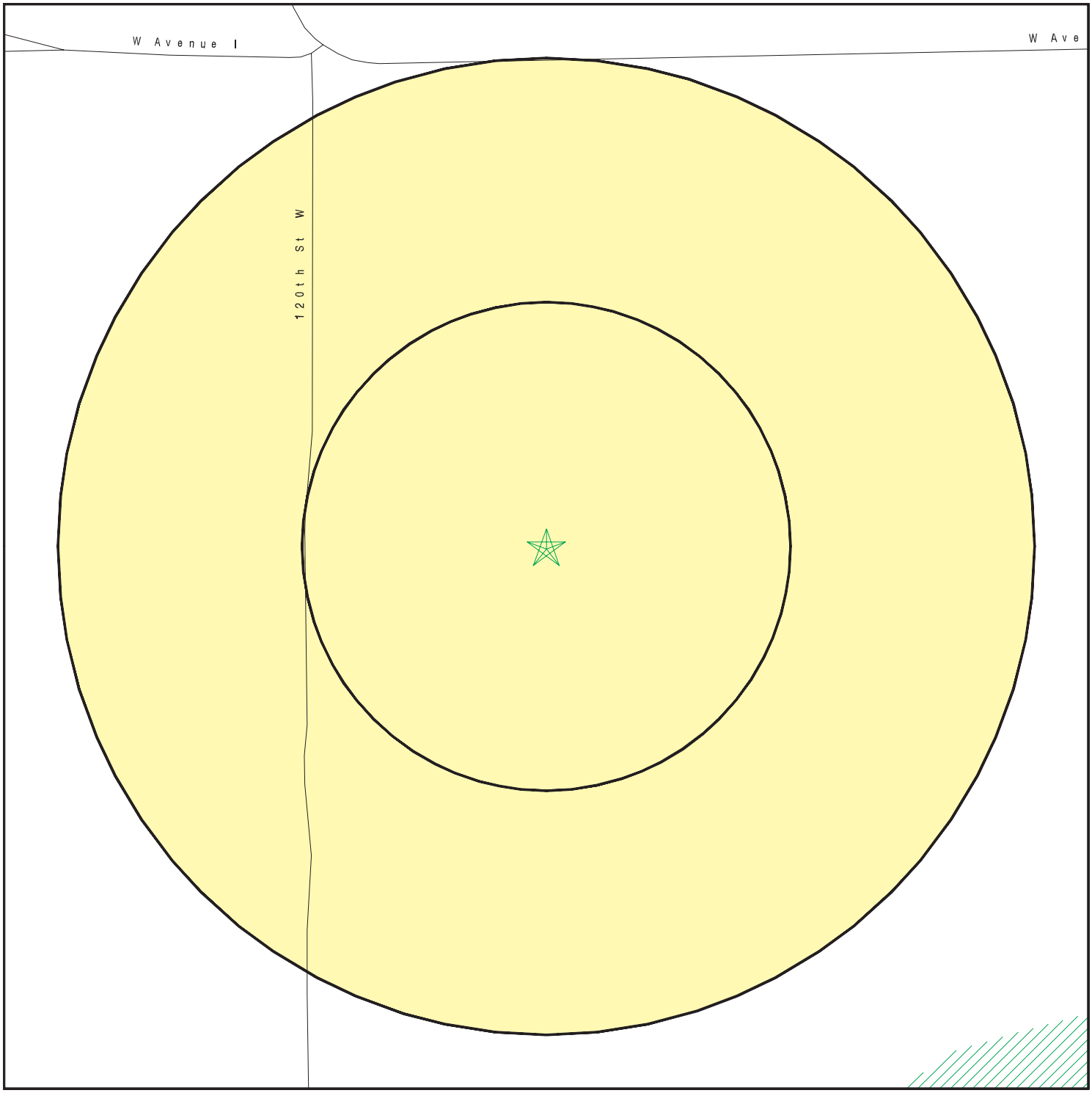
DETAIL MAP - 3089735.170s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Silver Sun Greenworks ADDRESS: 26 Lancaster CA 93536 LAT/LONG: 34.7000 / 118.3398	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089735.170s DATE: June 08, 2011 1:05 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.250	0	0	0	0	0	0
Proposed NPL		1.250	0	0	0	0	0	0
NPL LIENS		0.250	0	0	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.250	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		0.750	0	0	0	0	NR	0
FEDERAL FACILITY		1.250	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.750	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.250	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.750	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.500	0	0	0	NR	NR	0
RCRA-SQG		0.500	0	0	0	NR	NR	0
RCRA-CESQG		0.500	0	0	0	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.750	0	0	0	0	NR	0
US INST CONTROL		0.750	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.250	0	0	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.250	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.250	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.750	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		0.750	0	0	0	0	NR	0
SLIC		0.750	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST		0.750	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.500	0	0	0	NR	NR	0
AST		0.500	0	0	0	NR	NR	0
INDIAN UST		0.500	0	0	0	NR	NR	0
FEMA UST		0.500	0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.750	0	0	0	0	NR	0
INDIAN VCP		0.750	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.750	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		0.750	0	0	0	0	NR	0
DEBRIS REGION 9		0.750	0	0	0	0	NR	0
WMUDS/SWAT		0.750	0	0	0	0	NR	0
SWRCY		0.750	0	0	0	0	NR	0
HAULERS		0.250	0	0	NR	NR	NR	0
INDIAN ODI		0.750	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.250	0	0	NR	NR	NR	0
HIST Cal-Sites		1.250	0	0	0	0	0	0
SCH		0.500	0	0	0	NR	NR	0
Toxic Pits		1.250	0	0	0	0	0	0
AOCONCERN		1.250	0	0	0	0	0	0
CDL		0.250	0	0	NR	NR	NR	0
US HIST CDL		0.250	0	0	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.500	0	0	0	NR	NR	0
HIST UST		0.500	0	0	0	NR	NR	0
SWEEPS UST		0.500	0	0	0	NR	NR	0
Local Land Records								
LIENS 2		0.250	0	0	NR	NR	NR	0
LUCIS		0.750	0	0	0	0	NR	0
LIENS		0.250	0	0	NR	NR	NR	0
DEED		0.750	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.250	0	0	NR	NR	NR	0
CHMIRS		0.250	0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS		0.250	0	0	NR	NR	NR	0
MCS		0.250	0	0	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.500	0	0	0	NR	NR	0
DOT OPS		0.250	0	0	NR	NR	NR	0
DOD		1.250	0	0	0	0	0	0
FUDS		1.250	0	0	0	0	0	0
CONSENT		1.250	0	0	0	0	0	0
ROD		1.250	0	0	0	0	0	0
UMTRA		0.750	0	0	0	0	NR	0
MINES		0.500	0	0	0	NR	NR	0
TRIS		0.250	0	0	NR	NR	NR	0
TSCA		0.250	0	0	NR	NR	NR	0
FTTS		0.250	0	0	NR	NR	NR	0
HIST FTTS		0.250	0	0	NR	NR	NR	0
SSTS		0.250	0	0	NR	NR	NR	0
ICIS		0.250	0	0	NR	NR	NR	0
PADS		0.250	0	0	NR	NR	NR	0
MLTS		0.250	0	0	NR	NR	NR	0
RADINFO		0.250	0	0	NR	NR	NR	0
FINDS		0.250	0	0	NR	NR	NR	0
RAATS		0.250	0	0	NR	NR	NR	0
CA BOND EXP. PLAN		1.250	0	0	0	0	0	0
NPDES		0.250	0	0	NR	NR	NR	0
WDS		0.250	0	0	NR	NR	NR	0
Cortese		0.750	0	0	0	0	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.250	0	0	0	0	0	0
LA Co. Site Mitigation		0.250	0	0	NR	NR	NR	0
DRYCLEANERS		0.500	0	0	0	NR	NR	0
WIP		0.500	0	0	0	NR	NR	0
LOS ANGELES CO. HMS		0.250	0	0	NR	NR	NR	0
HAZNET		0.250	0	0	NR	NR	NR	0
EMI		0.250	0	0	NR	NR	NR	0
INDIAN RESERV		1.250	0	0	0	0	0	0
SCRD DRYCLEANERS		0.750	0	0	0	0	NR	0
FINANCIAL ASSURANCE		0.250	0	0	NR	NR	NR	0
HWP		1.250	0	0	0	0	0	0
HWT		0.500	0	0	0	NR	NR	0
COAL ASH EPA		0.750	0	0	0	0	NR	0
PCB TRANSFORMER		0.250	0	0	NR	NR	NR	0
PROC		0.750	0	0	0	0	NR	0
MWMP		0.500	0	0	0	NR	NR	0
COAL ASH DOE		0.250	0	0	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.250	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.500	0	0	0	NR	NR	0
EDR Historical Cleaners		0.500	0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

MAP FINDINGS

NO SITES FOUND

Count: 38 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
GORMAN	S107620404	CASTA DWR- CHECK SITE 44	CHECK 44 AT LANCASTER RD / 2	93536	EMI
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
LANCASTER	S110374354	PAR ELECTRICAL CONTRACTORS INC	2866TH & 2 W AVENUE F	93536	HAZNET
LANCASTER	S109462558	TRACT NO 060987	52 52ND ST W / AVENUE J	93536	NPDES
LANCASTER	S109444838	GRANDIFLORA	60 60TH STREET WEST / AVENUE	93536	NPDES
LANCASTER	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES
LANCASTER	S104568573	SO CALIF EDISON CO	9634 W AVENUE J	93536	NPDES, HAZNET
LANCASTER	S107143259	SOUTHERN CALIFORNIA EDISON/ANTELOP	9634 W AVENUE J	93536	HAZNET
LANCASTER	S106842034	VALUE CLEANERS, STUART MATROS	2849 W AVENUE L	93536	EMI
LANCASTER	S106826009	ANTELOPE VALLEY COLLEGE	3041 W AVENUE K	93536	EMI
LANCASTER	S107539709		ON AVENUE G, BETWEEN 100 WEST	93536	CDL
LANCASTER	S109436818	AVENUE K & 47TH STREET WEST	AVENUE K / 47TH STREET WEST		NPDES
LANCASTER	1012055833	3995 AVENUE H W	3995 AVENUE H W		US CDL
LANCASTER	S110367727	JMC TRANSPORTATION	W AVENUE L AT 30TH ST	93536	HAZNET
LANCASTER	S107620405	CASTA DWR- CHECK SITE 45	CHECK 45 AT LANCASTER RD / 1	93536	EMI
LANCASTER	S107620408	CASTA DWR- CHECK SITE 48	CHECK 48 AT LANCASTER RD / 1	93536	EMI
LANCASTER	S107620411	CASTA DWR- CHECK SITE 51	CHECK 51 AT LANCASTER RD / 1	93536	EMI
LANCASTER	S107620413	CASTA DWR- CHECK SITE 53	CHECK 53 AT LANCASTER RD / 1	93536	EMI
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S109462553	TRACT NO 060238	NW CORNER LANCASTER BLVD / 3	93536	NPDES
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 / 300TH S	93536	HAZNET
LANCASTER	S107539974		ON NORTH 35TH STREET WEST AT A	93536	CDL
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
LANCASTER	S109441193	D & D WELDING	NWC AVENUE L I2 / 7TH ST E		NPDES
LANCASTER	S109461420	TRACT 060430	SE OF 37TH STREET WEST / AVE		NPDES
LANCASTER	S109460024	SUNSET LANDING	SE OF INTERSECTION OF 45 ST W	93536	NPDES
LOS ANGELES	S110736984	TRTP YARD 28 MATERIAL STORAGE	W AVENUE I AND 73RD ST	93536	NPDES
LOS ANGELES	S110736118	SILVER LEAF 2	LOTS 11 TRWY	93536	NPDES
LOS ANGELES COUNTY	S107532211		28.15 MI.MARKER ON ANGELES CRE	0	CDL
PALMDALE	S103678194	ILLEGAL DRUG LAB/OPERATOR UNKNOWN	AVENUE T, 175TH ST EAST	93536	HAZNET
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HW	93536	EMI
QUARTZ HILL	S103975334	LOS ANGELES COUNTY DEPT OF PUBLIC	4859 W AVENUE L 12	93536	HAZNET
QUARTZ HILL	S103957875	CNTY LOS ANGELES/RD 551	4859 W AVENUE L 12	93536	HAZNET
QUARTZ HILL	S106920975	JOE WALKER MIDDLE SCHOOL	5632 W AVENUE L 8	93536	EMI
QUARTZ HILL	S106920186	BURGER KING	4107 W AVENUE L	93536	EMI
QUARTZ HILL	S108432323	LACO RD 551 ROAD MAINTENANCE YARD	4859 W AVENUE L 12	93536	EMI
QUARTZ HILL	S110042892	HARSHFIELD TERRACE RETIREMENT HOUS	6709 W AVENUE M	93536	NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPAa??s Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/15/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 05/25/2010
Date Data Arrived at EDR: 06/02/2010
Date Made Active in Reports: 10/04/2010
Number of Days to Update: 124

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/07/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 11/04/2009
Date Data Arrived at EDR: 05/04/2010
Date Made Active in Reports: 07/07/2010
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 12/02/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 57

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/03/2011
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/01/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 12/29/2010
Date Data Arrived at EDR: 12/30/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 02/24/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 46

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/07/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 03/04/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 05/02/2011
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/18/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 51

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/21/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 30

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

Other Ascertainable Records

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2011
Date Data Arrived at EDR: 02/11/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/15/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 10/29/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 5

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/21/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 99

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/02/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/08/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/17/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 94

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/07/2011
Date Data Arrived at EDR: 01/21/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/11/2011
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Biennially

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/04/2011
Number of Days to Update: 29

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/15/2010
Date Data Arrived at EDR: 09/16/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 13

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/07/2010
Date Made Active in Reports: 08/12/2010
Number of Days to Update: 36

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/01/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 02/28/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/04/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/09/2010
Date Data Arrived at EDR: 08/11/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 9
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 04/26/2011
Number of Days to Update: 41

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 33

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 03/29/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COLUSA COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 12/01/2010
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/06/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/31/2011
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/25/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2011
Date Data Arrived at EDR: 02/09/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 23
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/18/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/12/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 30
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/26/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 22
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 04/25/2011
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/20/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/07/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/15/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 16

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/17/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 31

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 20

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 11/16/2010
Date Made Active in Reports: 01/25/2011
Number of Days to Update: 70

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/21/2010
Next Scheduled EDR Contact: 03/28/2011
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/16/2011
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/30/2011
Date Data Arrived at EDR: 03/31/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 22
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/22/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 29
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 36
Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/14/2011
Date Data Arrived at EDR: 03/15/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 9
Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/25/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 25
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/07/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 35
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/07/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/08/2011
Number of Days to Update: 28
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 30
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 01/25/2011
Date Data Arrived at EDR: 02/03/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 29
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16
Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/26/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/22/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 05/12/2011
Date Made Active in Reports: 05/24/2011
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/12/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/06/2011
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/19/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 38

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/06/2010
Date Made Active in Reports: 07/26/2010
Number of Days to Update: 20

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

SILVER SUN GREENWORKS
26
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.70000 - 34° 42' 0.0''
Longitude (West):	118.3398 - 118° 20' 23.3''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	377289.7
UTM Y (Meters):	3840395.2
Elevation:	2553 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

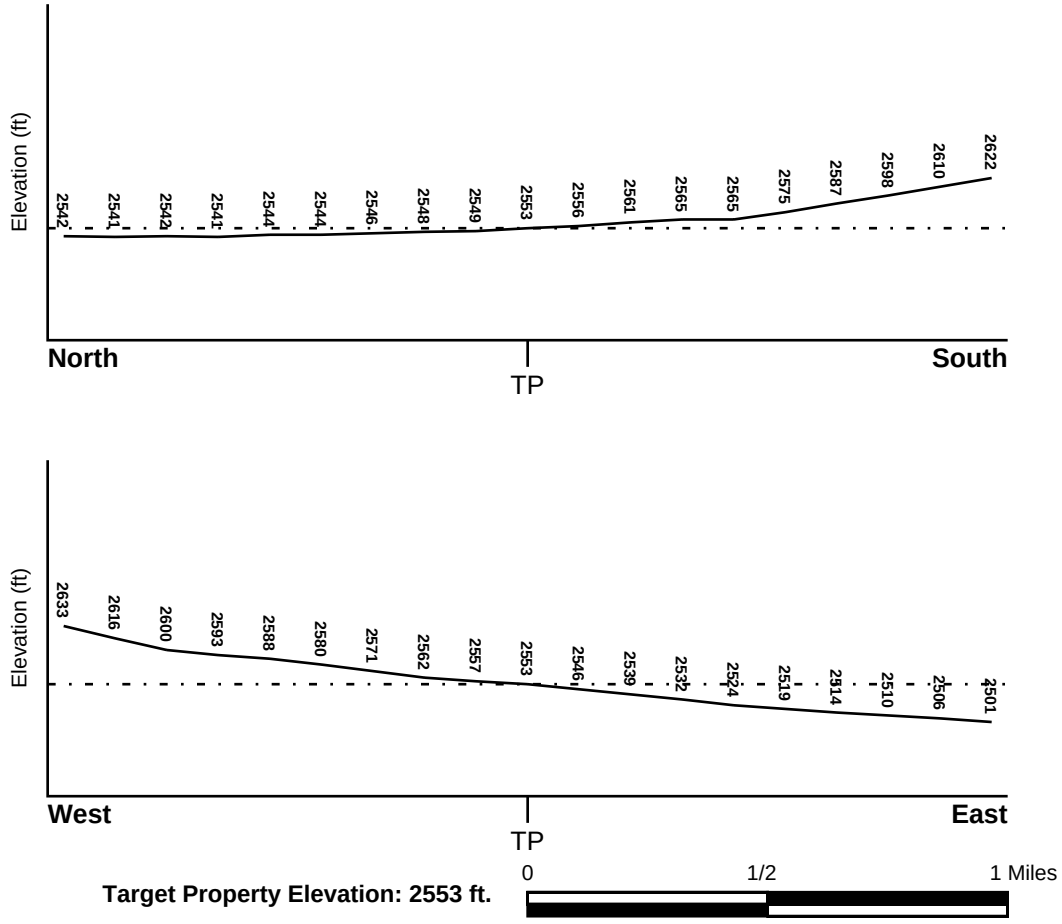
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 2553 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
DEL SUR	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

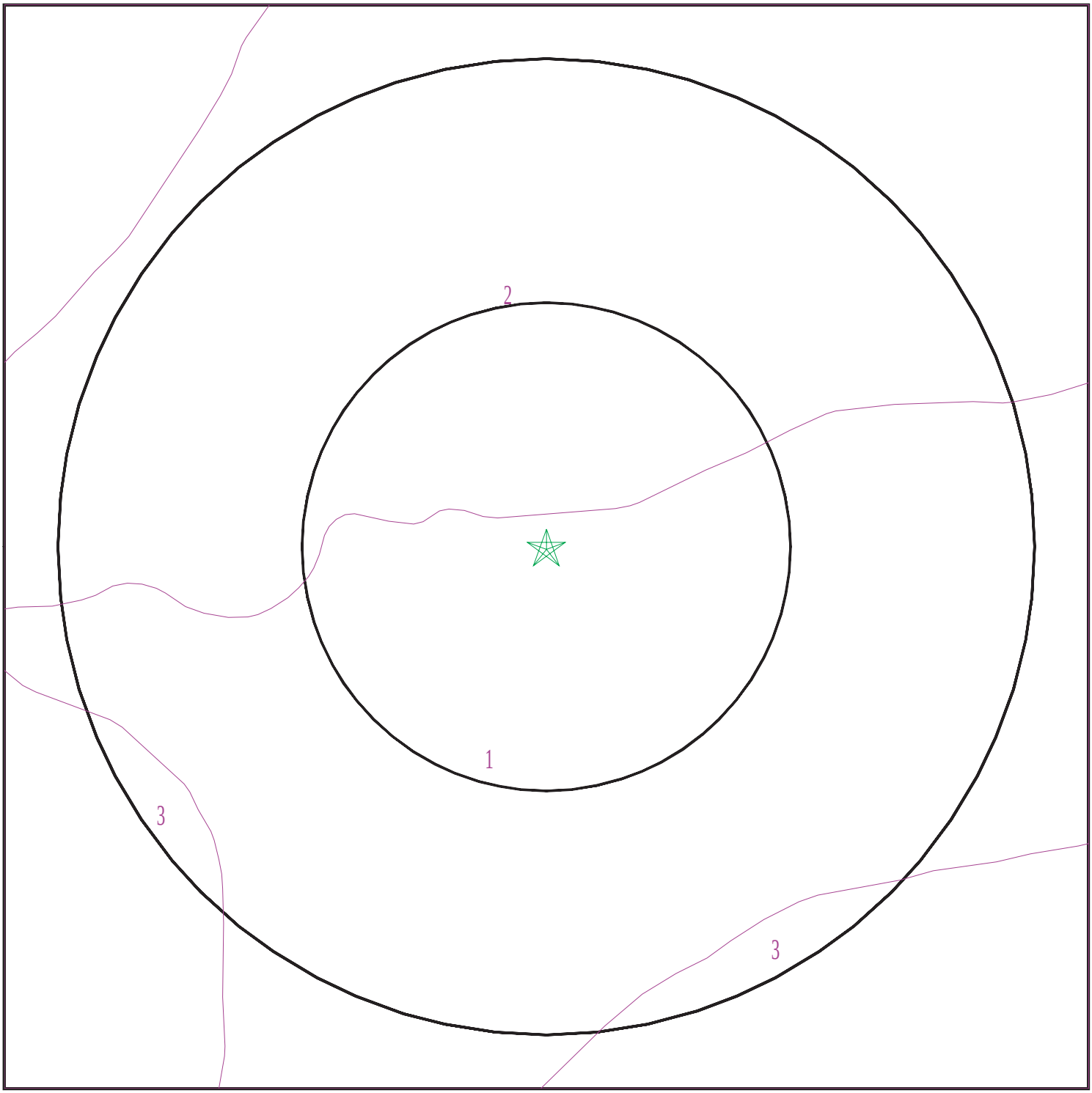
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3089735.170s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Silver Sun Greenworks	CLIENT:	Tetra Tech Inc.
ADDRESS:	26 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.7000 / 118.3398	INQUIRY #:	3089735.170s
		DATE:	June 08, 2011 1:05 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Ramona

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
2	20 inches	31 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	31 inches	90 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1

Soil Map ID: 2

Soil Component Name: Ramona

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
2	20 inches	31 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	31 inches	90 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1

Soil Map ID: 3

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS3159343	1/8 - 1/4 Mile WSW
A3	USGS3159302	1/4 - 1/2 Mile ESE
B4	USGS3159213	1/2 - 1 Mile WNW
B5	USGS3159209	1/2 - 1 Mile WNW
7	USGS3159166	1/2 - 1 Mile West
C9	USGS3159267	1/2 - 1 Mile ESE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

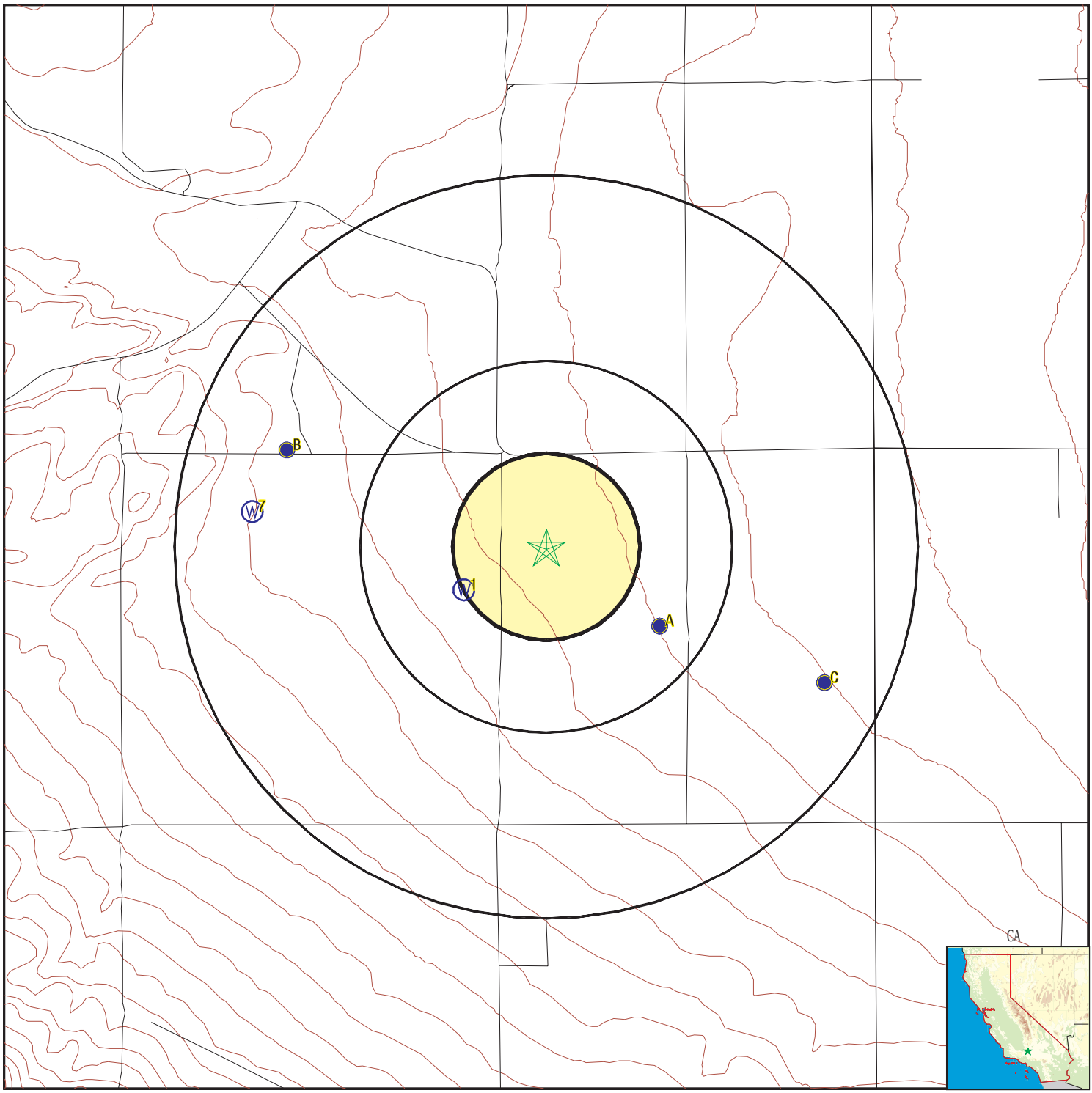
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	CADW40000013970	1/4 - 1/2 Mile SE
B6	CADW40000014057	1/2 - 1 Mile WNW
C8	CADW40000013955	1/2 - 1 Mile ESE

PHYSICAL SETTING SOURCE MAP - 3089735.170s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: Silver Sun Greenworks	CLIENT: Tetra Tech Inc.
ADDRESS: 26	CONTACT: Garret Bean
Lancaster CA 93536	INQUIRY #: 3089735.170s
LAT/LONG: 34.7000 / 118.3398	DATE: June 08, 2011 1:05 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
WSW
1/8 - 1/4 Mile
Higher | **FED USGS** | **USGS3159343**

Agency cd:	USGS	Site no:	344154118203401
Site name:	007N014W15H001S		
Latitude:	344154	EDR Site id:	USGS3159343
Longitude:	1182034	Dec lat:	34.69831761
Dec lon:	-118.34368986	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2565.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19630513
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	624	Hole depth:	624
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

A2
SE
1/4 - 1/2 Mile
Lower | **CA WELLS** | **CADW40000013970**

Longitude:	-118.334
Latiude:	34.6969
Stwellno:	07N14W14F001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013970

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A3
ESE **FED USGS** **USGS3159302**
1/4 - 1/2 Mile
Lower

Agency cd:	USGS	Site no:	344149118195901
Site name:	007N014W14F001S		
Latitude:	344149	EDR Site id:	USGS3159302
Longitude:	1181959	Dec lat:	34.6969288
Dec lon:	-118.33396734	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2533.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19090101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	109	Hole depth:	160
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1909-01-01
Water quality data end date:	1909-01-01	Water quality data count:	1
Ground water data begin date:	1909-00-00	Ground water data end date:	1962-05-01
Ground water data count:	28		

Ground-water levels, Number of Measurements: 28

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1962-05-01					
Note: The site was dry (no water level recorded).					
1927-10-26	147.50		1927-05-09	145.80	
1927-01-20	146.00		1926-10-15	146.30	
1926-08-30	146.10		1926-05-16	145.00	
1926-01-09	145.30		1925-10-06	146.20	
1925-07-21	145.80		1925-06-08	145.40	
1925-05-06	146.30		1925-02-17	145.20	
1924-11-15	145.70		1924-10-22	146.50	
1924-07-04	145.80		1924-03-28	145.55	
1924-01-09	145.80		1923-07-11	146.10	
1923-02-24	145.80		1922-10-26	146.50	
1922-05-24	146.00		1922-04-30	146.90	
1922-01-01	146.00		1921-10-14	146.60	
1921-04-30	146.00		1919-12-18	146.50	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1909	120.00				

B4
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159213**

Agency cd:	USGS	Site no:	344214118210201
Site name:	007N014W10P001S		
Latitude:	344214	EDR Site id:	USGS3159213
Longitude:	1182102	Dec lat:	34.70387292
Dec lon:	-118.35146786	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2583.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-10-23	Ground water data end date:	1963-04-10
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-04-10	318.20		1962-05-01	314.03	
1958-11-28	302.70		1958-03-13	309.70	
1957-10-23	310.20				

B5
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159209**

Agency cd:	USGS	Site no:	344213118210501
Site name:	007N014W10P002S		
Latitude:	344213	EDR Site id:	USGS3159209
Longitude:	1182105	Dec lat:	34.70359515
Dec lon:	-118.35230122	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2585.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	42.5	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

B6
WNW
1/2 - 1 Mile
Higher

CA WELLS **CADW40000014057**

Longitude:	-118.3515
Latiude:	34.7039
Stwellno:	07N14W10P001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014057

7
West
1/2 - 1 Mile
Higher

FED USGS **USGS3159166**

Agency cd:	USGS	Site no:	344205118211001
Site name:	007N014W15C001S		
Latitude:	344205	EDR Site id:	USGS3159166
Longitude:	1182110	Dec lat:	34.70137302
Dec lon:	-118.35369017	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2595.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18850101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	196
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

C8
ESE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000013955**

Longitude:	-118.3262
Latiude:	34.6947
Stwellno:	07N14W14J001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013955

C9
ESE
1/2 - 1 Mile
Lower

FED USGS **USGS3159267**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency cd:	USGS	Site no:	344141118193101
Site name:	007N014W14J001S		
Latitude:	344141	EDR Site id:	USGS3159267
Longitude:	1181931	Dec lat:	34.69470668
Dec lon:	-118.32618933	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2515.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18860101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	175
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1909-01-01	Ground water data end date:	1909-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1909-01-01	167.00	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Silver Sun Greenworks
26
Lancaster, CA 93536

Inquiry Number: 3089735.171
June 08, 2011

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
Silver Sun Greenworks
26
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089735.171

Contact: Garret Bean

EDR® Environmental Data Resources Inc

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Certified Sanborn Results:

Site Name: Silver Sun Greenworks
Address: 26
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 11
Certification # 9738-473E-A324

Sanborn® Library search results
Certification # 9738-473E-A324

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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Silver Sun Greenworks
26
Lancaster, CA 93536

Inquiry Number: 3089735.171
June 08, 2011

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
Silver Sun Greenworks
26
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089735.171

Contact: Garret Bean

EDR® Environmental Data Resources Inc

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Site Name: Silver Sun Greenworks
Address: 26
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 11
Certification # 9738-473E-A324

Sanborn® Library search results
Certification # 9738-473E-A324

UNMAPPED PROPERTY

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APN 3267003002, 3267003003 - Silversun Expansion
W Avenue I & 1/4 Mile East of 120th St W
Lancaster, CA 93536

Inquiry Number: 3408740.3
September 12, 2012

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

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Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

9/12/12

Site Name:
APN 3267003002, 3267003003
W Avenue I & 1/4 Mile East of
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3408740.3

Contact: Nancy Hsu

EDR® Environmental Data Resources Inc

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Certified Sanborn Results:

Site Name: APN 3267003002, 3267003003 - Silversun
Address: W Avenue I & 1/4 Mile East of 120th St W
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: Silversun Expansion
Certification # ECFA-49D6-A09A

Sanborn® Library search results
Certification # ECFA-49D6-A09A

UNMAPPED PROPERTY

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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APN 3267003002, 3267003003 - Silversun Expansion
W Avenue I & 1/4 Mile East of 120th St W
Lancaster, CA 93536

Inquiry Number: 3408740.4
September 12, 2012

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EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

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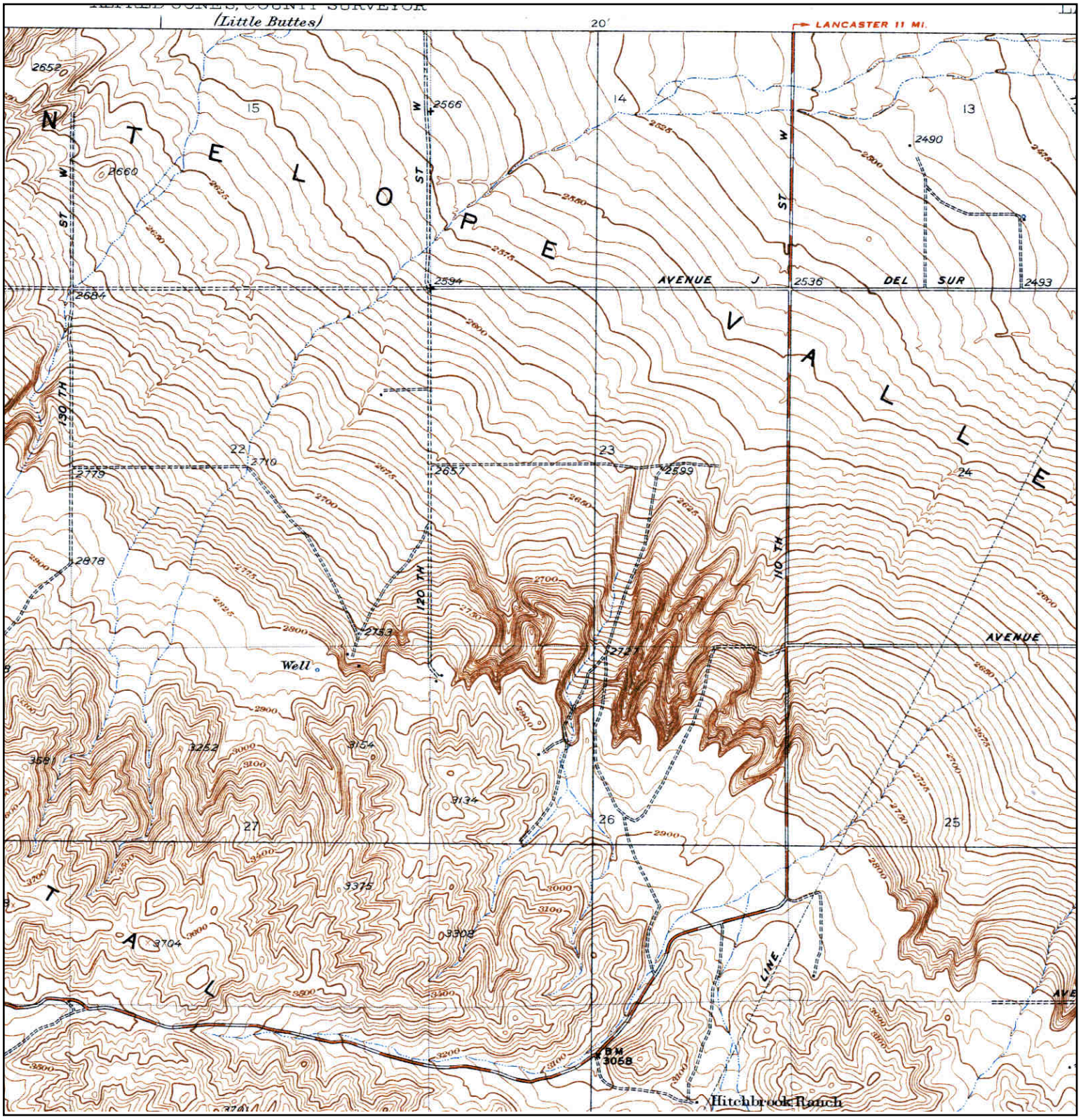
Historical Topographic Map

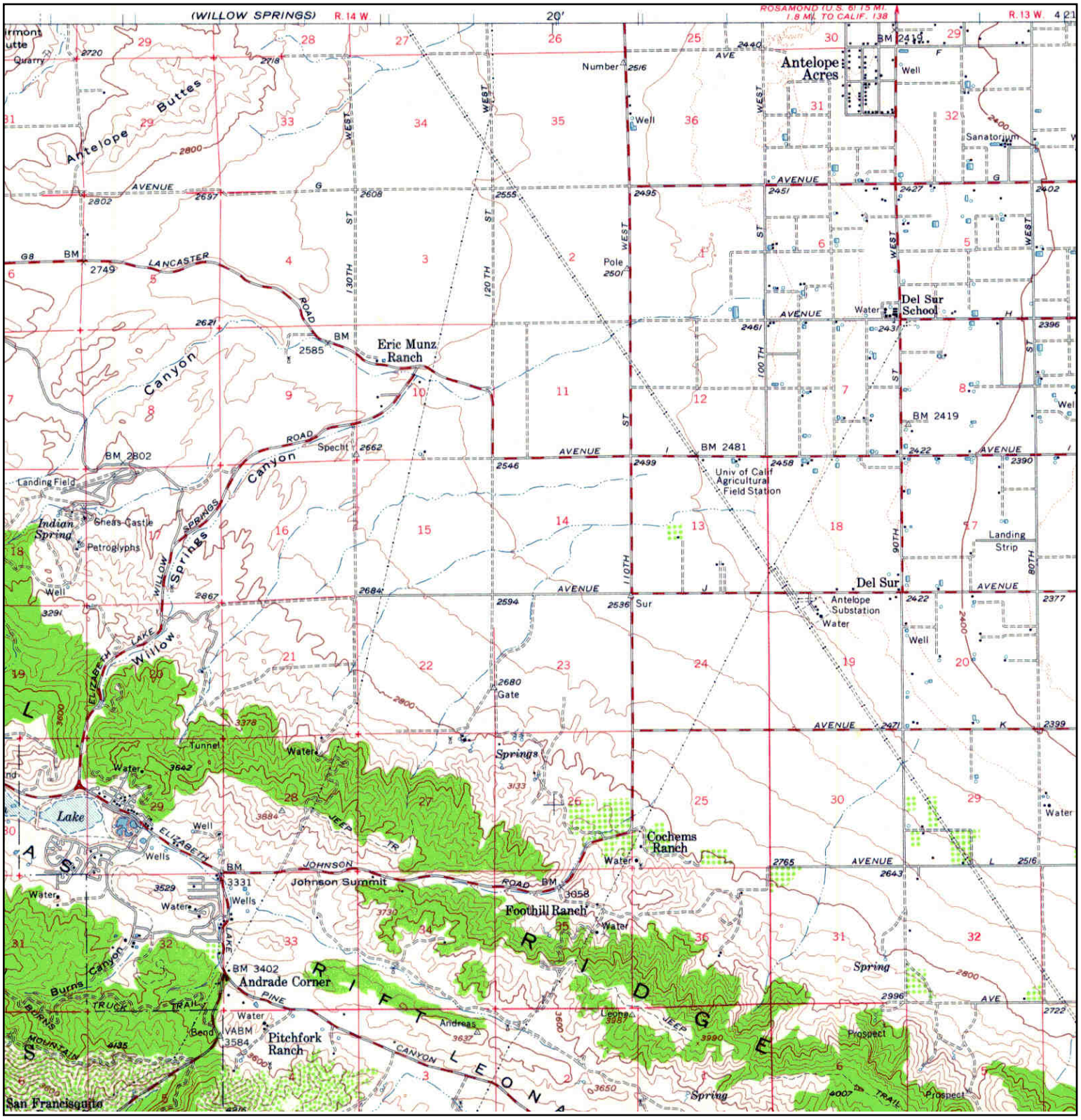
N	TARGET QUAD NAME: ELIZABETH LAKE MAP YEAR: 1917 SERIES: 30 SCALE: 1:125000	SITE NAME: APN 3267003002, 3267003003 - Silversun Expansion ADDRESS: W Avenue I & 1/4 Mile East of 120th St W Lancaster, CA 93536 LAT/LONG: 34.6999 / -118.3354	CLIENT: Tetra Tech Inc. CONTACT: Nancy Hsu INQUIRY#: 3408740.4 RESEARCH DATE: 09/12/2012

Historical Topographic Map



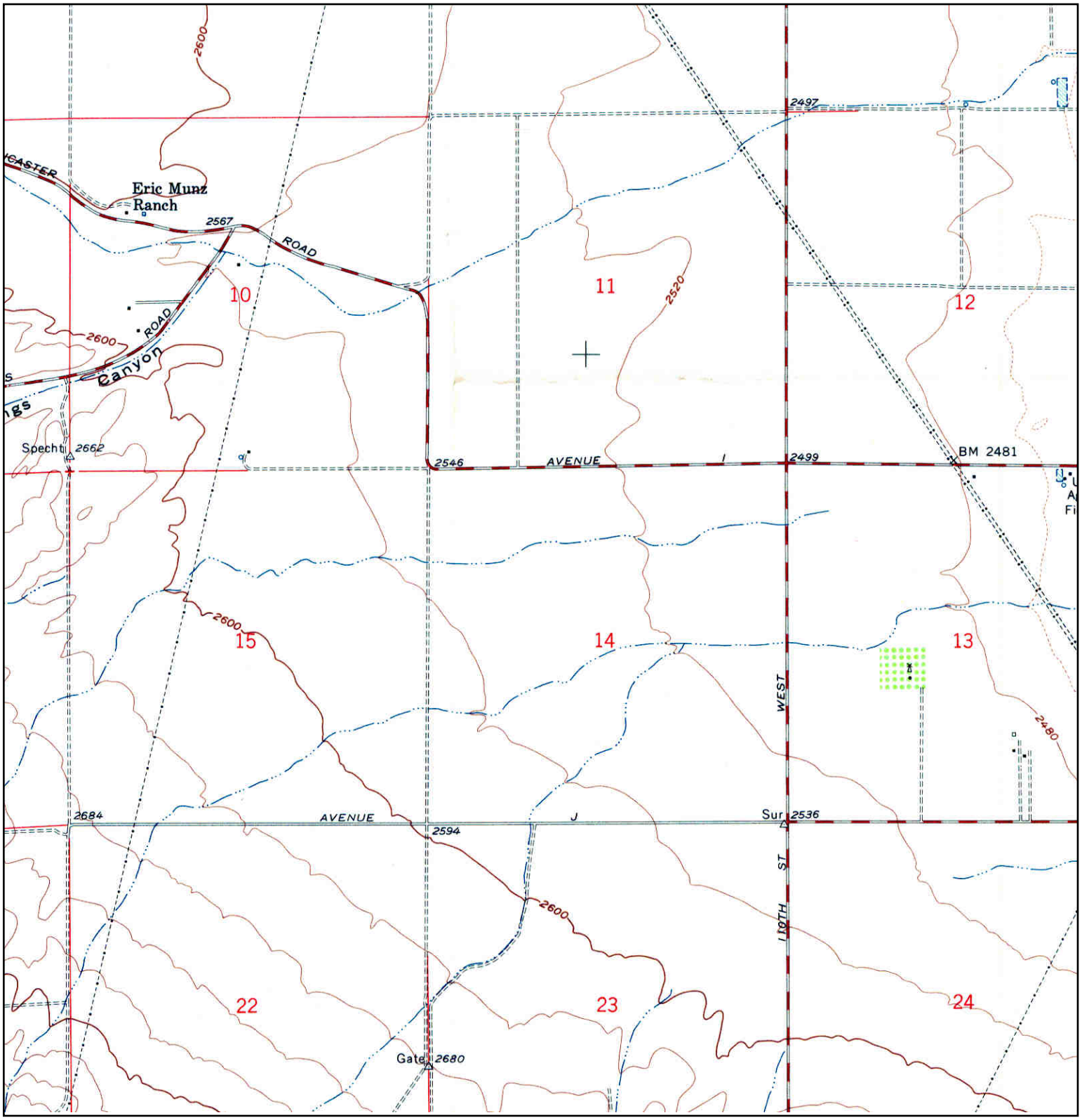
N	TARGET QUAD NAME: LAKE MAP YEAR: 1937 SERIES: 6 SCALE: 1:24000	SITE NAME:	APN 3267003002, 3267003003 - Silversun Expansion	CLIENT:	Tetra Tech Inc.
		ADDRESS:	W Avenue I & 1/4 Mile East of 120th St W Lancaster, CA 93536	CONTACT:	Nancy Hsu
				INQUIRY#:	3408740.4
		LAT/LONG:	34.6999 / -118.3354	RESEARCH DATE:	09/12/2012

Historical Topographic Map



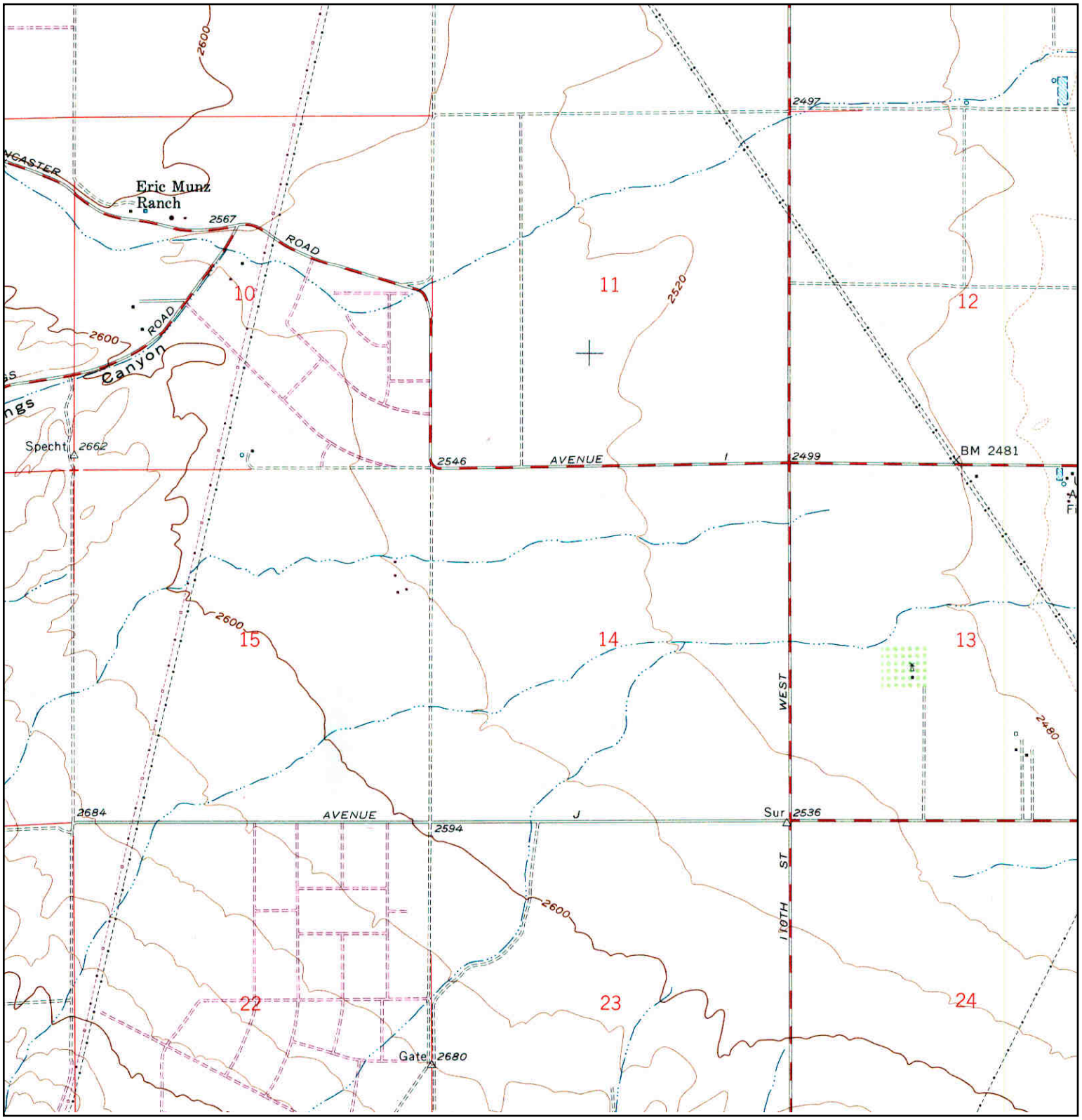
N	TARGET QUAD		SITE NAME:	APN 3267003002, 3267003003 - Silversun Expansion	CLIENT: Tetra Tech Inc.
	NAME:	BOUQUET RESERVOIR			CONTACT: Nancy Hsu
	MAP YEAR:	1958	ADDRESS:	W Avenue I & 1/4 Mile East of 120th St W	INQUIRY#: 3408740.4
					RESEARCH DATE: 09/12/2012
	SERIES:	15		Lancaster, CA 93536	
	SCALE:	1:62500	LAT/LONG:	34.6999 / -118.3354	

Historical Topographic Map



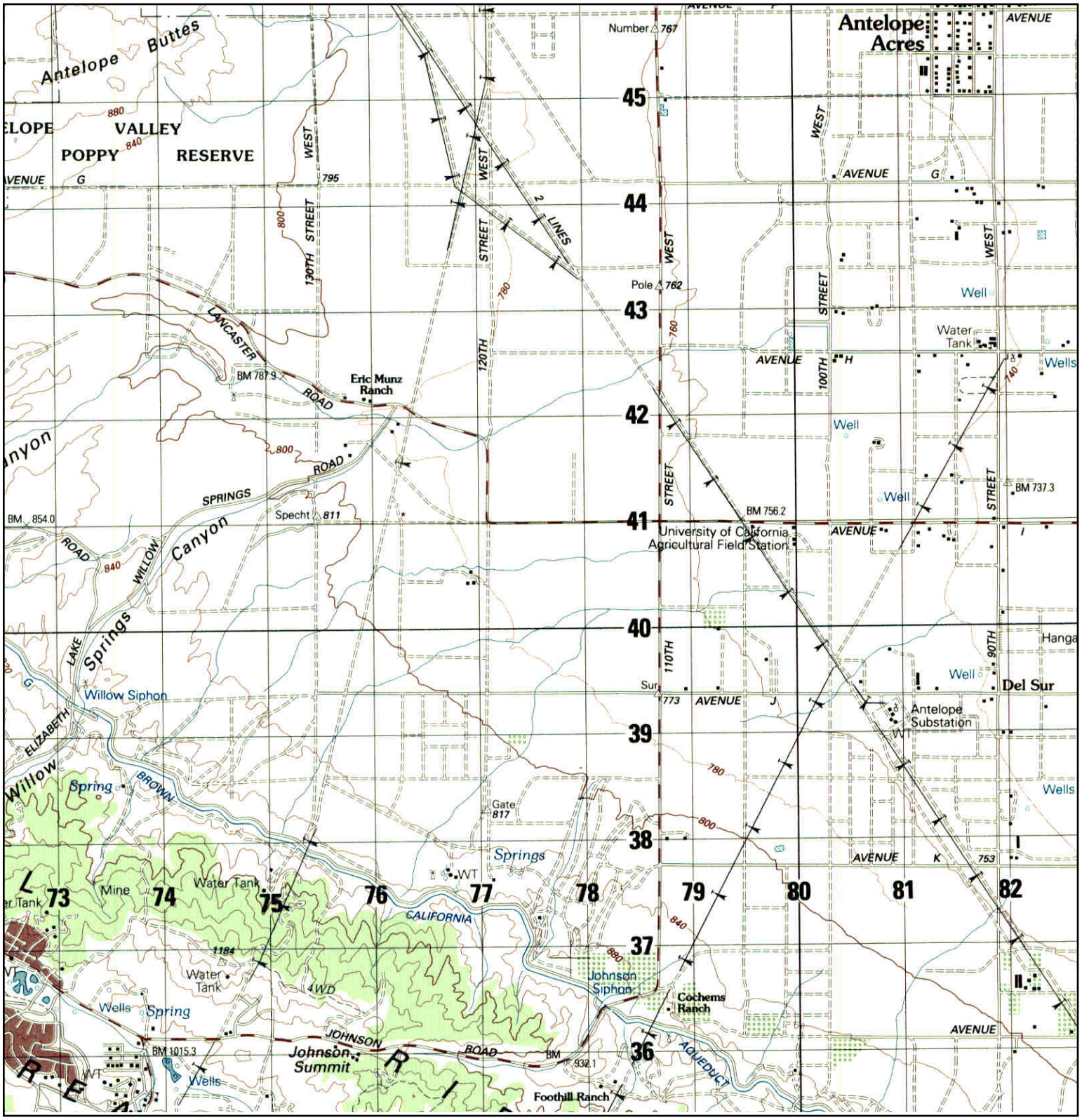
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: APN 3267003002, 3267003003 - Silversun Expansion ADDRESS: W Avenue I & 1/4 Mile East of 120th St W Lancaster, CA 93536 LAT/LONG: 34.6999 / -118.3354	CLIENT: Tetra Tech Inc. CONTACT: Nancy Hsu INQUIRY#: 3408740.4 RESEARCH DATE: 09/12/2012

Historical Topographic Map



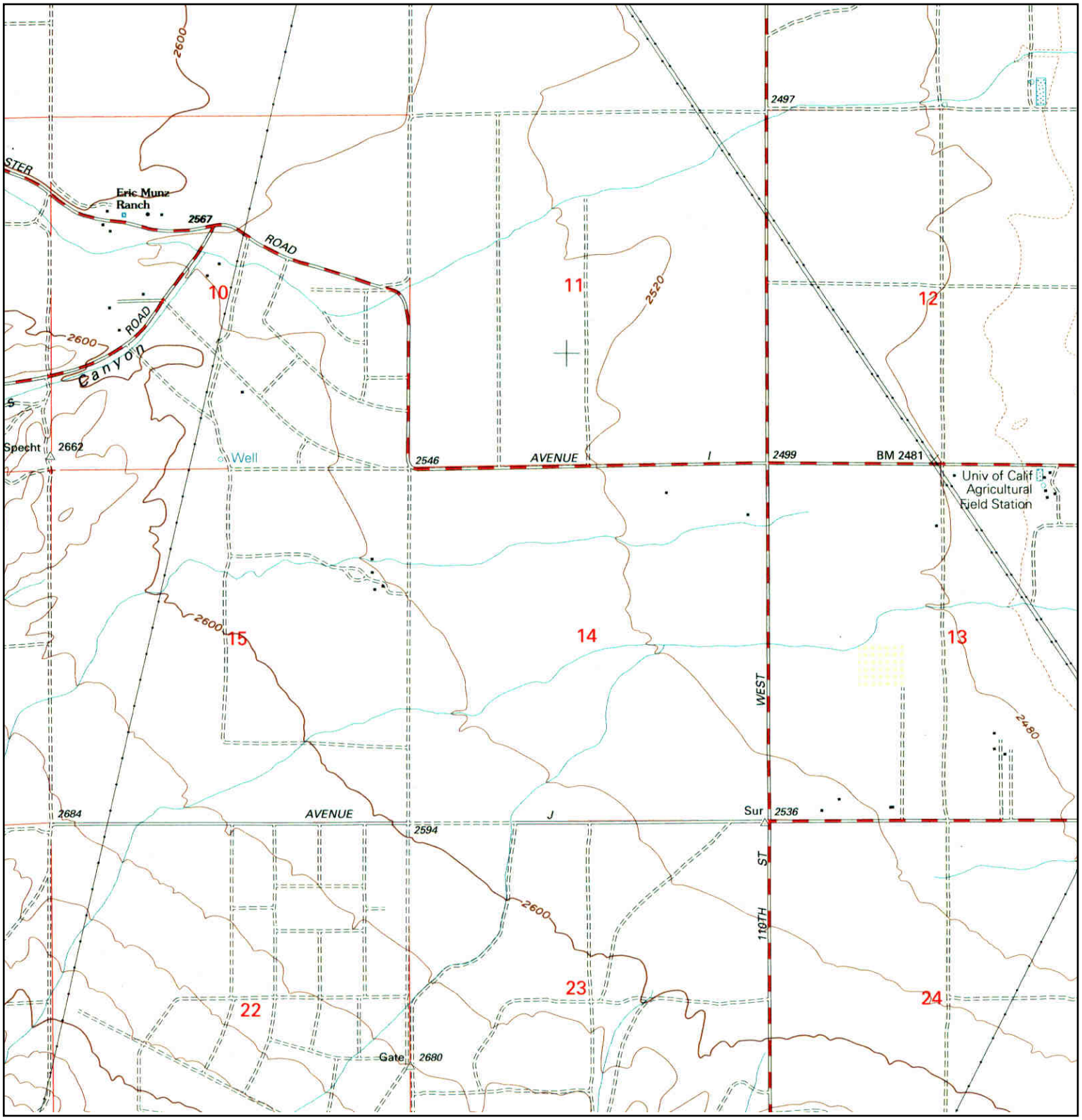
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1974 PHOTOREVISED FROM :1958 SERIES: 7.5 SCALE: 1:24000	SITE NAME: APN 3267003002, 3267003003 - Silversun Expansion ADDRESS: W Avenue I & 1/4 Mile East of 120th St W Lancaster, CA 93536 LAT/LONG: 34.6999 / -118.3354	CLIENT: Tetra Tech Inc. CONTACT: Nancy Hsu INQUIRY#: 3408740.4 RESEARCH DATE: 09/12/2012

Historical Topographic Map



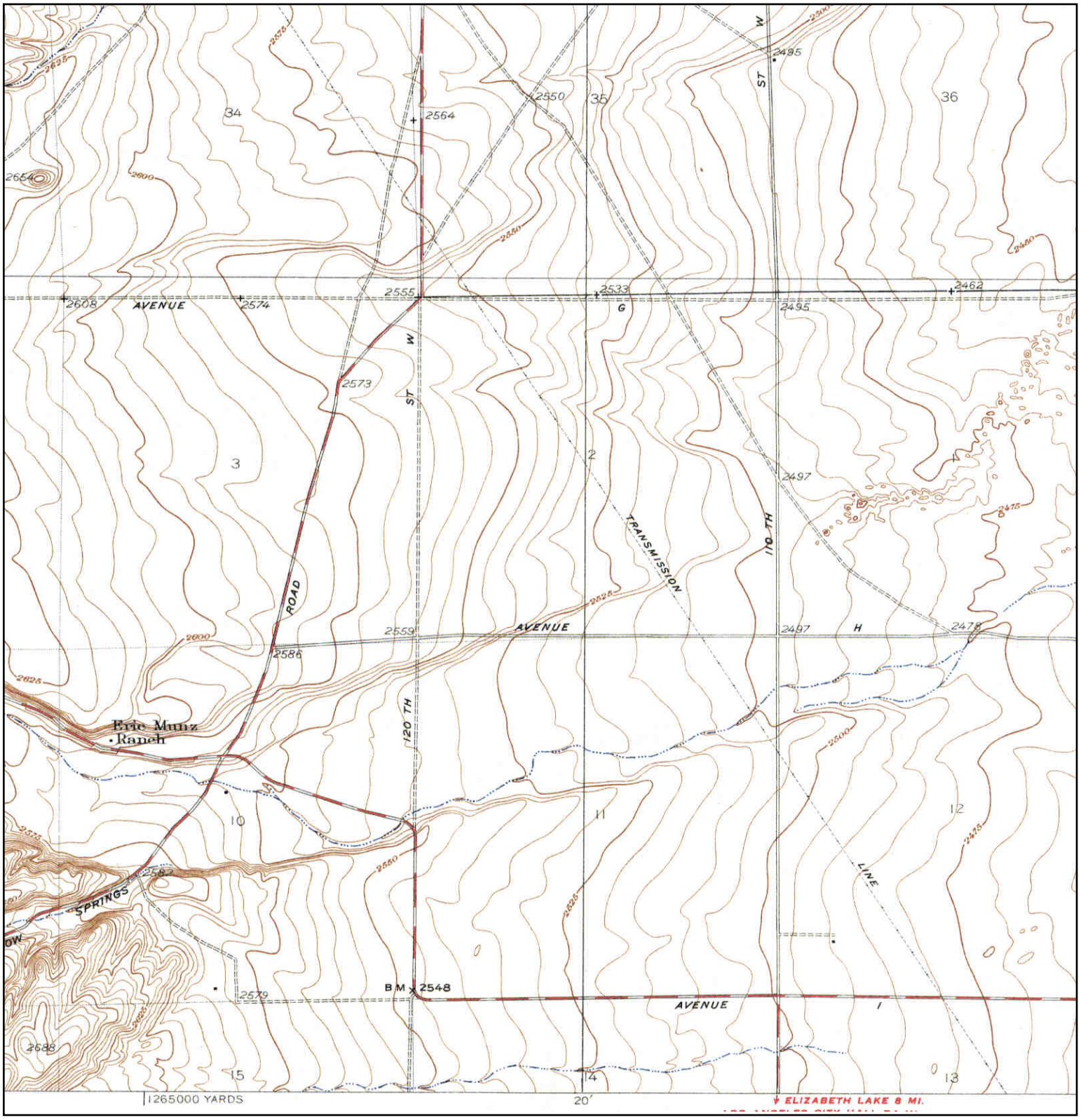
N	TARGET QUAD NAME: BOUQUET RESERVOIR MAP YEAR: 1987 SERIES: 15 SCALE: 1:50000	SITE NAME: APN 3267003002, 3267003003 - Silversun Expansion ADDRESS: W Avenue I & 1/4 Mile East of 120th St W Lancaster, CA 93536 LAT/LONG: 34.6999 / -118.3354	CLIENT: Tetra Tech Inc. CONTACT: Nancy Hsu INQUIRY#: 3408740.4 RESEARCH DATE: 09/12/2012

Historical Topographic Map



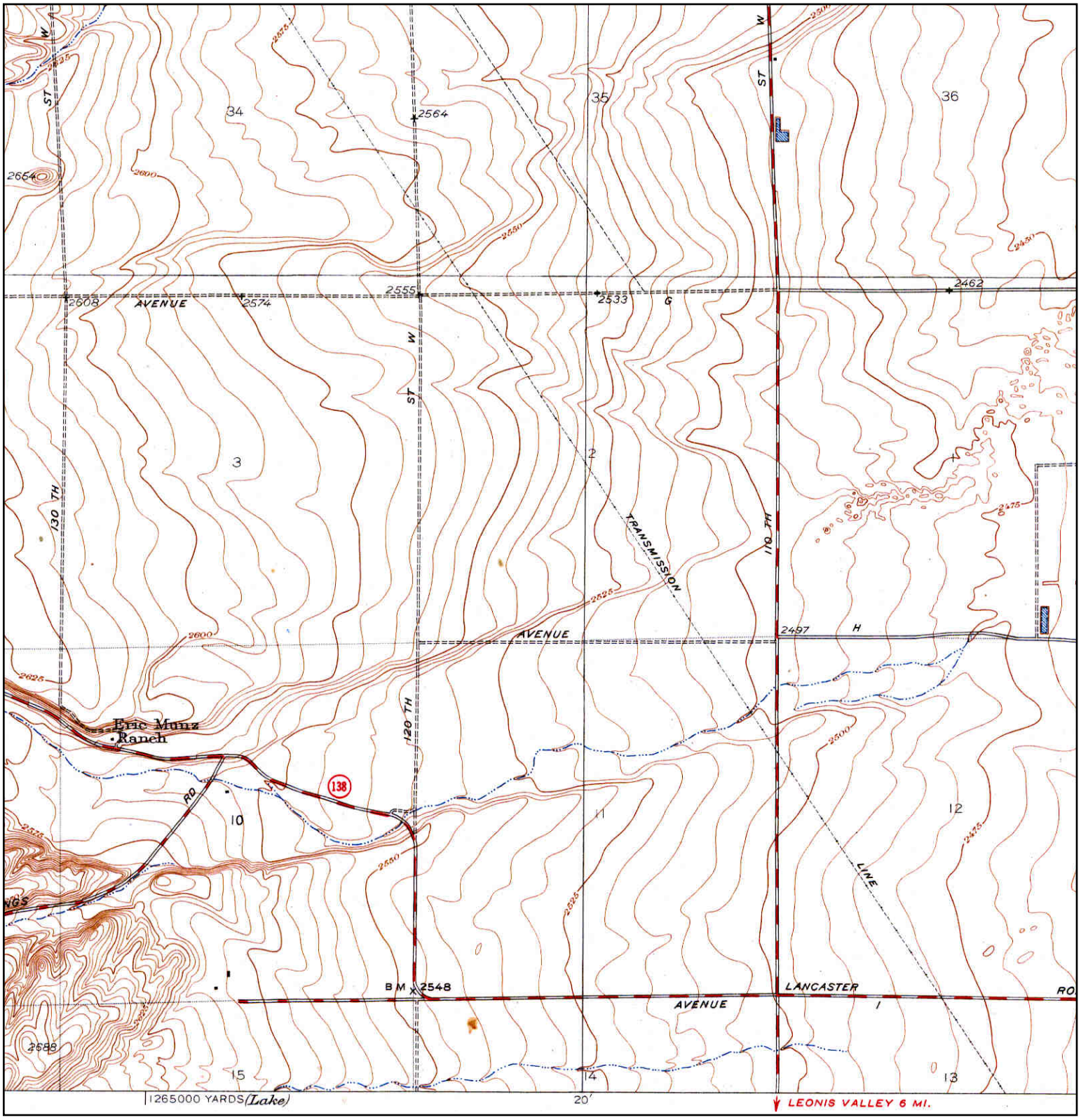
N	TARGET QUAD NAME: DEL SUR MAP YEAR: 1995 SERIES: 7.5 SCALE: 1:24000	SITE NAME: APN 3267003002, 3267003003 - Silversun Expansion ADDRESS: W Avenue I & 1/4 Mile East of 120th St W Lancaster, CA 93536 LAT/LONG: 34.6999 / -118.3354	CLIENT: Tetra Tech Inc. CONTACT: Nancy Hsu INQUIRY#: 3408740.4 RESEARCH DATE: 09/12/2012

Historical Topographic Map



N	ADJOINING QUAD NAME: LITTLE BUTTES MAP YEAR: 1934 SERIES: 6 SCALE: 1:24000	SITE NAME: APN 3267003002, 3267003003 - Silversun Expansion ADDRESS: W Avenue I & 1/4 Mile East of 120th St W Lancaster, CA 93536 LAT/LONG: 34.6999 / -118.3354	CLIENT: Tetra Tech Inc. CONTACT: Nancy Hsu INQUIRY#: 3408740.4 RESEARCH DATE: 09/12/2012

Historical Topographic Map



N	ADJOINING QUAD NAME: LITTLE BUTTES MAP YEAR: 1951 REVISED FROM :1934 SERIES: 6 SCALE: 1:24000	SITE NAME: APN 3267003002, 3267003003 - Silversun Expansion ADDRESS: W Avenue I & 1/4 Mile East of 120th St W Lancaster, CA 93536 LAT/LONG: 34.6999 / -118.3354	CLIENT: Tetra Tech Inc. CONTACT: Nancy Hsu INQUIRY#: 3408740.4 RESEARCH DATE: 09/12/2012

APN 3267003002, 3267003003 - Silversun Expansion
W Avenue I & 1/4 Mile East of 120th St W
Lancaster, CA 93536

Inquiry Number: 3408740.5
September 14, 2012

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Date EDR Searched Historical Sources:

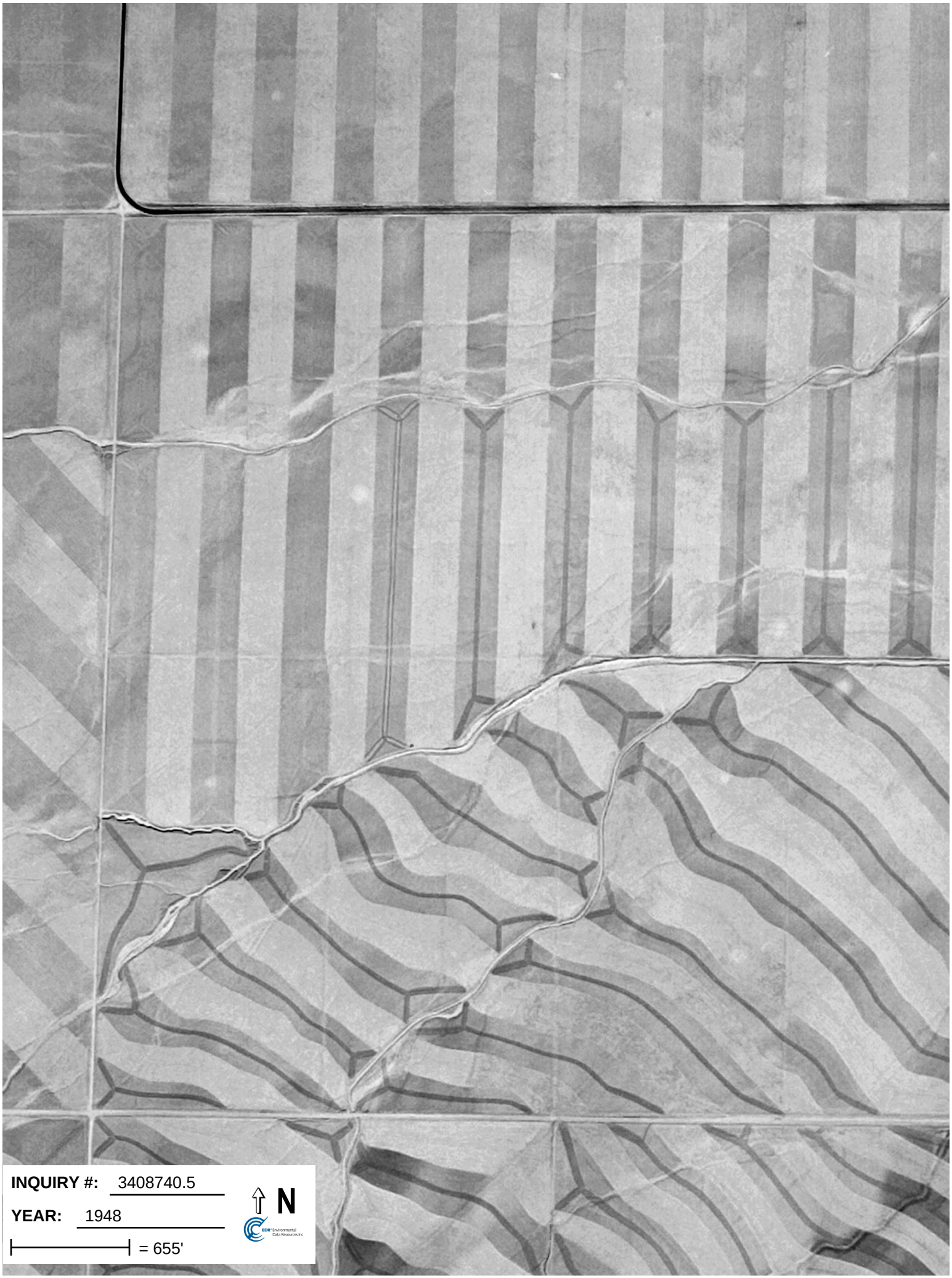
Aerial Photography September 14, 2012

Target Property:

W Avenue I & 1/4 Mile East of 120th St W

Lancaster, CA 93536

Year	***Scale***	***Details***	***Source***
1948	Aerial Photograph. Scale: 1"=655'	Flight Year: 1948	USGS
1954	Aerial Photograph. Scale: 1"=555'	Flight Year: 1954	Pacific Air
1968	Aerial Photograph. Scale: 1"=666'	Flight Year: 1968	Teledyne
1974	Aerial Photograph. Scale: 1"=500'	Flight Year: 1974	USGS
1990	Aerial Photograph. Scale: 1"=666'	Flight Year: 1990	USGS
1994	Aerial Photograph. Scale: 1"=500'	/Composite DOQQ - acquisition dates: 1994	EDR
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	EDR


INQUIRY #: 3408740.5
YEAR: 1948
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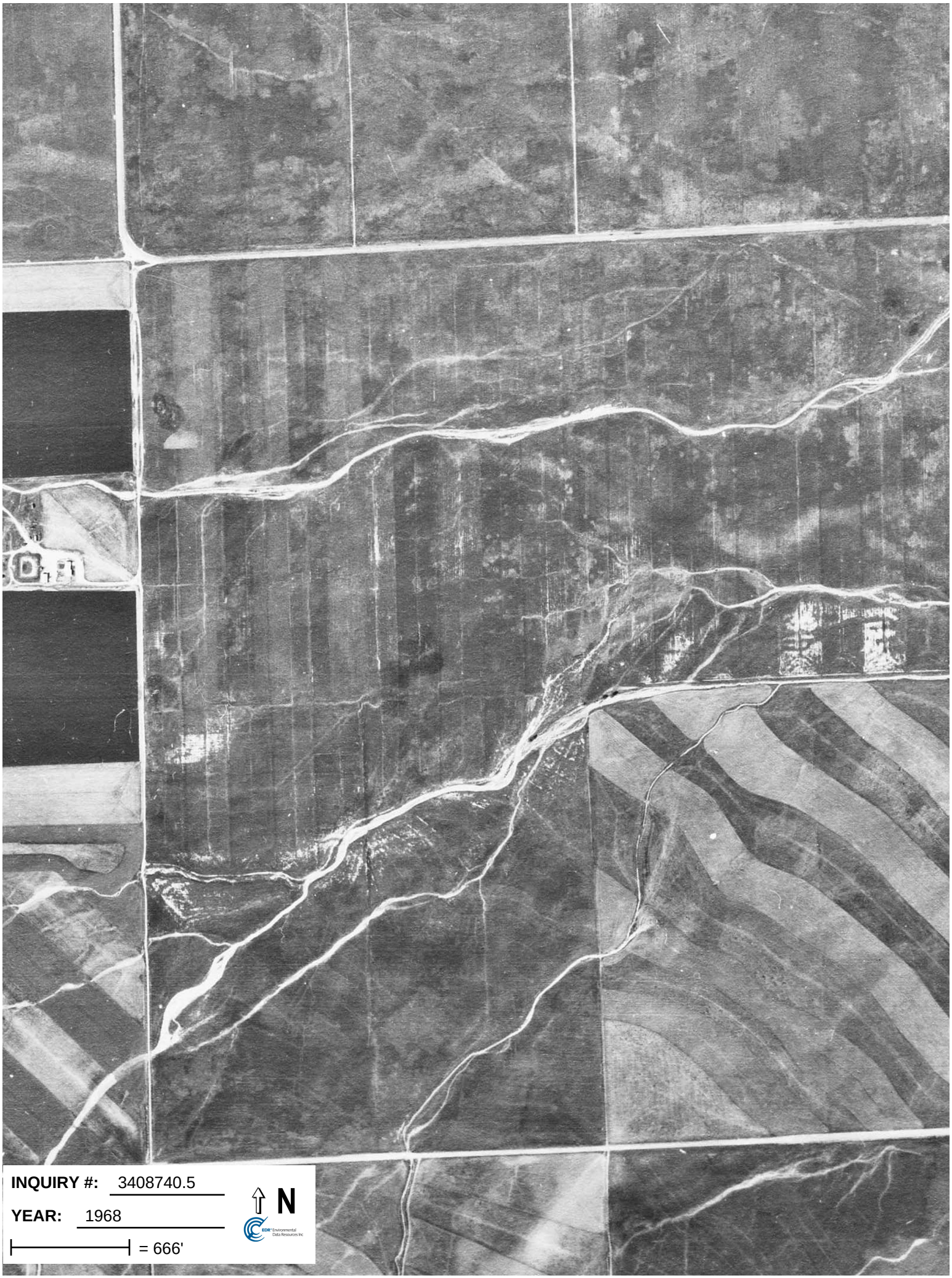
N

INQUIRY #: 3408740.5
YEAR: 1954
= 555'
N
EDR Environmental Data Resources Inc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YEAR: 1968
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INQUIRY #: 3408740.5
YEAR: 1974
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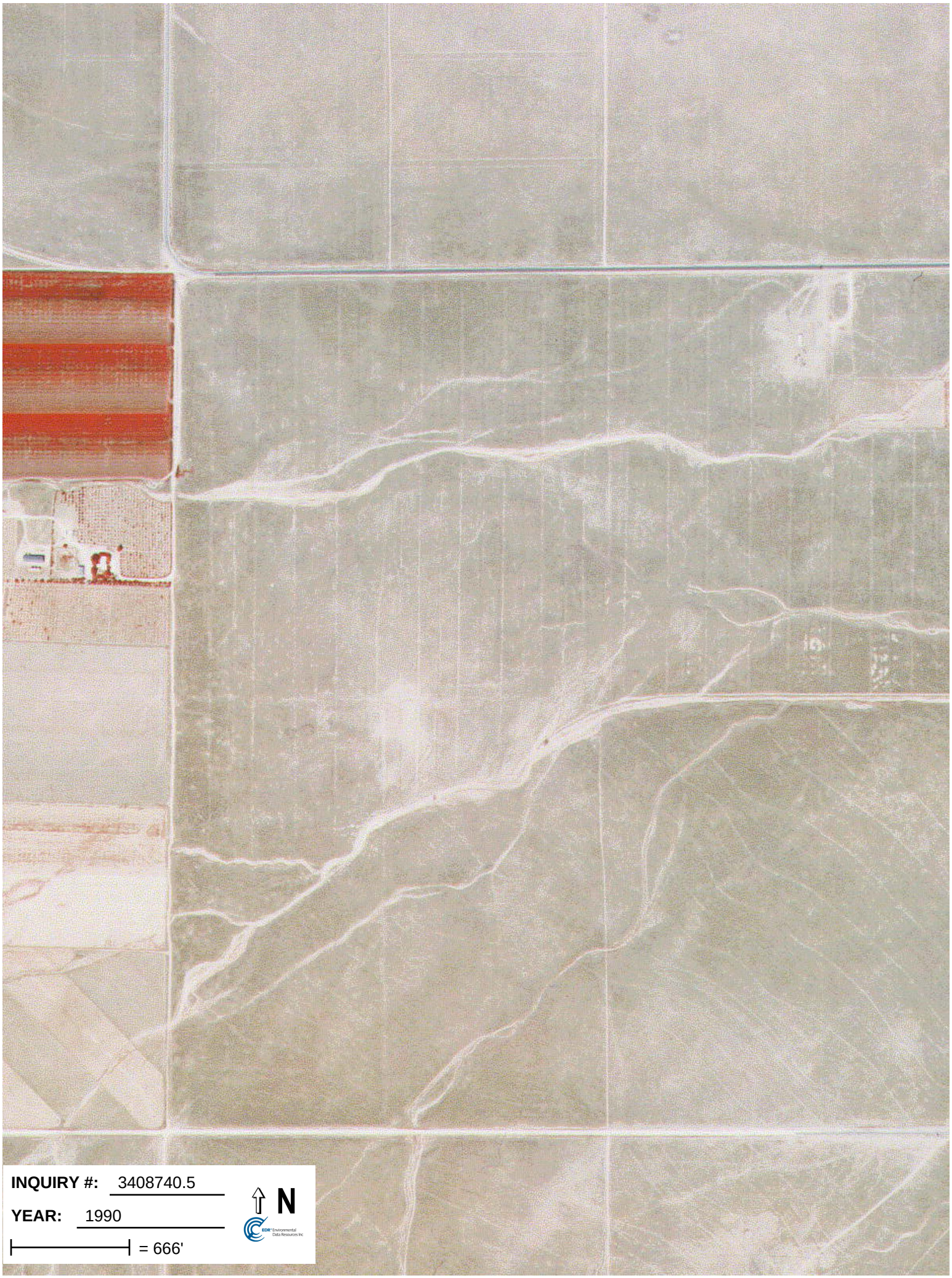
N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YEAR: 1990
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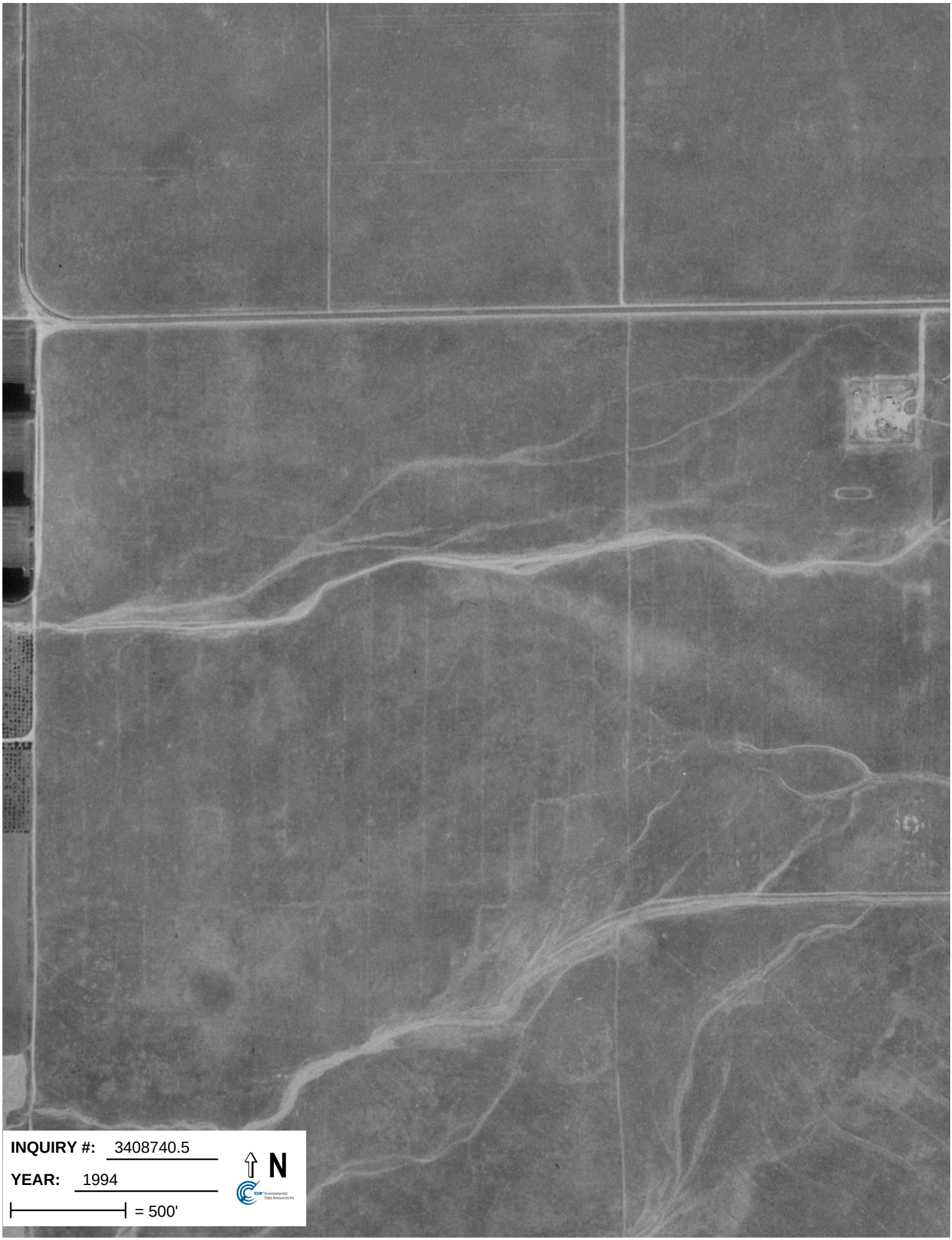
EDR Environmental Data Resources Inc


INQUIRY #: 3408740.5
YEAR: 1994
= 500'
N
EDR Environmental Data Resources Inc

INQUIRY #: 3408740.5
YEAR: 2005
= 500'
N
EDR Environmental Data Resources Inc

APN 3267003002, 3267003003 - Silversun Expansion
W Avenue I & 1/4 Mile East of 120th St W
Lancaster, CA 93536

Inquiry Number: 3408740.2s
September 12, 2012

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

W AVENUE I & 1/4 MILE EAST OF 120TH ST W
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.6999000 - 34° 41' 59.64''
Longitude (West):	118.3354000 - 118° 20' 7.44''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	377692.6
UTM Y (Meters):	3840378.8
Elevation:	2538 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	2009, 2010
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System
WDS ---------- Waste Discharge System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report

SLIC ---------- Statewide SLIC Cases
INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ---------- Active UST Facilities
AST ---------- Aboveground Petroleum Storage Tank Facilities
INDIAN UST ---------- Underground Storage Tanks on Indian Land
FEMA UST ---------- Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP ---------- Voluntary Cleanup Program Properties
INDIAN VCP ---------- Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI ---------- Open Dump Inventory
DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT ---------- Waste Management Unit Database
SWRCY ---------- Recycler Database
HAULERS ---------- Registered Waste Tire Haulers Listing
INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ---------- Clandestine Drug Labs
HIST Cal-Sites ---------- Historical Calsites Database
SCH ---------- School Property Evaluation Program
Toxic Pits ---------- Toxic Pits Cleanup Act Sites
AOCONCERN ---------- San Gabriel Valley Areas of Concern
CDL ---------- Clandestine Drug Labs
US HIST CDL ---------- National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST ---------- Facility Inventory Database
HIST UST ---------- Hazardous Substance Storage Container Database
SWEEPS UST ---------- SWEEPS UST Listing

Local Land Records

LIENS 2 ---------- CERCLA Lien Information
LUCIS ---------- Land Use Control Information System
LIENS ---------- Environmental Liens Listing
DEED ---------- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---------- Hazardous Materials Information Reporting System

CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen	RCRA - Non Generators
DOT OPS	Incident and Accident Data
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
CA BOND EXP. PLAN	Bond Expenditure Plan
UIC	UIC Listing
NPDES	NPDES Permits Listing
Cortese	"Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE	Hazardous Waste & Substance Site List
Notify 65	Proposition 65 Records
LA Co. Site Mitigation	Site Mitigation List
DRYCLEANERS	Cleaner Facilities
LOS ANGELES CO. HMS	HMS: Street Number List
WIP	Well Investigation Program Case List
ENF	Enforcement Action Listing
HAZNET	Facility and Manifest Data
EMI	Emissions Inventory Data
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
PROC	Certified Processors Database
MWMP	Medical Waste Management Program Listing
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
HWT	Registered Hazardous Waste Transporter Database
HWP	EnviroStor Permitted Facilities Listing
FINANCIAL ASSURANCE	Financial Assurance Information Listing
2020 COR ACTION	2020 Corrective Action Program List
PRP	Potentially Responsible Parties
EPA WATCH LIST	EPA WATCH LIST
US FIN ASSUR	Financial Assurance Information
PCB TRANSFORMER	PCB Transformer Registration Database

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Historical Auto Stations - EDR Proprietary Historic Gas Stations
EDR Historical Cleaners - - - - - EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

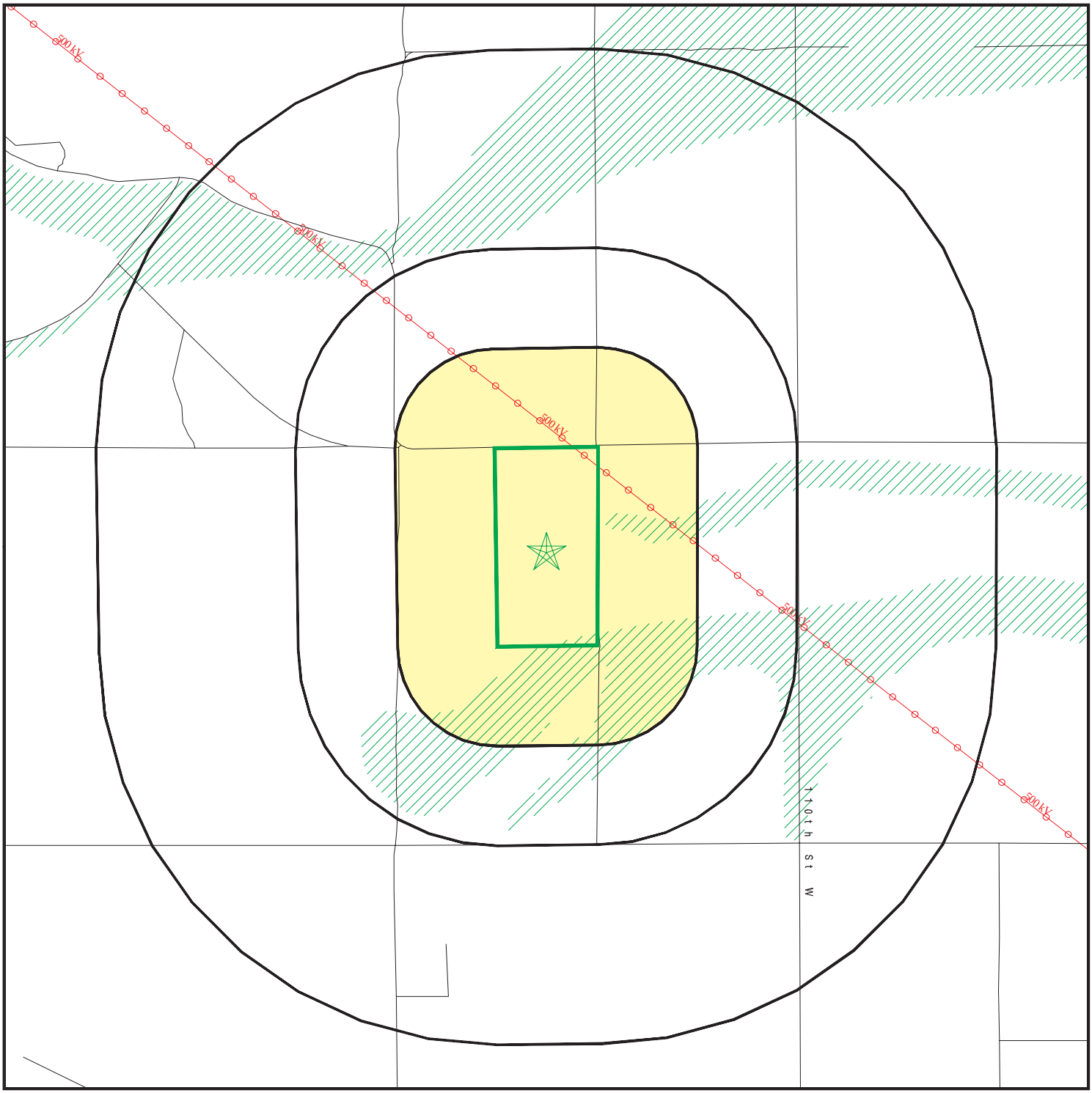
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 10 records.

Site Name	Database(s)
CAL MAT	SWEEPS UST
L.A. COUNTY ROAD DEPARTMENT DUMP #	SWF/LF
30TH STREET EAST PIT	SWF/LF
	AST
BERTH 136 - PORT OF LOS ANGELES	ERNS
UNKNOWN SHEEN INCIDENT - CABRILLO	ERNS
LA CO. - HIGH DESERT HOSPITAL	FINDS
METRO WD AQUATIC PEST. - WEED	WDS
LA CO. - HIGH DESERT HOSPITAL	EMI
SCG - LANCASTER DISTRICT	EMI

OVERVIEW MAP - 3408740.2s



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

Oil & Gas pipelines from USGS

100-year flood zone

500-year flood zone

Areas of Concern

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	APN 3267003002, 3267003003 - Silversun Expansion	CLIENT:	Tetra Tech Inc.
ADDRESS:	W Avenue I & 1/4 Mile East of 120th St W Lancaster CA 93536	CONTACT:	Nancy Hsu
LAT/LONG:	34.6999 / 118.3354	INQUIRY #:	3408740.2s
		DATE:	September 12, 2012 1:29 pm

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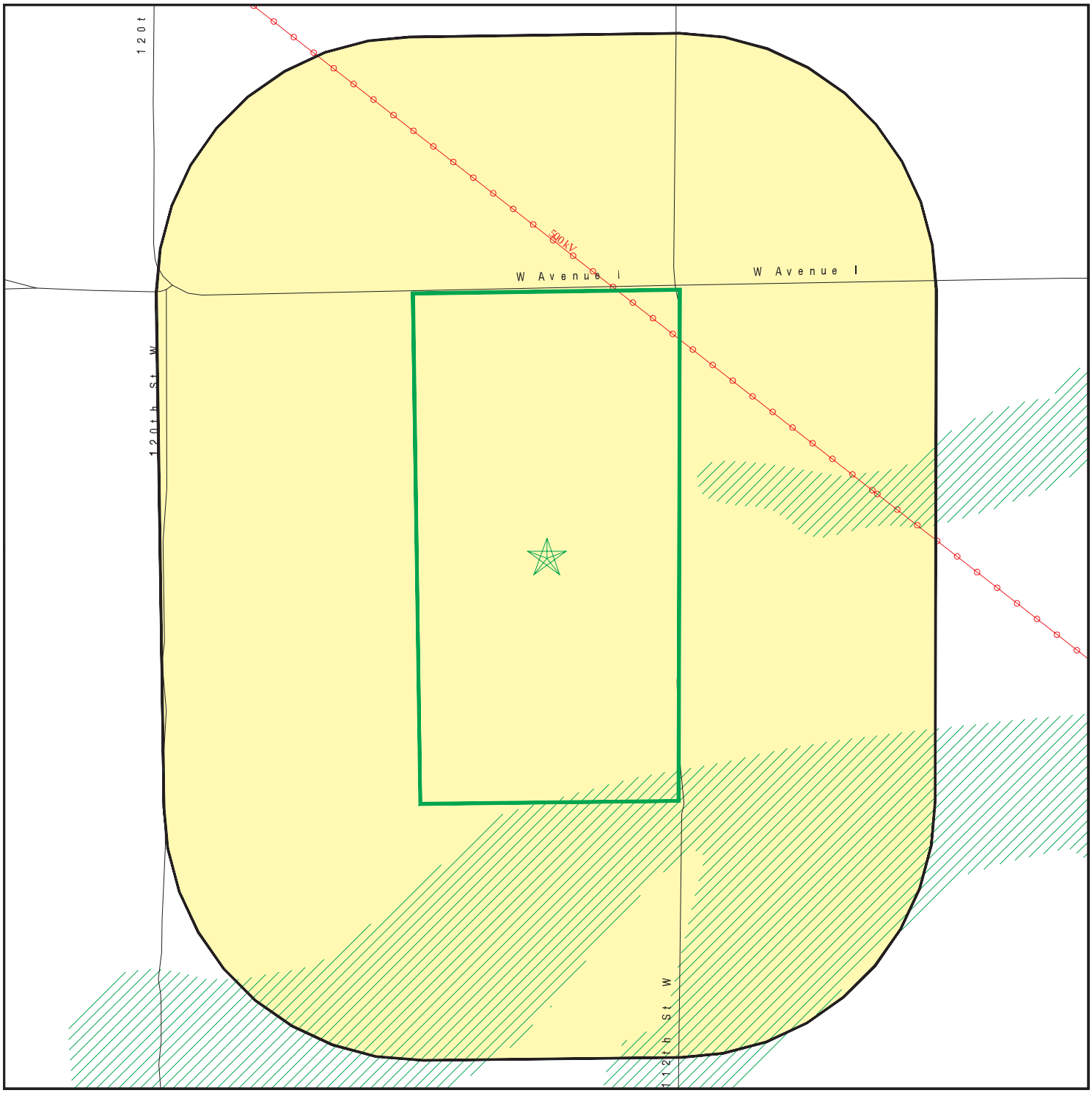
DETAIL MAP - 3408740.2s



0 1/8 1/4 1/2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	APN 3267003002, 3267003003 - Silversun Expansion	CLIENT:	Tetra Tech Inc.
ADDRESS:	W Avenue I & 1/4 Mile East of 120th St W Lancaster CA 93536	CONTACT:	Nancy Hsu
LAT/LONG:	34.6999 / 118.3354	INQUIRY #:	3408740.2s
		DATE:	September 12, 2012 1:32 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	1.000		0	0	0	0	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SLIC	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
AOCONCERN	1.000		0	0	0	0	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
SWEEPS UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
LIENS	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen	0.250		0	0	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
Cortese	0.500		0	0	0	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
LA Co. Site Mitigation	TP		NR	NR	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
LOS ANGELES CO. HMS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
HWT	0.250		0	0	NR	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
FINANCIAL ASSURANCE	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants	1.000		0	0	0	0	NR	0
EDR Historical Auto Stations	0.250		0	0	NR	NR	NR	0
EDR Historical Cleaners	0.250		0	0	NR	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

MAP FINDINGS

NO SITES FOUND

Count: 10 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
LANCASTER	S111075968	L.A. COUNTY ROAD DEPARTMENT DUMP #	15TH STREET WEST AND LANCASTER		SWF/LF
LANCASTER	S111075737	30TH STREET EAST PIT	30TH ST		SWF/LF
LANCASTER	S105938400	LA CO. - HIGH DESERT HOSPITAL	44900 N 60TH WEST ST	93536	EMI
LANCASTER	1014675235	LA CO. - HIGH DESERT HOSPITAL	44900 N 60TH WEST ST	93536	FINDS
LANCASTER	S109282499	SCG - LANCASTER DISTRICT	44416 N. DIVISOIN STREET		EMI
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
LOS ANGELES COUNTY	2011977526	BERTH 136 - PORT OF LOS ANGELES	BERTH 136 - PORT OF LOS ANGELE		ERNS
LOS ANGELES COUNTY	S105775001	METRO WD AQUATIC PEST. - WEED	LAKES SKINNER-MATHEWS-DIAMOND	0	WDS
LOS ANGELES COUNTY	2011980941	UNKNOWN SHEEN INCIDENT - CABRILLO	UNKNOWN SHEEN INCIDENT - CABRI		ERNS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 05/08/2012
Date Data Arrived at EDR: 05/10/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 5

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/30/2012
Date Data Arrived at EDR: 04/05/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 03/30/2012
Date Data Arrived at EDR: 04/05/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 12/27/2011
Date Data Arrived at EDR: 02/27/2012
Date Made Active in Reports: 03/12/2012
Number of Days to Update: 14

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/28/2011
Date Data Arrived at EDR: 02/27/2012
Date Made Active in Reports: 03/12/2012
Number of Days to Update: 14

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 08/19/2011
Date Data Arrived at EDR: 08/31/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 132

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 12/30/2011
Date Data Arrived at EDR: 12/30/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 12/30/2011
Date Data Arrived at EDR: 12/30/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 04/02/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 72

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 08/06/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 08/06/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/21/2012
Date Data Arrived at EDR: 05/22/2012
Date Made Active in Reports: 06/21/2012
Number of Days to Update: 30

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/20/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 05/25/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 05/07/2012
Date Data Arrived at EDR: 05/08/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 05/09/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 62

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 12/14/2011
Date Data Arrived at EDR: 12/15/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 26

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 09/12/2011
Date Data Arrived at EDR: 09/13/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 59

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 25

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 02/07/2012
Date Data Arrived at EDR: 02/17/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 88

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

State and tribal registered storage tank lists

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/06/2012
Number of Days to Update: 18

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-327-5092
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 05/07/2012
Date Data Arrived at EDR: 05/08/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 69

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 11/28/2011
Date Data Arrived at EDR: 11/29/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 42

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 25

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 02/07/2012
Date Data Arrived at EDR: 02/17/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 88

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/10/2011
Date Data Arrived at EDR: 05/11/2011
Date Made Active in Reports: 06/14/2011
Number of Days to Update: 34

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 02/28/2012
Date Data Arrived at EDR: 02/29/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 76

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 12/14/2011
Date Data Arrived at EDR: 12/15/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 26

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 05/02/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/12/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27
Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties
Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 08/06/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 30
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 02/17/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 42
Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/27/2011
Date Data Arrived at EDR: 06/27/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 78
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/25/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30
Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 06/11/2012
Date Data Arrived at EDR: 06/14/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 22
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/14/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 07/09/2012
Date Data Arrived at EDR: 07/12/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 56
Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/16/2012
Date Data Arrived at EDR: 06/12/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 34

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 08/06/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 02/14/2012
Date Made Active in Reports: 02/21/2012
Number of Days to Update: 7

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 08/06/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/29/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/16/2012
Date Data Arrived at EDR: 03/26/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/21/2012
Next Scheduled EDR Contact: 09/03/2012
Data Release Frequency: Varies

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 03/12/2012
Date Data Arrived at EDR: 03/13/2012
Date Made Active in Reports: 04/02/2012
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 06/11/2012
Date Data Arrived at EDR: 06/12/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 24

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/11/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 04/01/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 72

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 03/28/2012
Date Data Arrived at EDR: 05/01/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 24

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 49

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 49

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/29/2011
Date Data Arrived at EDR: 08/09/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 94

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 09/10/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 01/25/2012
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 36

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/27/2012
Date Data Arrived at EDR: 03/14/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 92

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/12/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 09/08/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 21

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/04/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 09/01/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 131

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/31/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/29/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Every 4 Years

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/22/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/22/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/20/2011
Date Data Arrived at EDR: 11/10/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/21/2011
Date Data Arrived at EDR: 07/15/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 60

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/10/2012
Date Data Arrived at EDR: 01/12/2012
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 49

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/11/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 10/23/2011
Date Data Arrived at EDR: 12/13/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 79

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/11/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/31/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UIC: UIC Listing

A listing of underground control injection wells.

Date of Government Version: 12/09/2011
Date Data Arrived at EDR: 02/29/2012
Date Made Active in Reports: 04/04/2012
Number of Days to Update: 35

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 07/24/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 05/21/2012
Date Data Arrived at EDR: 05/22/2012
Date Made Active in Reports: 06/21/2012
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/20/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 04/02/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 06/11/2012
Number of Days to Update: 69

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 01/19/2012
Date Data Arrived at EDR: 01/19/2012
Date Made Active in Reports: 02/21/2012
Number of Days to Update: 33

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 08/15/2011
Date Data Arrived at EDR: 08/23/2011
Date Made Active in Reports: 10/03/2011
Number of Days to Update: 41

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/22/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 14

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19
Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/29/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34
Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing
The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information
All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 05/24/2012
Date Data Arrived at EDR: 06/05/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 9
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 08/14/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST
EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 03/31/2012
Date Data Arrived at EDR: 05/17/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 28
Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 02/27/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: N/A

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 11/11/2011
Date Data Arrived at EDR: 05/18/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 05/23/2012
Date Data Arrived at EDR: 05/24/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 43

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/14/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Varies

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 05/31/2012
Date Data Arrived at EDR: 06/01/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 60

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 07/16/2012
Date Data Arrived at EDR: 07/17/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 51

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/17/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Quarterly

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/12/2012
Next Scheduled EDR Contact: 09/24/2012
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Varies

MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 06/01/2012
Date Data Arrived at EDR: 06/12/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 24

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 09/10/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 06/11/2012
Date Data Arrived at EDR: 06/14/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 22

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/14/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/03/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/08/2012
Number of Days to Update: 34

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Semi-Annually

Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 04/03/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/08/2012
Number of Days to Update: 34

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 06/13/2012
Date Data Arrived at EDR: 06/14/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 22

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 08/06/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Semi-Annually

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/09/2012
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 03/29/2012
Date Data Arrived at EDR: 05/29/2012
Date Made Active in Reports: 06/21/2012
Number of Days to Update: 23

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/26/2012
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/23/2012
Date Data Arrived at EDR: 07/26/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 42

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29
Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 08/29/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 12/29/2011
Date Data Arrived at EDR: 02/02/2012
Date Made Active in Reports: 02/21/2012
Number of Days to Update: 19
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/17/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 04/26/2012
Date Data Arrived at EDR: 05/01/2012
Date Made Active in Reports: 05/24/2012
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/17/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 07/12/2012
Date Data Arrived at EDR: 07/23/2012
Date Made Active in Reports: 08/02/2012
Number of Days to Update: 10
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/12/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Semi-Annually

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 05/22/2012
Date Data Arrived at EDR: 05/29/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 38
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 07/23/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Semi-Annually

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 12/05/2011
Date Data Arrived at EDR: 12/06/2011
Date Made Active in Reports: 02/07/2012
Number of Days to Update: 63
Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/29/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23
Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 12/05/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 08/02/2012
Date Data Arrived at EDR: 08/13/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 24
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 08/02/2012
Date Data Arrived at EDR: 08/13/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 24
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 05/17/2012
Date Made Active in Reports: 05/24/2012
Number of Days to Update: 7
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 06/12/2012
Date Data Arrived at EDR: 06/13/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 23
Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites

Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 07/18/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 49

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/25/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Quarterly

Underground Storage Tank Tank List

Underground storage tank sites located in Riverside county.

Date of Government Version: 07/18/2012
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/06/2012
Number of Days to Update: 18

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/25/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2012
Date Data Arrived at EDR: 04/16/2012
Date Made Active in Reports: 05/08/2012
Number of Days to Update: 22

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/02/2012
Date Data Arrived at EDR: 04/17/2012
Date Made Active in Reports: 05/08/2012
Number of Days to Update: 21

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 05/30/2012
Date Data Arrived at EDR: 05/31/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 36

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 08/13/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2011
Date Data Arrived at EDR: 11/04/2011
Date Made Active in Reports: 12/13/2011
Number of Days to Update: 39

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/25/2012
Date Data Arrived at EDR: 06/27/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 34

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Semi-Annually

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 07/09/2012
Date Data Arrived at EDR: 07/16/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 52
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/17/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 06/19/2012
Date Data Arrived at EDR: 06/20/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 16
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/18/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Semi-Annually

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 06/04/2012
Date Data Arrived at EDR: 06/08/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 28
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 09/04/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 05/15/2012
Date Data Arrived at EDR: 05/15/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 10
Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Annually

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/18/2012
Date Data Arrived at EDR: 06/21/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 15
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/15/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 06/18/2012
Date Data Arrived at EDR: 06/22/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 14

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/15/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 03/31/2012
Date Data Arrived at EDR: 06/29/2012
Date Made Active in Reports: 08/09/2012
Number of Days to Update: 41

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 06/11/2012
Date Data Arrived at EDR: 06/12/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 24

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 03/30/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/06/2012
Number of Days to Update: 42

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/24/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/14/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 06/28/2012
Date Data Arrived at EDR: 08/02/2012
Date Made Active in Reports: 09/06/2012
Number of Days to Update: 35

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/30/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 06/29/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 32

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 06/29/2012
Date Data Arrived at EDR: 07/09/2012
Date Made Active in Reports: 08/02/2012
Number of Days to Update: 24

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/21/2012
Date Data Arrived at EDR: 05/22/2012
Date Made Active in Reports: 05/31/2012
Number of Days to Update: 9

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/20/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/28/2012
Number of Days to Update: 40

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 05/09/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 36
Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/09/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 04/27/2012
Date Made Active in Reports: 06/05/2012
Number of Days to Update: 39
Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/22/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 39
Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/15/2011
Number of Days to Update: 27
Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

APN 3267003002, 3267003003 - SILVERSUN EXPANSION
W AVENUE I & 1/4 MILE EAST OF 120TH ST W
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.6999 - 34° 41' 59.64''
Longitude (West):	118.3354 - 118° 20' 7.44''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	377692.6
UTM Y (Meters):	3840378.8
Elevation:	2538 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-F3 DEL SUR, CA
Most Recent Revision:	1974

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

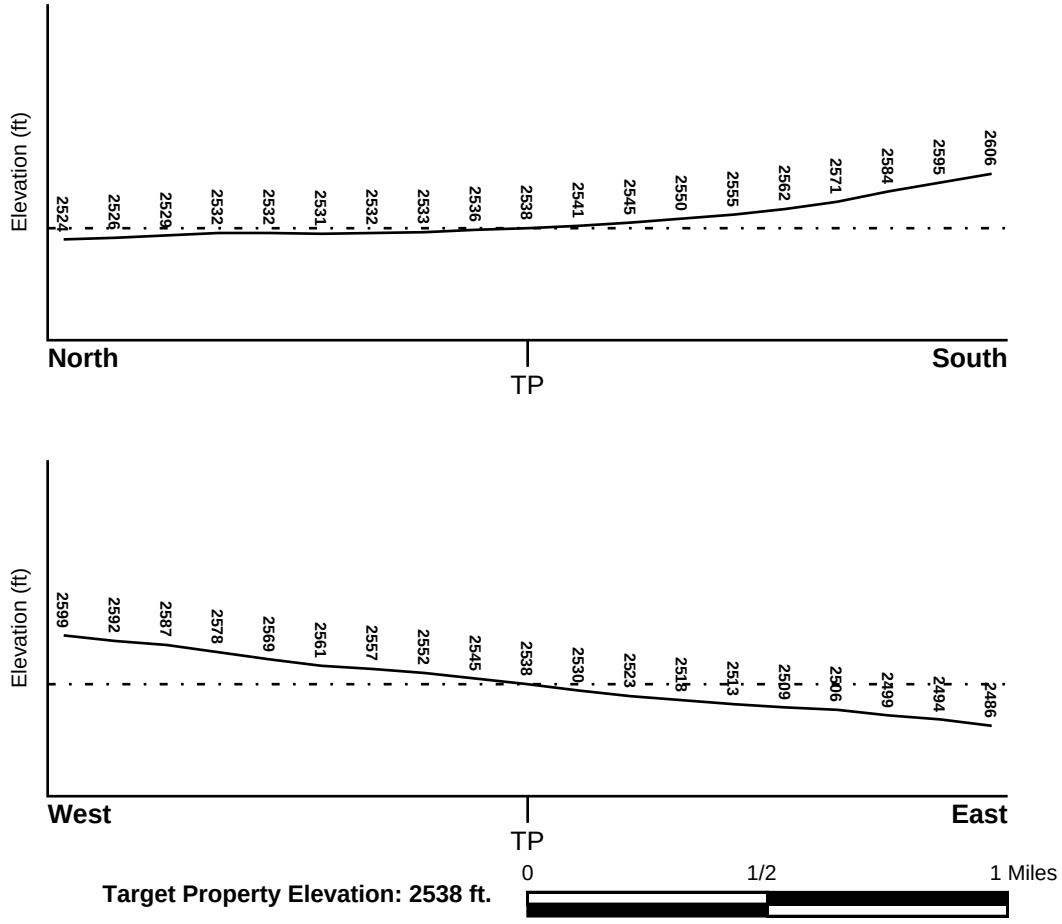
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 2538 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
DEL SUR	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

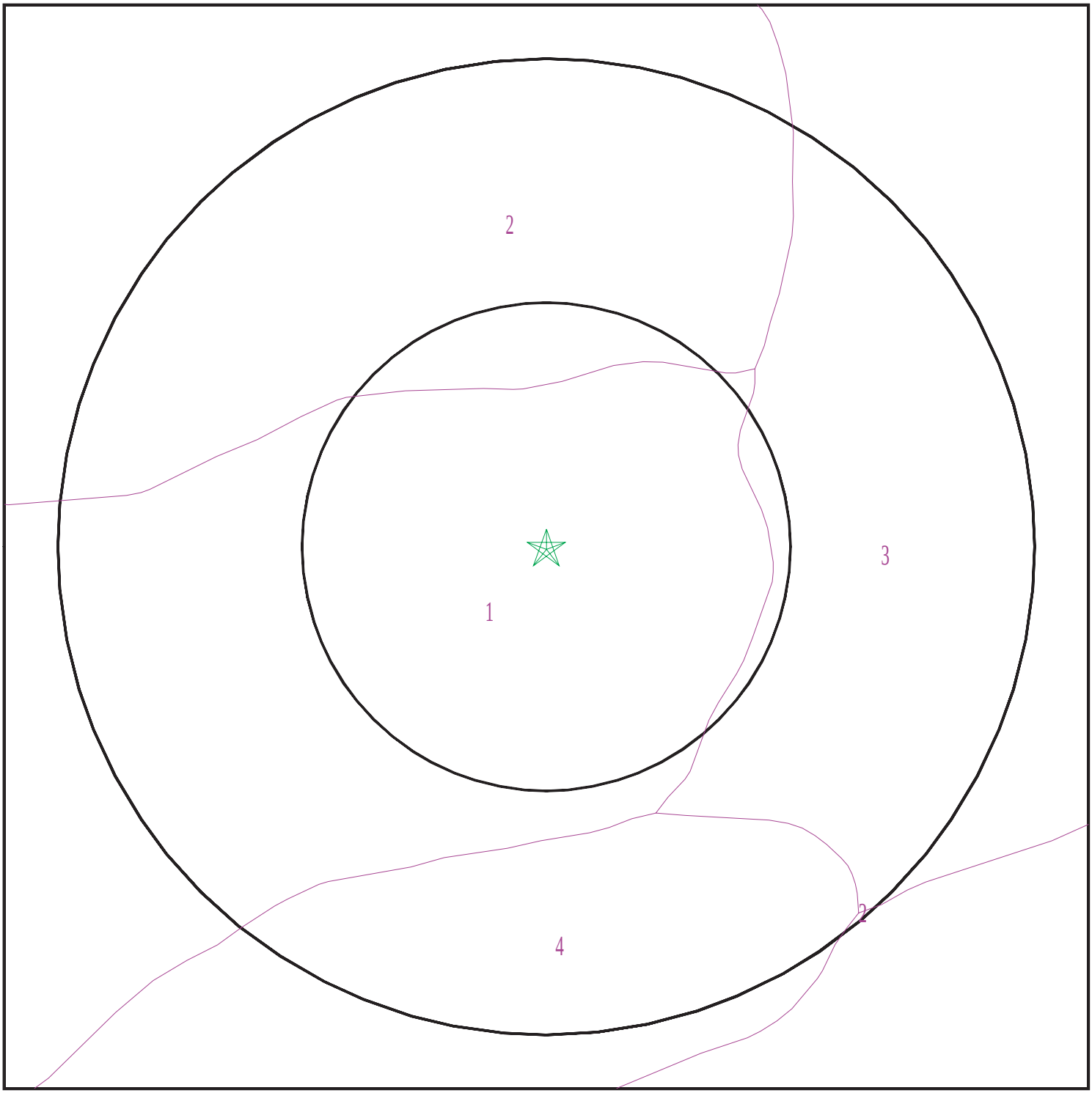
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3408740.2s



SITE NAME:	APN 3267003002, 3267003003 - Silversun Expansion	CLIENT:	Tetra Tech Inc.
ADDRESS:	W Avenue I & 1/4 Mile East of 120th St W Lancaster CA 93536	CONTACT:	Nancy Hsu
LAT/LONG:	34.6999 / 118.3354	INQUIRY #:	3408740.2s
		DATE:	September 12, 2012 1:32 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Ramona

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
2	20 inches	31 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	31 inches	90 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 2

Soil Component Name: Ramona

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
2	20 inches	31 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	31 inches	90 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1

Soil Map ID: 3

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

Soil Map ID: 4

Soil Component Name: Greenfield

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
2	20 inches	59 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6
3	59 inches	79 inches	stratified loamy sand to coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	USGS3159302	1/8 - 1/4 Mile SSE
3	USGS3159343	1/4 - 1/2 Mile WSW
B5	USGS3159267	1/2 - 1 Mile SE
6	USGS3159090	1/2 - 1 Mile ENE
C7	USGS3159213	1/2 - 1 Mile WNW
C9	USGS3159209	1/2 - 1 Mile WNW
D10	USGS3159133	1/2 - 1 Mile NE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

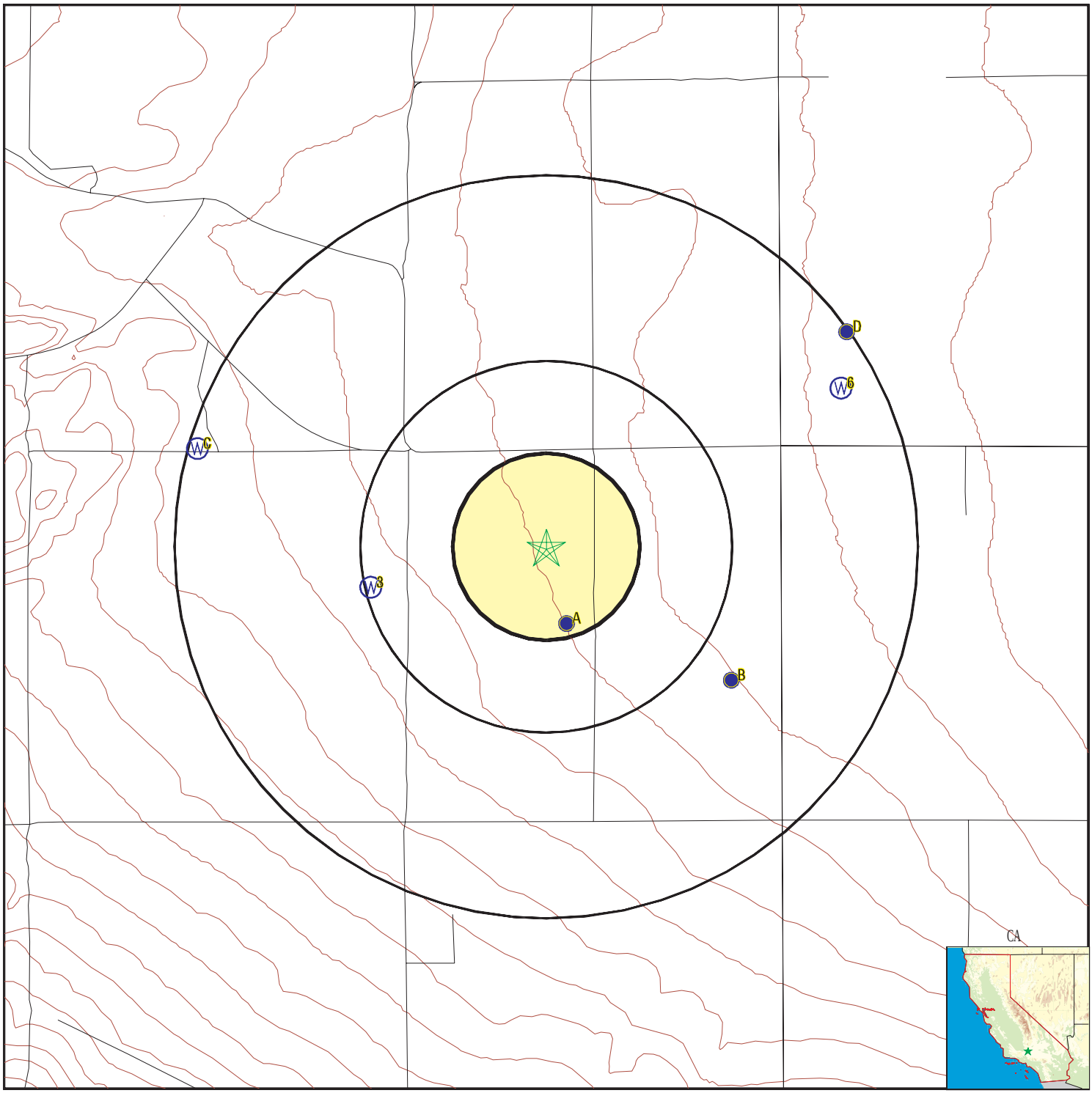
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	CADW40000013970	1/8 - 1/4 Mile South
B4	CADW40000013955	1/2 - 1 Mile SE
D8	CADW40000014126	1/2 - 1 Mile NE

PHYSICAL SETTING SOURCE MAP - 3408740.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	APN 3267003002, 3267003003 - Silversun Expansion	CLIENT:	Tetra Tech Inc.
ADDRESS:	W Avenue I & 1/4 Mile East of 120th St W Lancaster CA 93536	CONTACT:	Nancy Hsu
		INQUIRY #:	3408740.2s
LAT/LONG:	34.6999 / 118.3354	DATE:	September 12, 2012 1:32 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
South
1/8 - 1/4 Mile
Higher | **CA WELLS** | **CADW40000013970**

Longitude:	-118.334
Latiude:	34.6969
Stwellno:	07N14W14F001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013970

A2
SSE
1/8 - 1/4 Mile
Higher | **FED USGS** | **USGS3159302**

Agency cd:	USGS	Site no:	344149118195901
Site name:	007N014W14F001S		
Latitude:	344149	EDR Site id:	USGS3159302
Longitude:	1181959	Dec lat:	34.6969288
Dec lon:	-118.33396734	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2533.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19090101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	109	Hole depth:	160
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1909-01-01
Water quality data end date:	1909-01-01	Water quality data count:	1
Ground water data begin date:	1909-00-00	Ground water data end date:	1962-05-01
Ground water data count:	28		

Ground-water levels, Number of Measurements: 28

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1962-05-01					
Note: The site was dry (no water level recorded).					
1927-10-26	147.50		1927-05-09	145.80	
1927-01-20	146.00		1926-10-15	146.30	
1926-08-30	146.10		1926-05-16	145.00	
1926-01-09	145.30		1925-10-06	146.20	
1925-07-21	145.80		1925-06-08	145.40	
1925-05-06	146.30		1925-02-17	145.20	
1924-11-15	145.70		1924-10-22	146.50	
1924-07-04	145.80		1924-03-28	145.55	
1924-01-09	145.80		1923-07-11	146.10	
1923-02-24	145.80		1922-10-26	146.50	
1922-05-24	146.00		1922-04-30	146.90	
1922-01-01	146.00		1921-10-14	146.60	
1921-04-30	146.00		1919-12-18	146.50	
1909	120.00				

3
WSW **FED USGS** **USGS3159343**
1/4 - 1/2 Mile
Higher

Agency cd:	USGS	Site no:	344154118203401
Site name:	007N014W15H001S		
Latitude:	344154	EDR Site id:	USGS3159343
Longitude:	1182034	Dec lat:	34.69831761
Dec lon:	-118.34368986	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2565.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19630513
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	624	Hole depth:	624
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
B4 **SE** **1/2 - 1 Mile** **Lower**	**CA WELLS**	**CADW40000013955**

Longitude:	-118.3262
Latiude:	34.6947
Stwellno:	07N14W14J001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000013955

B5
SE
1/2 - 1 Mile
Lower

FED USGS **USGS3159267**

Agency cd:	USGS	Site no:	344141118193101
Site name:	007N014W14J001S		
Latitude:	344141	EDR Site id:	USGS3159267
Longitude:	1181931	Dec lat:	34.69470668
Dec lon:	-118.32618933	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2515.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18860101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	175
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1909-01-01	Ground water data end date:	1909-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1909-01-01	167.00	

6
ENE **FED USGS** **USGS3159090**
1/2 - 1 Mile
Lower

Agency cd:	USGS	Site no:	344222118191401
Site name:	007N014W12N001S		
Latitude:	344222	EDR Site id:	USGS3159090
Longitude:	1181914	Dec lat:	34.7060951
Dec lon:	-118.32146689	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2490.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	3.1	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

C7
WNW **FED USGS** **USGS3159213**
1/2 - 1 Mile
Higher

Agency cd:	USGS	Site no:	344214118210201
Site name:	007N014W10P001S		
Latitude:	344214	EDR Site id:	USGS3159213
Longitude:	1182102	Dec lat:	34.70387292
Dec lon:	-118.35146786	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2583.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	500
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1957-10-23	Ground water data end date:	1963-04-10
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-04-10	318.20		1962-05-01	314.03	
1958-11-28	302.70		1958-03-13	309.70	
1957-10-23	310.20				

D8
NE
1/2 - 1 Mile
Lower

CA WELLS **CADW40000014126**

Longitude:	-118.3203
Latiude:	34.7083
Stwellno:	07N14W12Z001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000014126

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

C9
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS3159209**

Agency cd:	USGS	Site no:	344213118210501
Site name:	007N014W10P002S		
Latitude:	344213	EDR Site id:	USGS3159209
Longitude:	1182105	Dec lat:	34.70359515
Dec lon:	-118.35230122	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000
Altitude:	2585.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	42.5	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	0000-00-00	Ground water data end date:	0000-00-00
Ground water data count:	0		

Ground-water levels, Number of Measurements: 0

D10
NE
1/2 - 1 Mile
Lower

FED USGS **USGS3159133**

Agency cd:	USGS	Site no:	344230118191301
Site name:	007N014W12Z001S		
Latitude:	344230	EDR Site id:	USGS3159133
Longitude:	1181913	Dec lat:	34.70831723
Dec lon:	-118.3211891	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	DEL SUR	Map scale:	24000

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Altitude:	2487.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	010		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	18860101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	120
Source of depth data:	Not Reported		
Project number:	479381106		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1908-01-01	Ground water data end date:	1908-01-01
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1908-01-01	113.00	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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APN 3267003002, 3267003003 - Silversun Expansion
W Avenue I & 1/4 Mile East of 120th St W
Lancaster, CA 93536

Inquiry Number: 3408740.6
September 17, 2012

The EDR-City Directory Image Report

Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

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Executive Summary

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City Directory Images

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with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	*Target Street*	*Cross Street*	*Source*
2010	☐	☐	Haines Criss-Cross Directory
2005	☐	☐	Haines Criss-Cross Directory
1999	☐	☑	Haines Criss-Cross Directory
1995	☐	☑	Haines Criss-Cross Directory
1991	☐	☑	Haines Criss-Cross Directory
1985	☐	☐	Haines Criss-Cross Directory
1980	☐	☑	Haines Criss-Cross Directory
1975	☐	☑	Haines Criss-Cross Directory
1971	☐	☐	Haines Criss-Cross Directory

RECORD SOURCES

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FINDINGS

TARGET PROPERTY STREET

W Avenue I & 1/4 Mile East of 120th St W
Lancaster, CA 93536

Year	*CD Image*	*Source*	
W Avenue I			
2010	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
2005	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1999	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1995	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1991	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1985	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1980	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1975	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1971	-	Haines Criss-Cross Directory	Street not listed in Source

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
120th St W			
2010	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
2005	-	Haines Criss-Cross Directory	Target and Adjoining not listed in Source
1999	pg. A1	Haines Criss-Cross Directory	
1995	pg. A2	Haines Criss-Cross Directory	
1991	pg. A3	Haines Criss-Cross Directory	
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1980	pg. A4	Haines Criss-Cross Directory	
1975	pg. A5	Haines Criss-Cross Directory	
1971	-	Haines Criss-Cross Directory	Street not listed in Source

City Directory Images

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

120th St W 1999

48825	●AMBROSE David	805-946-1769	
48841	●JEWETT Anthony T	OO	+9
48903	●NORDBLOM Roy H Jr	805-946-2017	
48951	XXXX	OO	
49003	XXXX	OO	
49007	XXXX	OO	
*	0 BUS 12 RES	3 NEW	

120TH W 93536 LANCASTER

45201	●KADIVAR E	805-945-4901	8
*	0 BUS 1 RES	0 NEW	

121ST E 93543 LITTLEROCK

28749	●RIGALI Paul J Jr	805-944-5339	
28801	XXXX	OO	
*	0 BUS 2 RES	0 NEW	

121ST E 93553 PEARBLOSSOM

32238	●COLVIN Charles R	OO	+9
32420	●SHERMANEK Kathryn A	OO	+9
32515	ALLEN Kj	805-944-4056	8
	KRUMM Nathan	805-944-4056	8
32756	●CARTER Bryan D	805-944-4420	
	CARTER Evelyn N	805-944-4420	

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

120th St W 1995

48903	NORDBLOM Roy H Jr	946-2017	
48951	STICKNEY Erika	946-1992	
	STICKNEY Judson D	946-1992	
49003	XXXX	00	
49007	XXXX	00	
49009	HARDING M D	946-2332	
49019	EVANS C	946-9171	+5
	ROMERO Victor	946-0116	4
	* 0 BUS 17 RES	5 NEW	

120TH W 93536
LANCASTER

WEALTH CODE 4.0

45201	KADIVAR E	945-1101	0
	• KADIVAR Esfandiar	00	+5
	* 0 BUS 2 RES	1 NEW	

121ST E 93543
LITTLEROCK

28749	RIGALI Paul J Jr	944-5339	7
28801	XXXX	00	
29100	• SMALL Emilie	00	+5
29101	XXXX	00	
29132	• SWEM Mildred	00	+5
29220	• ULMAN Terry	944-1825	

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

120th St W 1991

48903	NORDBLOM Roy H Jr	946-2017	5
48951	STICKNEY Erika	946-1992	
	STICKNEY Judson D	946-1992	
49003	XXXX	00	
49007	MORTON Jerry	946-2823	9
49009	HARDING M D	946-2332	4
49019	SWARTZ Ann	946-1880	+0
	SWARTZ John	946-1880	+0
*	0 BUS 16 RES	3 NEW	

120TH W 93536 LANCASTER

45201	KADIVAR E	945-1101	+0
*	0 BUS 1 RES	1 NEW	

121ST E 93543 LITTLEROCK

28749	RIGALI Paul J Jr	944-5339	7
28801	HOWELL John M	944-3319	
29101	XXXX	00	
29220	ULMAN Terry	944-1825	
*	0 BUS 4 RES	0 NEW	

121ST E 93553 PEARBLOSSOM

32238	BERROW Paul J	944-3325	
32515	GUEST Charles	944-5633	8

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

120th St W 1980

49003	XXXX	00
49007	JENNINGS KATHERINE	946-1686 +0
	TORRES PHILLIP	946-1686 +0
49009	XXXX	00
49019	HANSON ALFRED	946-1342 +0
49155	NORDBLOM ROY H SR	946-1793
*	0 BUS 16 RES	6 NEW

120TH W 93534
LANCASTER

45201	ULLMAN K F	942-2289
*	0 BUS 1 RES	0 NEW

121ST E 93543
LITTLEROCK

28749	XXXX	00
28801	HOWELL JOHN M	944-3319
29101	XXXX	00
29220	ULMAN TERRY	944-1825
29319	KARNAZES GEO	944-4875 +0
*	0 BUS 5 RES	1 NEW

Target Street	Cross Street	Source
-	✓	Haines Criss-Cross Directory

120th St W 1975

49003 HARRISON GEO W 946-2380+5
49007 ROUSOS JAS R 946-2589+5
49009 XXXX OO
49019 JOHNSON HAROLD D 946-1455
49051 KING PHILLIP M 946-2508+5
49155 NORDBLOM R H SR 946-1793
* 0 BUS 21 RES 4 NEW

120TH W 93534 LANCASTER

45201 ULLMAN K F 942-2289
* 0 BUS 1 RES 0 NEW

121ST E 93543 LITTLEROCK

28749 PIERCE DONALD L 944-4385
28801 HOWELL JOHN M 944-3319
29101 XXXX OO
29220 ULMAN TERRY 944-1825
29319 AMES MALCOLM H 944-1488
* 0 BUS 5 RES 0 NEW

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APPENDIX B-6.6

PROJECT 6 LANCASTER WAD
ENVIRONMENTAL DATA RESOURCES

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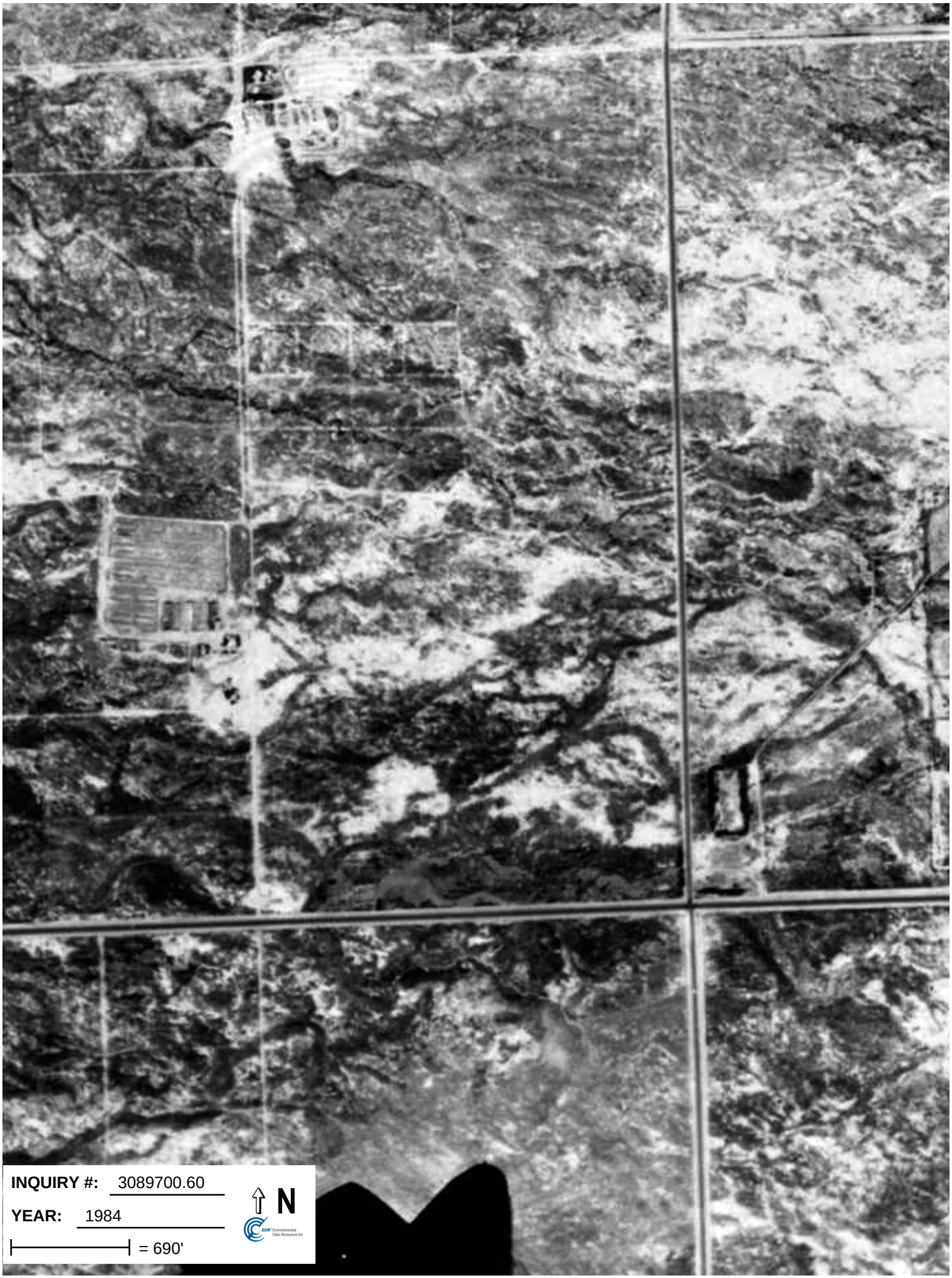
INQUIRY #: 3089700.60
YEAR: 1972
= 569'
N
EDR Environmental Data Resources Inc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YEAR: 1984
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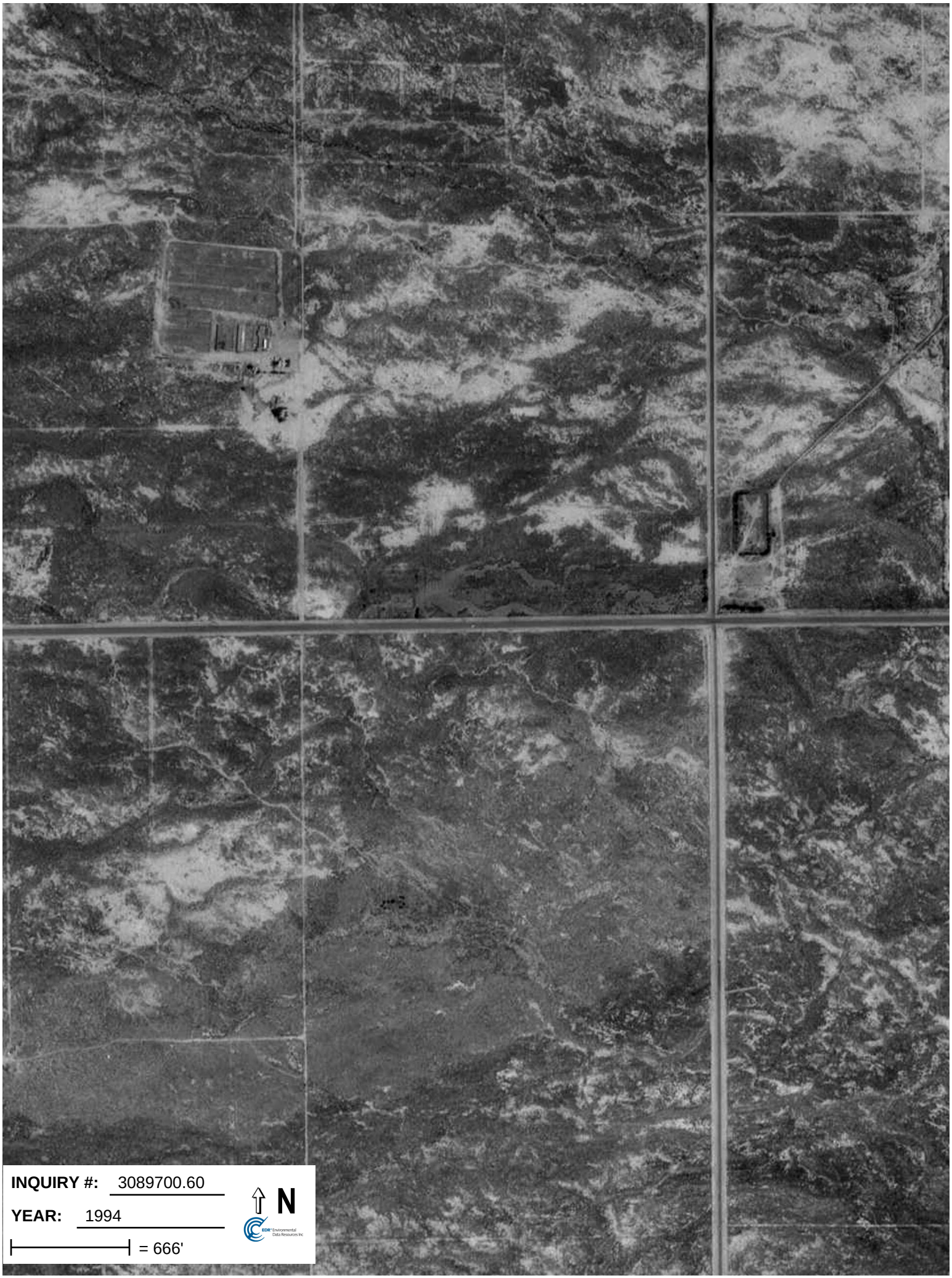


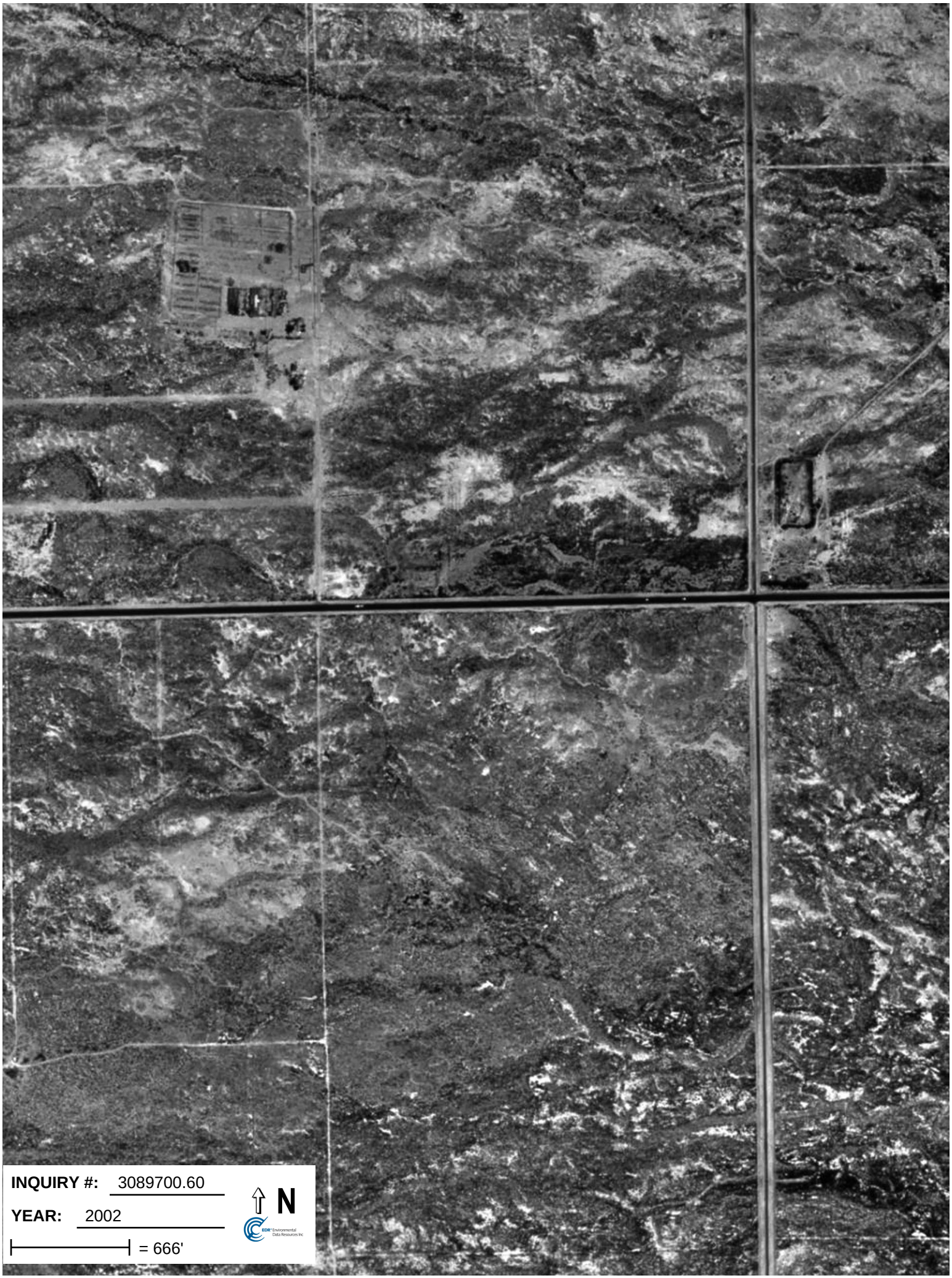
INQUIRY #: 3089700.60

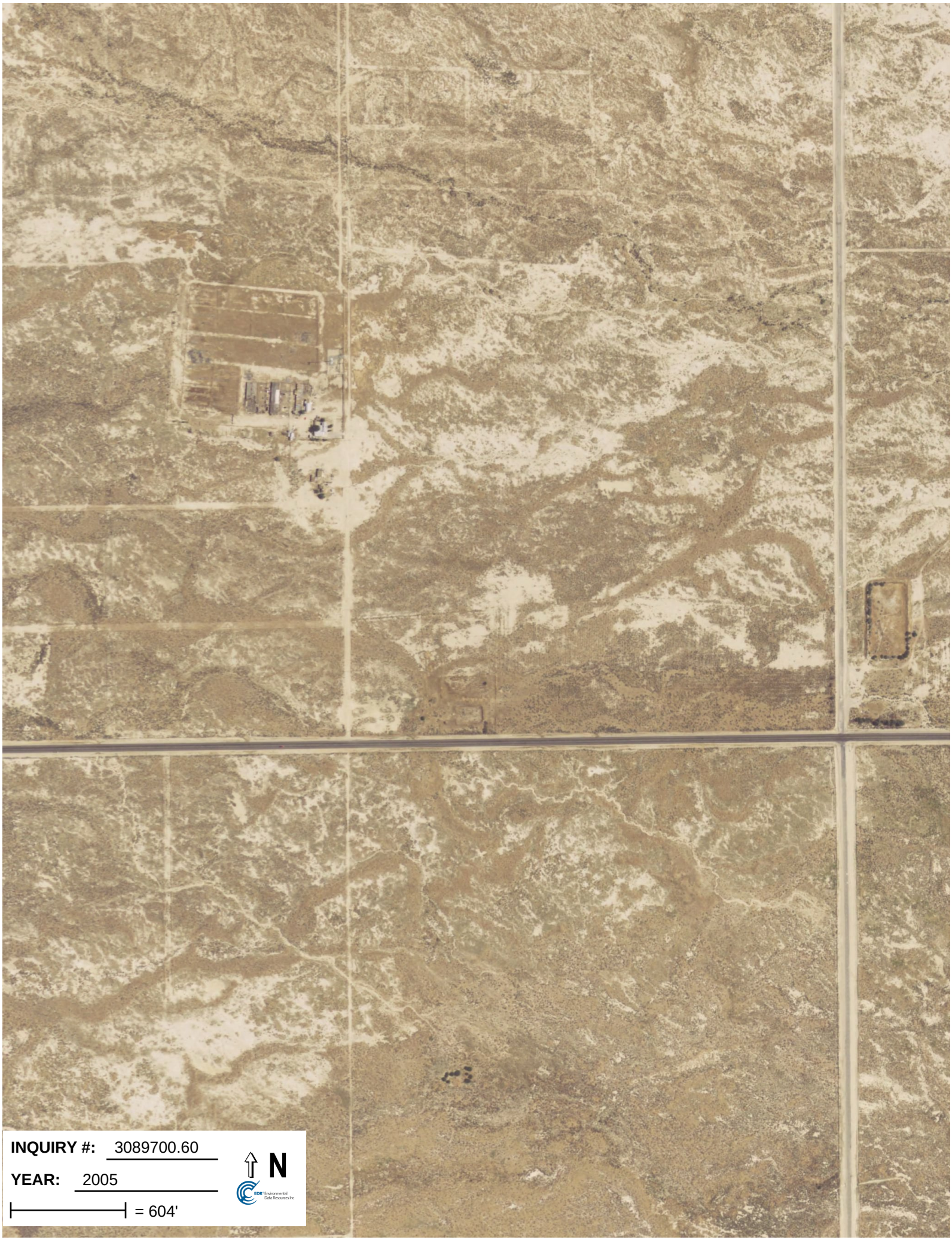
YEAR: 1994

= 666'

N

EDR Environmental Data Resources Inc


INQUIRY #: 3089700.60
YEAR: 2002
= 666'
N


INQUIRY #: 3089700.60
YEAR: 2005
= 604'
N
EDR Environmental Data Resources Inc

Lancaster WAD
21
Lancaster, CA 93536

Inquiry Number: 3089700.60
June 08, 2011

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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Date EDR Searched Historical Sources:

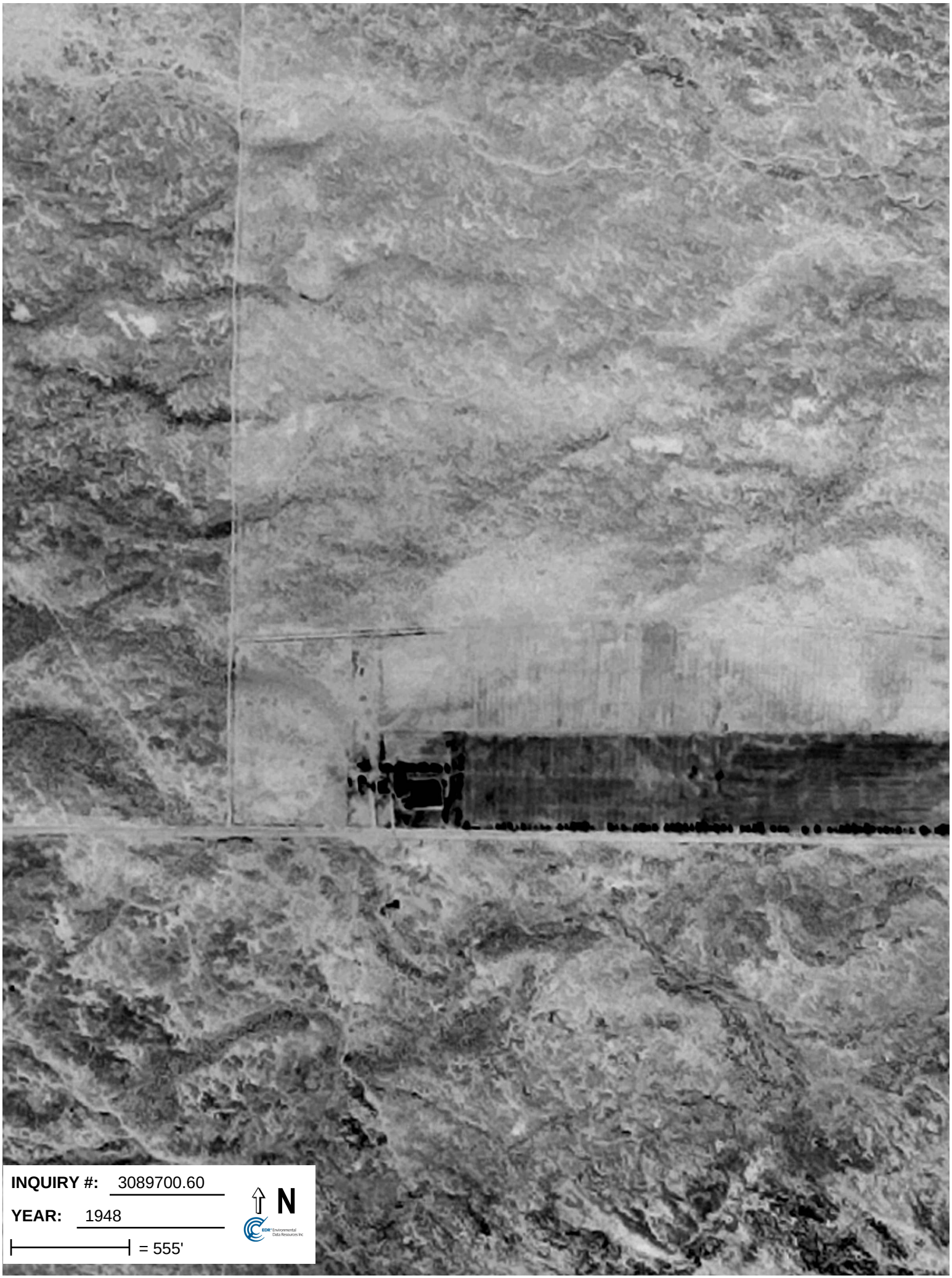
Aerial Photography June 08, 2011

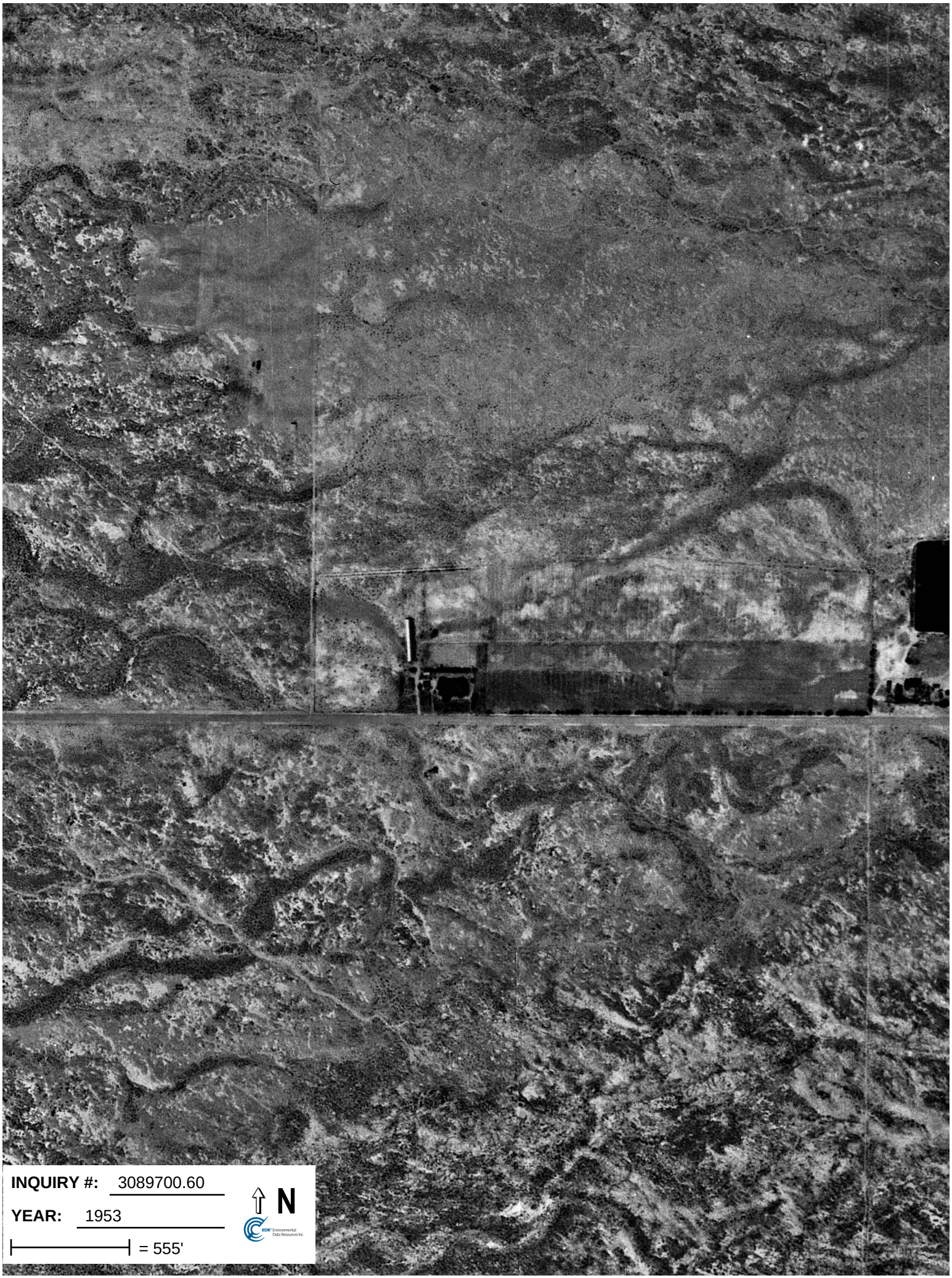
Target Property:

21

Lancaster, CA 93536

Year	*Scale*	*Details*	*Source*
1948	Aerial Photograph. Scale: 1"=555'	Flight Year: 1948	USGS
1953	Aerial Photograph. Scale: 1"=555'	Flight Year: 1953	Pacific Air
1968	Aerial Photograph. Scale: 1"=666'	Flight Year: 1968	Teledyne
1972	Aerial Photograph. Scale: 1"=569'	Flight Year: 1972	Nasa
1984	Aerial Photograph. Scale: 1"=690'	Flight Year: 1984 Best Copy Available from original source	USGS
1994	Aerial Photograph. Scale: 1"=666'	Flight Year: 1994	USGS
2002	Aerial Photograph. Scale: 1"=666'	Flight Year: 2002	USGS
2005	Aerial Photograph. Scale: 1"=604'	Flight Year: 2005	EDR


INQUIRY #: 3089700.60
YEAR: 1948
= 555'
N
EDR Environmental Data Resources Inc



INQUIRY #: 3089700.60

YEAR: 1953

= 555'

N

EDR Environmental Data Resources Inc

INQUIRY #: 3089700.60
YEAR: 1968
= 666'
N

Lancaster WAD
21
Lancaster, CA 93536

Inquiry Number: 3089700.58s
June 08, 2011

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

21
LANCASTER, CA 93536

COORDINATES

Latitude (North):	34.778600 - 34° 46' 43.0''
Longitude (West):	118.191200 - 118° 11' 28.3''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	391003.8
UTM Y (Meters):	3848940.5
Elevation:	2338 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	34118-G2 ROSAMOND, CA
Most Recent Revision:	1973

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	2006, 2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
SLIC ---------- Statewide SLIC Cases

INDIAN LUST ---- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ---- Active UST Facilities
AST ---- Aboveground Petroleum Storage Tank Facilities
INDIAN UST ---- Underground Storage Tanks on Indian Land
FEMA UST ---- Underground Storage Tank Listing

State and tribal voluntary cleanup sites

VCP ---- Voluntary Cleanup Program Properties
INDIAN VCP ---- Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI ---- Open Dump Inventory
DEBRIS REGION 9 ---- Torres Martinez Reservation Illegal Dump Site Locations
WMUDS/SWAT ---- Waste Management Unit Database
SWRCY ---- Recycler Database
HAULERS ---- Registered Waste Tire Haulers Listing
INDIAN ODI ---- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ---- Clandestine Drug Labs
HIST Cal-Sites ---- Historical Calsites Database
SCH ---- School Property Evaluation Program
Toxic Pits ---- Toxic Pits Cleanup Act Sites
AOCONCERN ---- San Gabriel Valley Areas of Concern
CDL ---- Clandestine Drug Labs
US HIST CDL ---- National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

CA FID UST ---- Facility Inventory Database
HIST UST ---- Hazardous Substance Storage Container Database
SWEEPS UST ---- SWEEPS UST Listing

Local Land Records

LIENS 2 ---- CERCLA Lien Information
LUCIS ---- Land Use Control Information System
LIENS ---- Environmental Liens Listing
DEED ---- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System

CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen	RCRA - Non Generators
DOT OPS	Incident and Accident Data
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
CA BOND EXP. PLAN	Bond Expenditure Plan
NPDES	NPDES Permits Listing
WDS	Waste Discharge System
Cortese	"Cortese" Hazardous Waste & Substances Sites List
HIST CORTESE	Hazardous Waste & Substance Site List
Notify 65	Proposition 65 Records
LA Co. Site Mitigation	Site Mitigation List
DRYCLEANERS	Cleaner Facilities
WIP	Well Investigation Program Case List
LOS ANGELES CO. HMS	HMS: Street Number List
HAZNET	Facility and Manifest Data
EMI	Emissions Inventory Data
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
FINANCIAL ASSURANCE	Financial Assurance Information Listing
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
PROC	Certified Processors Database
MWMP	Medical Waste Management Program Listing
COAL ASH DOE	Sleam-Electric Plan Operation Data

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Historical Auto Stations EDR Proprietary Historic Gas Stations
EDR Historical Cleaners EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

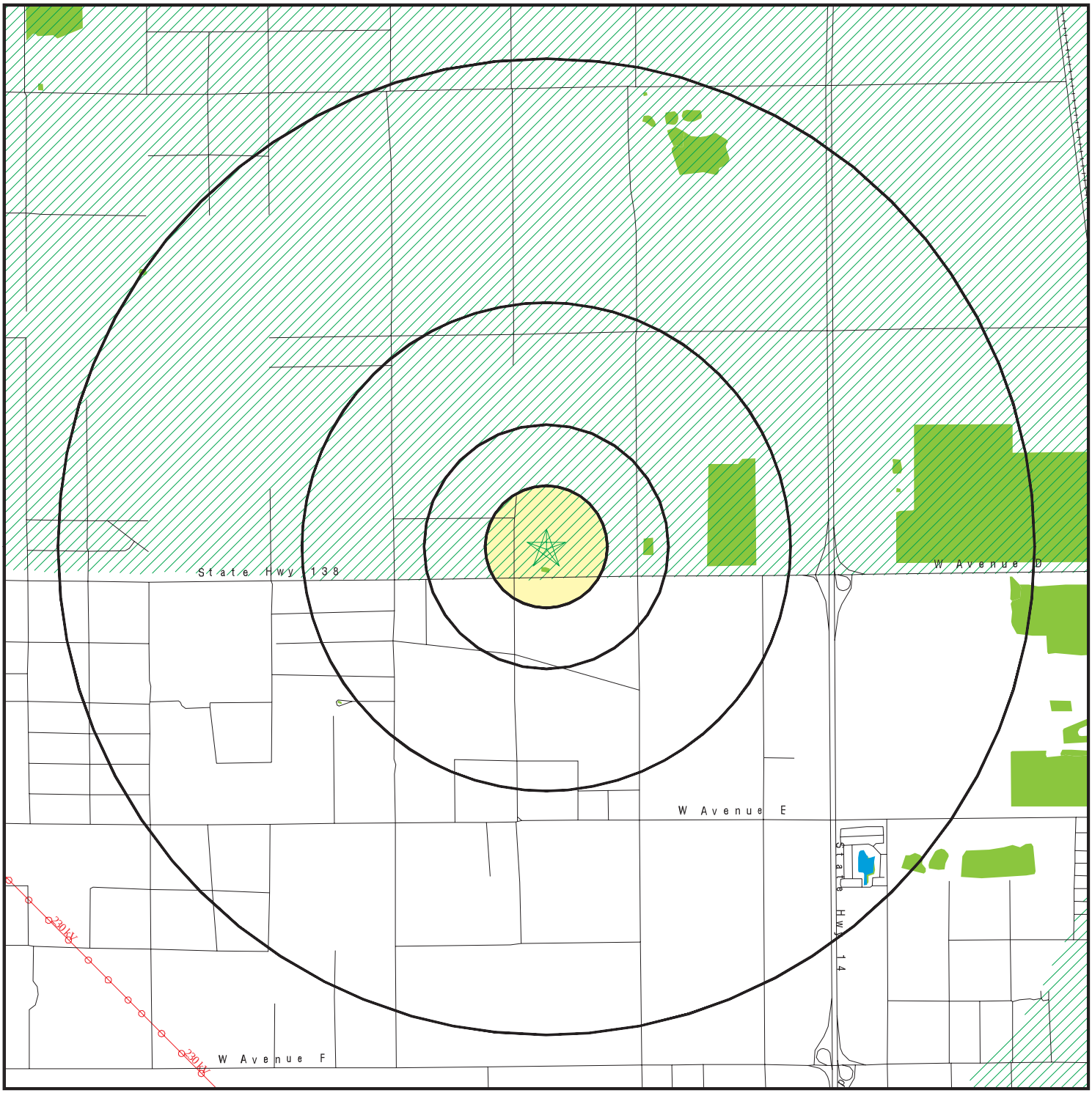
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 28 records.

Site Name	Database(s)
LANCASTER TRACT 060034	NPDES
TRACT 54384 LANCASTER	NPDES
LANCASTER SITE CLEARING & FENCING	NPDES
LACO LANCASTER	NPDES
AVE E ETAL	NPDES
TRACT NO 060238	NPDES
LANCASTER	NPDES
TRACT 53253	NPDES
TTM 060154	NPDES
JAMESTOWN AT LANCASTER	NPDES
SAPPHIRE	NPDES
SAPPHIRE	NPDES
WILD ROSE & BELMONT AT WEST LANCAS	NPDES
CAL MAT	SWEEPS UST
LANCASTER CITY PK REC BLDG	SWEEPS UST
ON NORTH 35TH STREET WEST AT A	CDL
G2 X 30TH ST EAST	CDL
28.15 MI.MARKER ON ANGELES CRE	CDL
5 MI NW OF HWY 138 & 300TH ST	AST
JMC TRANSPORTATION	HAZNET
OSO PUMPING PLANT	HAZNET
NR: LANCASTER, CA	ERNS
205 ST WEST NEAREST CROSS ST WAS L	ERNS
LANCASTER SD, WRP	FINDS
CASTA DWR- CHECK SITE 56	EMI
CASTA DWR- CHECK SITE 60	EMI
SCG - LANCASTER DISTRICT	EMI
CASTA DWR- CHECK SITE 59	EMI

OVERVIEW MAP - 3089700.58s



0 1/2 1 2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Lancaster WAD ADDRESS: 21 Lancaster CA 93536 LAT/LONG: 34.7786 / 118.1912	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089700.58s DATE: June 08, 2011 12:48 pm

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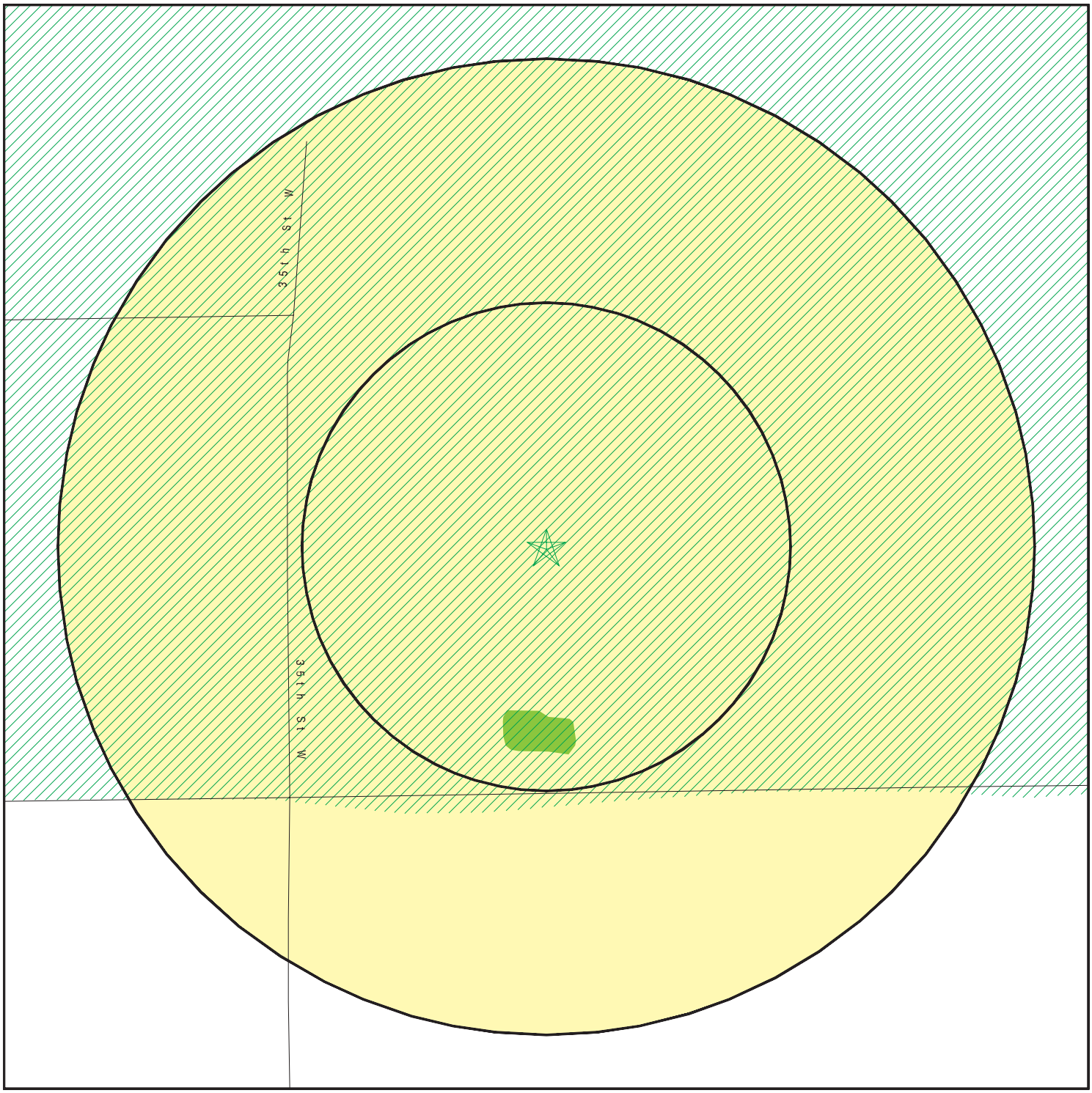
DETAIL MAP - 3089700.58s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- Areas of Concern

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Lancaster WAD ADDRESS: 21 Lancaster CA 93536 LAT/LONG: 34.7786 / 118.1912	CLIENT: Tetra Tech Inc. CONTACT: Garret Bean INQUIRY #: 3089700.58s DATE: June 08, 2011 12:51 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.125	0	0	0	0	0	0
Proposed NPL		1.125	0	0	0	0	0	0
NPL LIENS		0.125	0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.125	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		0.625	0	0	0	0	NR	0
FEDERAL FACILITY		1.125	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.625	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.125	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.625	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.375	0	0	0	NR	NR	0
RCRA-SQG		0.375	0	0	0	NR	NR	0
RCRA-CESQG		0.375	0	0	0	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.625	0	0	0	0	NR	0
US INST CONTROL		0.625	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.125	0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.125	0	0	0	0	0	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.125	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.625	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		0.625	0	0	0	0	NR	0
SLIC		0.625	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST		0.625	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.375	0	0	0	NR	NR	0
AST		0.375	0	0	0	NR	NR	0
INDIAN UST		0.375	0	0	0	NR	NR	0
FEMA UST		0.375	0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.625	0	0	0	0	NR	0
INDIAN VCP		0.625	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.625	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI		0.625	0	0	0	0	NR	0
DEBRIS REGION 9		0.625	0	0	0	0	NR	0
WMUDS/SWAT		0.625	0	0	0	0	NR	0
SWRCY		0.625	0	0	0	0	NR	0
HAULERS		0.125	0	NR	NR	NR	NR	0
INDIAN ODI		0.625	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.125	0	NR	NR	NR	NR	0
HIST Cal-Sites		1.125	0	0	0	0	0	0
SCH		0.375	0	0	0	NR	NR	0
Toxic Pits		1.125	0	0	0	0	0	0
AOCONCERN		1.125	0	0	0	0	0	0
CDL		0.125	0	NR	NR	NR	NR	0
US HIST CDL		0.125	0	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.375	0	0	0	NR	NR	0
HIST UST		0.375	0	0	0	NR	NR	0
SWEEPS UST		0.375	0	0	0	NR	NR	0
Local Land Records								
LIENS 2		0.125	0	NR	NR	NR	NR	0
LUCIS		0.625	0	0	0	0	NR	0
LIENS		0.125	0	NR	NR	NR	NR	0
DEED		0.625	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.125	0	NR	NR	NR	NR	0
CHMIRS		0.125	0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LDS		0.125	0	NR	NR	NR	NR	0
MCS		0.125	0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.375	0	0	0	NR	NR	0
DOT OPS		0.125	0	NR	NR	NR	NR	0
DOD		1.125	0	0	0	0	0	0
FUDS		1.125	0	0	0	0	0	0
CONSENT		1.125	0	0	0	0	0	0
ROD		1.125	0	0	0	0	0	0
UMTRA		0.625	0	0	0	0	NR	0
MINES		0.375	0	0	0	NR	NR	0
TRIS		0.125	0	NR	NR	NR	NR	0
TSCA		0.125	0	NR	NR	NR	NR	0
FTTS		0.125	0	NR	NR	NR	NR	0
HIST FTTS		0.125	0	NR	NR	NR	NR	0
SSTS		0.125	0	NR	NR	NR	NR	0
ICIS		0.125	0	NR	NR	NR	NR	0
PADS		0.125	0	NR	NR	NR	NR	0
MLTS		0.125	0	NR	NR	NR	NR	0
RADINFO		0.125	0	NR	NR	NR	NR	0
FINDS		0.125	0	NR	NR	NR	NR	0
RAATS		0.125	0	NR	NR	NR	NR	0
CA BOND EXP. PLAN		1.125	0	0	0	0	0	0
NPDES		0.125	0	NR	NR	NR	NR	0
WDS		0.125	0	NR	NR	NR	NR	0
Cortese		0.625	0	0	0	0	NR	0
HIST CORTESE		0.500	0	0	0	NR	NR	0
Notify 65		1.125	0	0	0	0	0	0
LA Co. Site Mitigation		0.125	0	NR	NR	NR	NR	0
DRYCLEANERS		0.375	0	0	0	NR	NR	0
WIP		0.375	0	0	0	NR	NR	0
LOS ANGELES CO. HMS		0.125	0	NR	NR	NR	NR	0
HAZNET		0.125	0	NR	NR	NR	NR	0
EMI		0.125	0	NR	NR	NR	NR	0
INDIAN RESERV		1.125	0	0	0	0	0	0
SCRD DRYCLEANERS		0.625	0	0	0	0	NR	0
FINANCIAL ASSURANCE		0.125	0	NR	NR	NR	NR	0
HWP		1.125	0	0	0	0	0	0
HWT		0.375	0	0	0	NR	NR	0
COAL ASH EPA		0.625	0	0	0	0	NR	0
PCB TRANSFORMER		0.125	0	NR	NR	NR	NR	0
PROC		0.625	0	0	0	0	NR	0
MWMP		0.375	0	0	0	NR	NR	0
COAL ASH DOE		0.125	0	NR	NR	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.125	0	0	0	0	0	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR Historical Auto Stations		0.375	0	0	0	NR	NR	0
EDR Historical Cleaners		0.375	0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 28 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
LANCASTER	S109448155	LANCASTER TRACT 060034	8 J8 / 60 WEST		NPDES
LANCASTER	S106923762	CAL MAT	155TH AT HIGHWAY 138		SWEEPS UST
LANCASTER	S109462302	TRACT 54384 LANCASTER	35 35TH WEST ST		NPDES
LANCASTER	S109692875	LANCASTER SITE CLEARING & FENCING	47002 N 45TH ST W	93536	NPDES
LANCASTER	S109447897	LACO LANCASTER	AVE K / 69TH ST		NPDES
LANCASTER	S109436798	AVE E ETAL	AVE E SIERRA HWY AVE A AVE G		NPDES
LANCASTER	S110367727	JMC TRANSPORTATION	W AVENUE L AT 30TH ST	93536	HAZNET
LANCASTER	S107620416	CASTA DWR- CHECK SITE 56	CHECK 56 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	S107620419	CASTA DWR- CHECK SITE 60	CHECK 60 AT CALIF. AQUADUCT/HW	93536	EMI
LANCASTER	1005584611	LANCASTER SD, WRP	11043 CLARIBELL RD	93536	FINDS
LANCASTER	S109462553	TRACT NO 060238	NW CORNER LANCASTER BLVD / 3	93536	NPDES
LANCASTER	S109282499	SCG - LANCASTER DISTRICT	44416 N. DIVISOIN STREET		EMI
LANCASTER	S109448139	LANCASTER	22 ST E / NUGENT		NPDES
LANCASTER	87463949	NR: LANCASTER, CA	NR: LANCASTER, CA		ERNS
LANCASTER	S106928508	LANCASTER CITY PK REC BLDG	43011 W N 010TH ST		SWEEPS UST
LANCASTER	S103980307	OSO PUMPING PLANT	5 MI NE OF HWY 138 / 300TH S	93536	HAZNET
LANCASTER	S107539974		ON NORTH 35TH STREET WEST AT A	93536	CDL
LANCASTER	A100345193		5 MI NW OF HWY 138 & 300TH ST	93536	AST
LANCASTER	S109462254	TRACT 53253	S OF AVE M 4 BETW 30TH / 32N		NPDES
LANCASTER	S109463165	TTM 060154	SE OF AVE J / 30TH ST E		NPDES
LANCASTER	S109446937	JAMESTOWN AT LANCASTER	32 W ST BTW J6 / J8		NPDES
LANCASTER	93468078	205 ST WEST NEAREST CROSS ST WAS L	205 ST WEST NEAREST CROSS ST W	93536	ERNS
LANCASTER	S107538556		G2 X 30TH ST EAST		CDL
LOS ANGELES	S110735951	SAPPHIRE	J & 35TH ST	93536	NPDES
LOS ANGELES	S110735952	SAPPHIRE	J AND 35TH ST	93536	NPDES
LOS ANGELES	S110737463	WILD ROSE & BELMONT AT WEST LANCAS	SEC 60TH ST W & AVE J	93536	NPDES
LOS ANGELES COUNTY	S107532211		28.15 MI.MARKER ON ANGELES CRE	0	CDL
PEARBLOSSOM	S107620418	CASTA DWR- CHECK SITE 59	CHECK 59 AT CALIF. AQUADUCT/HW	93536	EMI

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 15

Source: EPA
Telephone: N/A
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPAa??s Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/15/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 05/25/2010
Date Data Arrived at EDR: 06/02/2010
Date Made Active in Reports: 10/04/2010
Number of Days to Update: 124

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/05/2011
Date Data Arrived at EDR: 01/14/2011
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 14

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/07/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 73

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 11/04/2009
Date Data Arrived at EDR: 05/04/2010
Date Made Active in Reports: 07/07/2010
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/04/2010
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

State and tribal registered storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 19

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 08/01/2009
Date Data Arrived at EDR: 09/10/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 48

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 02/04/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 12/02/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 57

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/03/2011
Next Scheduled EDR Contact: 05/16/2011
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 45

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 01/01/2011
Date Data Arrived at EDR: 02/23/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 03/03/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 45

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 11/05/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/03/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 09/01/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 12/29/2010
Date Data Arrived at EDR: 12/30/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 02/24/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 30

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 46

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 06/07/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 03/04/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/01/2009
Number of Days to Update: 8
Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18
Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing
Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 02/04/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 87
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LUCIS: Land Use Control Information System
LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31
Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 05/02/2011
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/18/2011
Date Data Arrived at EDR: 03/18/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 33

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/05/2011
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 51

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Annually

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/21/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 30

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 04/29/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 04/29/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/11/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/12/2011
Date Data Arrived at EDR: 02/11/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 05/11/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/15/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 10/29/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 91

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/25/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 5

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/21/2010
Date Made Active in Reports: 01/28/2011
Number of Days to Update: 99

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 06/02/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 06/08/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/17/2010
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 94

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 01/07/2011
Date Data Arrived at EDR: 01/21/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/18/2010
Date Data Arrived at EDR: 04/06/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 51

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/11/2011
Date Data Arrived at EDR: 01/13/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/13/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/14/2010
Date Data Arrived at EDR: 04/16/2010
Date Made Active in Reports: 05/27/2010
Number of Days to Update: 41

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/27/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/22/2011
Date Data Arrived at EDR: 02/22/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/05/2011
Date Made Active in Reports: 05/04/2011
Number of Days to Update: 29

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES].

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/29/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/15/2010
Date Data Arrived at EDR: 09/16/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 13

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 04/05/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/07/2010
Date Made Active in Reports: 08/12/2010
Number of Days to Update: 36

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 10/18/2010
Number of Days to Update: 19

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 04/01/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 02/28/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 29
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 03/04/2011
Date Data Arrived at EDR: 03/17/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 34
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Varies

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Quarterly

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/09/2010
Date Data Arrived at EDR: 08/11/2010
Date Made Active in Reports: 08/20/2010
Number of Days to Update: 9
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 06/03/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Quarterly

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/15/2011
Date Data Arrived at EDR: 03/16/2011
Date Made Active in Reports: 04/26/2011
Number of Days to Update: 41

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/23/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 03/01/2007
Date Data Arrived at EDR: 06/01/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/21/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: N/A

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/05/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/12/2011
Date Data Arrived at EDR: 04/15/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 33

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Semi-Annually

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 03/29/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

COLUSA COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 12/01/2010
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 03/03/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 05/09/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/19/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 23

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 02/08/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 08/31/2010
Date Data Arrived at EDR: 09/01/2010
Date Made Active in Reports: 09/30/2010
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/06/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/31/2011
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/25/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/05/2009
Date Data Arrived at EDR: 03/10/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 29

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/09/2011
Date Data Arrived at EDR: 02/09/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 23
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 02/03/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 23
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/25/2011
Next Scheduled EDR Contact: 08/08/2011
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/18/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/18/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county?s Certified Unified Program Agency database. California?s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/12/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 30
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 04/15/2011
Date Data Arrived at EDR: 04/26/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 22
Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 04/25/2011
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/20/2011
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/07/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: No Update Planned

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/17/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/02/2011
Date Data Arrived at EDR: 02/15/2011
Date Made Active in Reports: 03/03/2011
Number of Days to Update: 16
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 05/17/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 01/31/2011
Date Data Arrived at EDR: 02/01/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 31
Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/26/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/18/2011
Number of Days to Update: 20
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/28/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 19
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/07/2011
Date Data Arrived at EDR: 04/29/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 18
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 03/10/2011
Date Data Arrived at EDR: 03/11/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 13

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 09/09/2010
Date Data Arrived at EDR: 09/15/2010
Date Made Active in Reports: 09/29/2010
Number of Days to Update: 14

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/18/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2010
Date Data Arrived at EDR: 11/16/2010
Date Made Active in Reports: 01/25/2011
Number of Days to Update: 70

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Varies

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/21/2010
Next Scheduled EDR Contact: 03/28/2011
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 05/16/2011
Next Scheduled EDR Contact: 08/16/2011
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 03/30/2011
Date Data Arrived at EDR: 03/31/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 22
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/17/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 04/19/2011
Date Data Arrived at EDR: 04/20/2011
Date Made Active in Reports: 05/17/2011
Number of Days to Update: 27
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/28/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/22/2011
Date Made Active in Reports: 04/20/2011
Number of Days to Update: 29
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SANTA CLARA COUNTY:

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 05/29/2009
Date Data Arrived at EDR: 06/01/2009
Date Made Active in Reports: 06/15/2009
Number of Days to Update: 14

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 06/06/2011
Next Scheduled EDR Contact: 09/19/2011
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/31/2009
Date Data Arrived at EDR: 08/31/2009
Date Made Active in Reports: 09/18/2009
Number of Days to Update: 18

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 08/29/2011
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 11/22/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/30/2010
Date Data Arrived at EDR: 03/03/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 21

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/21/2011
Number of Days to Update: 27
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/21/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 06/20/2011
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/05/2011
Date Data Arrived at EDR: 04/06/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 36
Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/18/2011
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/14/2011
Date Data Arrived at EDR: 03/15/2011
Date Made Active in Reports: 03/24/2011
Number of Days to Update: 9
Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 03/14/2011
Next Scheduled EDR Contact: 06/27/2011
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/25/2011
Date Made Active in Reports: 03/22/2011
Number of Days to Update: 25
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 04/01/2011
Date Data Arrived at EDR: 04/07/2011
Date Made Active in Reports: 05/12/2011
Number of Days to Update: 35
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/07/2011
Next Scheduled EDR Contact: 07/25/2011
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites

Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/24/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Quarterly

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 01/26/2011
Date Data Arrived at EDR: 02/08/2011
Date Made Active in Reports: 03/08/2011
Number of Days to Update: 28

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 05/02/2011
Next Scheduled EDR Contact: 08/15/2011
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2011
Date Data Arrived at EDR: 03/23/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 30

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/23/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 01/25/2011
Date Data Arrived at EDR: 02/03/2011
Date Made Active in Reports: 03/04/2011
Number of Days to Update: 29

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 04/11/2011
Next Scheduled EDR Contact: 07/11/2011
Data Release Frequency: Annually

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/26/2009
Date Made Active in Reports: 09/11/2009
Number of Days to Update: 16

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/26/2011
Next Scheduled EDR Contact: 09/05/2011
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/22/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/19/2011
Next Scheduled EDR Contact: 08/01/2011
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 05/12/2011
Date Made Active in Reports: 05/24/2011
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 05/12/2011
Next Scheduled EDR Contact: 08/22/2011
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/14/2009
Number of Days to Update: 13

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/04/2011
Next Scheduled EDR Contact: 07/06/2011
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/19/2010
Date Made Active in Reports: 08/26/2010
Number of Days to Update: 38

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/31/2011
Next Scheduled EDR Contact: 09/12/2011
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 07/06/2010
Date Made Active in Reports: 07/26/2010
Number of Days to Update: 20

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/21/2011
Next Scheduled EDR Contact: 07/04/2011
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

LANCASTER WAD
21
LANCASTER, CA 93536

TARGET PROPERTY COORDINATES

Latitude (North):	34.77860 - 34° 46' 43.0''
Longitude (West):	118.1912 - 118° 11' 28.3''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	391003.8
UTM Y (Meters):	3848940.5
Elevation:	2338 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	34118-G2 ROSAMOND, CA
Most Recent Revision:	1973

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

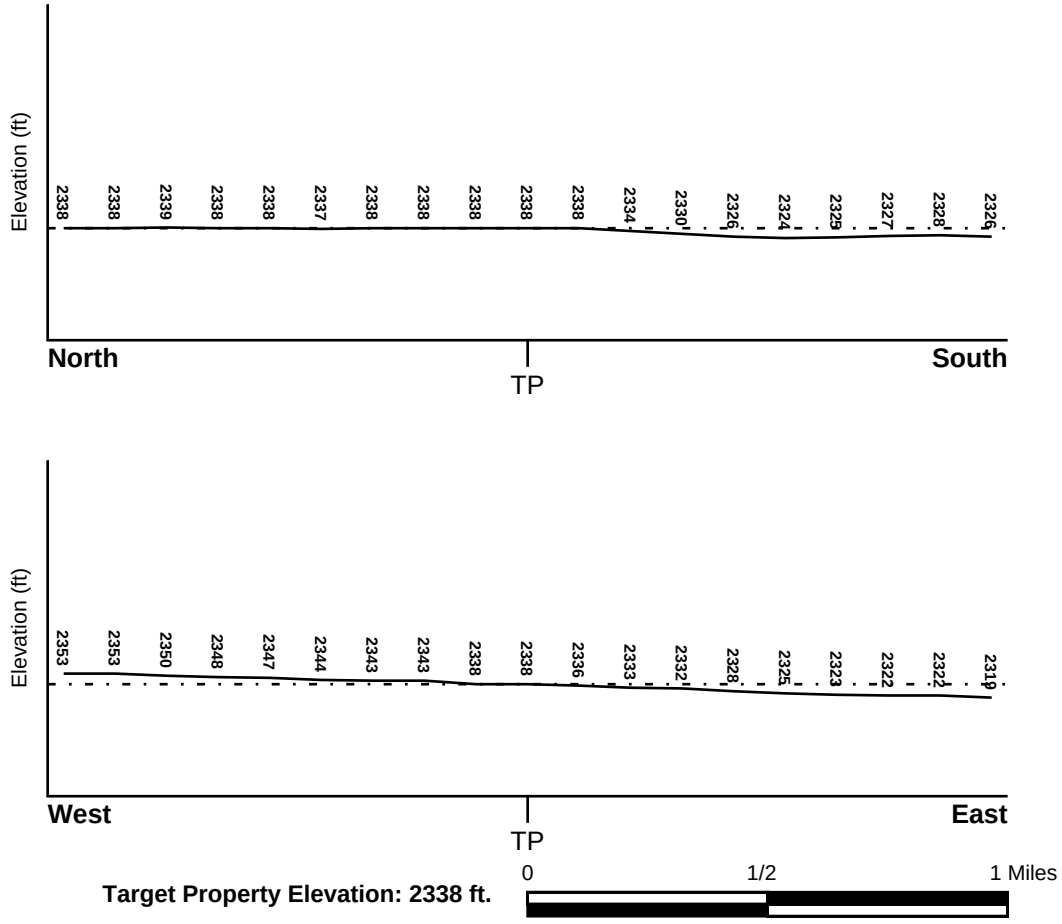
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ESE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
LOS ANGELES, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 06037C - FEMA DFIRM Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
ROSAMOND	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius: 1.25 miles
Status: Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

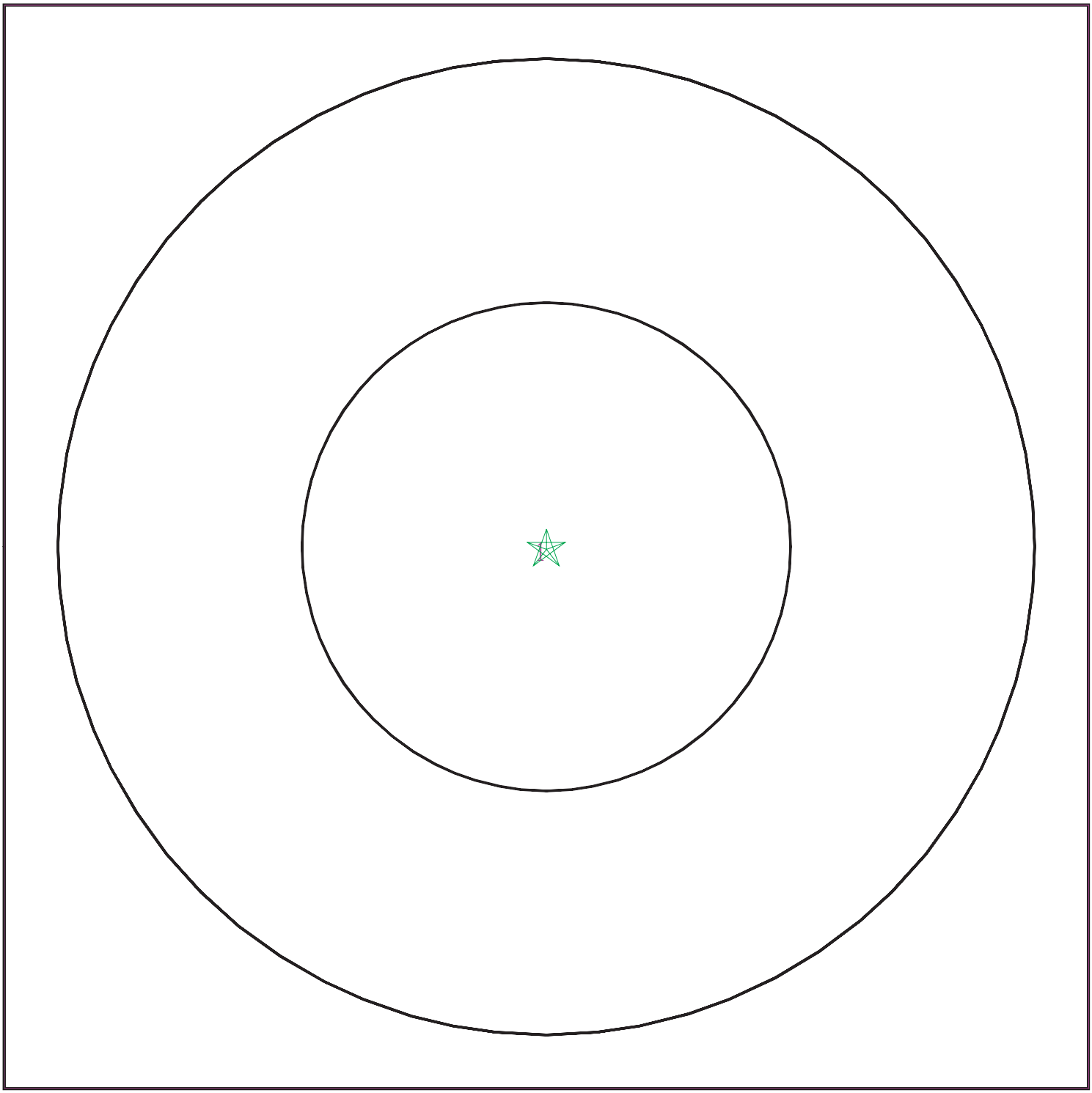
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3089700.58s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Lancaster WAD	CLIENT:	Tetra Tech Inc.
ADDRESS:	21 Lancaster CA 93536	CONTACT:	Garret Bean
LAT/LONG:	34.7786 / 118.1912	INQUIRY #:	3089700.58s
		DATE:	June 08, 2011 12:51 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Pond

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	3 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Elastic silt.	Max: 0 Min: 0	Max: 9.6 Min: 8.5
2	3 inches	24 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Elastic silt.	Max: 0 Min: 0	Max: 9.6 Min: 8.5
3	24 inches	72 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Elastic silt.	Max: 0 Min: 0	Max: 9.6 Min: 8.5

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS3158159	0 - 1/8 Mile South
A2	USGS3158004	1/8 - 1/4 Mile NW
A3	USGS3158007	1/8 - 1/4 Mile NW
B6	USGS3158168	1/4 - 1/2 Mile East
C9	USGS3158147	1/2 - 1 Mile East

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

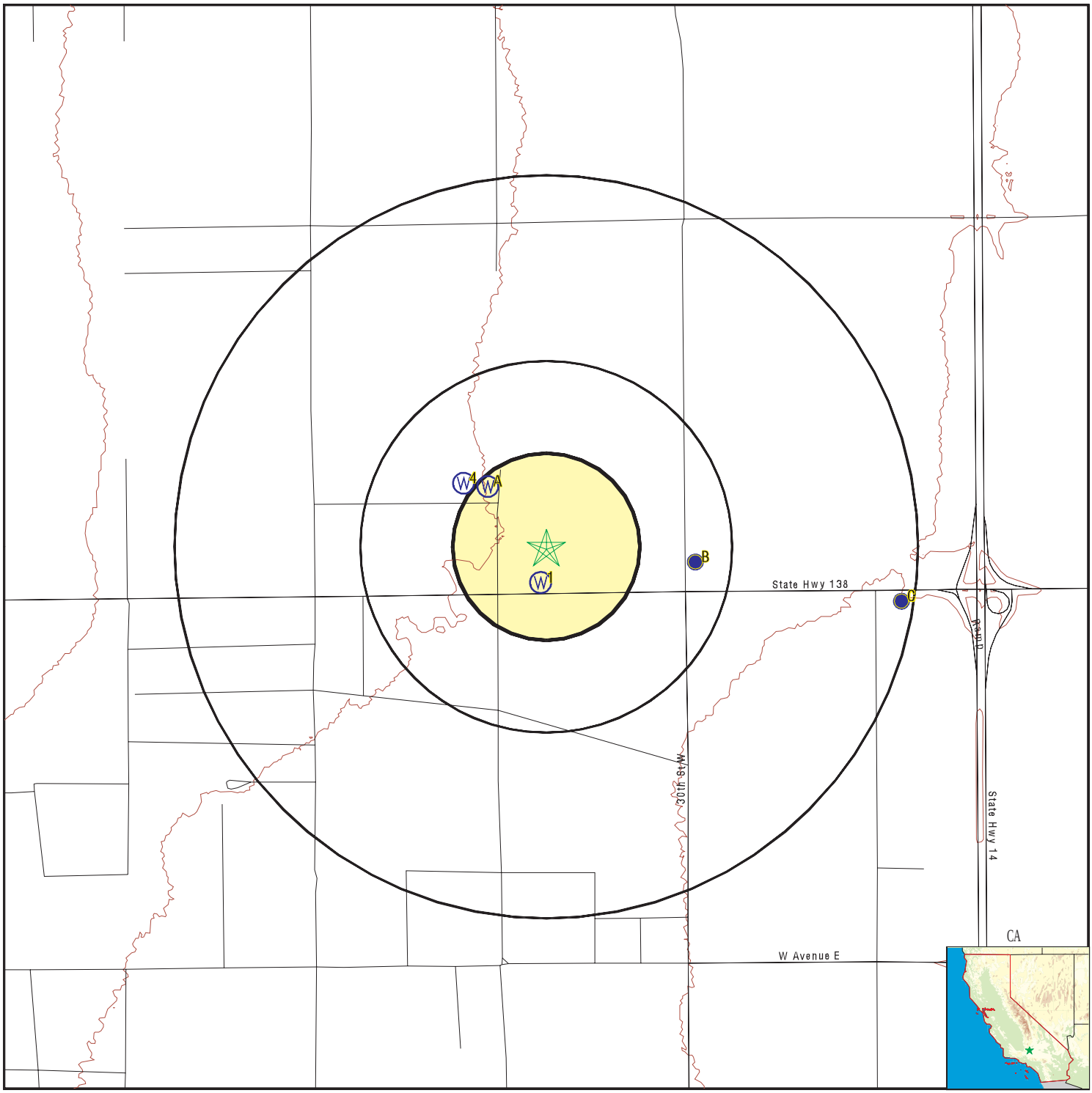
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
4	CADW40000015276	1/4 - 1/2 Mile NW
B5	CADW40000015229	1/4 - 1/2 Mile East
C7	CADW40000015200	1/2 - 1 Mile East
C8	CADW40000015207	1/2 - 1 Mile East

PHYSICAL SETTING SOURCE MAP - 3089700.58s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: Lancaster WAD	CLIENT: Tetra Tech Inc.
ADDRESS: 21 Lancaster CA 93536	CONTACT: Garret Bean
LAT/LONG: 34.7786 / 118.1912	INQUIRY #: 3089700.58s DATE: June 08, 2011 12:51 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
South
0 - 1/8 Mile
Higher | **FED USGS** | **USGS3158159**

Agency cd:	USGS	Site no:	344638118112601
Site name:	008N012W18Q001S		
Latitude:	344638	EDR Site id:	USGS3158159
Longitude:	1181126	Dec lat:	34.77720367
Dec lon:	-118.19146306	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	ROSAMOND	Map scale:	24000
Altitude:	2336.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	2.5		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19150101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	550	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

A2
NW
1/8 - 1/4 Mile
Higher | **FED USGS** | **USGS3158004**

Agency cd:	USGS	Site no:	344651118113401
Site name:	008N012W18P002S		
Latitude:	344651	EDR Site id:	USGS3158004
Longitude:	1181134	Dec lat:	34.78081462
Dec lon:	-118.19368537	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	ROSAMOND	Map scale:	24000

Altitude:	2338.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	2.5		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	1960
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

A3
NW
1/8 - 1/4 Mile
Higher

FED USGS **USGS3158007**

Agency cd:	USGS	Site no:	344652118113601
Site name:	008N012W18P001S		
Latitude:	344652	EDR Site id:	USGS3158007
Longitude:	1181136	Dec lat:	34.78109238
Dec lon:	-118.19424094	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	ROSAMOND	Map scale:	24000
Altitude:	2339.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	2.5		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19550101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data end date: 0000-00-00
Ground water data begin date: 1963-05-20
Ground water data count: 1
Water quality data begin date: 0000-00-00
Water quality data count: 0
Ground water data end date: 1963-05-20

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1963-05-20	82.57	

4
NW
1/4 - 1/2 Mile
Higher

CA WELLS **CADW40000015276**

Longitude: -118.1942
Latiude: 34.7811
Stwellno: 08N12W18P001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000015276

B5
East
1/4 - 1/2 Mile
Lower

CA WELLS **CADW40000015229**

Longitude: -118.1837
Latiude: 34.778
Stwellno: 08N12W17N001S
Districtco: 3
Welluseco: Z
Countyco: 19
Gwcode: 604400
Site id: CADW40000015229

B6
East
1/4 - 1/2 Mile
Lower

FED USGS **USGS3158168**

Agency cd: USGS
Site name: 008N012W17N001S
Latitude: 344641
Longitude: 1181058
Dec lon: -118.18368508
Coor accr: S
Dec latlong datum: NAD83
State: 06
Country: US
Location map: ROSAMOND
Site no: 344641118105801
EDR Site id: USGS3158168
Dec lat: 34.778037
Coor meth: M
Latlong datum: NAD27
District: 06
County: 037
Land net: Not Reported
Map scale: 24000

Altitude:	2327.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	2.5		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19500101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	300	Hole depth:	300
Source of depth data:	Not Reported		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1952-04-17
Water quality data end date:	1952-04-17	Water quality data count:	1
Ground water data begin date:	1951-04-20	Ground water data end date:	1951-04-20
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1951-04-20	34.07	

C7
East
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015200**

Longitude:	-118.174
Latiude:	34.7764
Stwellno:	08N12W20B002S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015200

C8
East
1/2 - 1 Mile
Lower

CA WELLS **CADW40000015207**

Longitude:	-118.1734
Latiude:	34.7767
Stwellno:	08N12W20B001S
Districtco:	3
Welluseco:	Z
Countyco:	19
Gwcode:	604400
Site id:	CADW40000015207

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

C9
East
1/2 - 1 Mile
Lower | **FED USGS** | **USGS3158147**

Agency cd:	USGS	Site no:	344635118102301
Site name:	008N012W20B002S		
Latitude:	344635	EDR Site id:	USGS3158147
Longitude:	1181023	Dec lat:	34.77637045
Dec lon:	-118.1739626	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	037
Country:	US	Land net:	Not Reported
Location map:	ROSAMOND	Map scale:	24000
Altitude:	2317		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	2.5		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	AntelopeFremont Valleys. California. Area = 3310 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	101.9	Hole depth:	Not Reported
Source of depth data:	reporting agency (generally USGS)		
Project number:	479281160		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1941-12-05	Ground water data end date:	1990-03-12
Ground water data count:	49		

Ground-water levels, Number of Measurements: 49

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1990-03-12					
Note: The measurement was discontinued.					
1989-03-23	80.99		1988-03-29	84.34	
1987-03-12	81.05		1986-03-18	80.56	
1985-03-26	71.30		1984-03-07	73.95	
1983-04-15	77.69		1982-02-10	80.02	
1981-04-14	82.24		1980-03-14	77.49	
1979-02-12	77.26		1978-03-29	74.76	
1977-03-09	78.40		1976-03-08	79.19	
1975-02-12	78.20		1974-02-12	76.51	
1973-02-14	74.48		1968-10-14	79.50	
1968-03-07	67.35		1967-10-26	68.85	
1967-03-16	65.68		1966-10-27	77.35	
1966-03-12	61.78		1965-10-19	74.50	
1965-04-15	61.05		1964-09-17	70.41	

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1964-03-03	56.26	
1962-03-01	48.77	
1961-02-28	48.11	
1960-03-09	44.30	
1958-11-04	55.32	
1957-11-18	52.69	
1956-10-17	57.10	
1953-04-13	29.16	
1951-11-15	37.10	
1944-05-02	7.66	
1942-12-26	5.9	
1963-11-05	66.19	
1961-10-24	61.89	
1960-11-17	59.23	
1959-03-09	42.48	
1958-03-10	41.27	
1957-03-08	38.78	
1954-10-19	50.19	
1952-03-03	22.62	
1951-04-20	23.45	
1943-12-04	6.65	
1941-12-05	6.2	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93536	31	1

Federal EPA Radon Zone for LOS ANGELES County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 93536

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.600 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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Lancaster WAD
21
Lancaster, CA 93536

Inquiry Number: 3089700.59
June 08, 2011

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

6/08/11

Site Name:
Lancaster WAD
21
Lancaster, CA 93536

Client Name:
Tetra Tech Inc.
17885 Von Karman Ave
Irvine, CA 92614

EDR Inquiry # 3089700.59

Contact: Garret Bean

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Tetra Tech Inc. were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Lancaster WAD
Address: 21
City, State, Zip: Lancaster, CA 93536
Cross Street:
P.O. # NA
Project: 15
Certification # 853B-4638-8535

Sanborn® Library search results
Certification # 853B-4638-8535

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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APPENDIX B-7

HYDROLOGY STUDY/DRAINAGE CONCEPT/SUSMP/LID

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APPENDIX B-7.1

PROJECT 1 NORTH LANCASTER RANCH
HYDROLOGY STUDY/DRAINAGE CONCEPT/SUSMP/LID

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HYDROLOGY STUDY/DRAINAGE CONCEPT/LID

PROJECT 1
NORTH LANCASTER RANCH

R2011-00833 (RCUP201100079)

110th STREET W. & W. AVENUE B
LANCASTER
LOS ANGELES COUNTY, CA

December 2013

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID APPROVED FOR AREA AND Q ONLY

APPROVED BY: _____ RCE NO. _____DATE_____

CHECKED BY:_____ DATE_____

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS LAND DEVELOPMENT DIVISION

Prepared for:

SILVERADO power

2 Embarcadero Center, Suite 410
San Francisco, CA 94111
(415) 692-7740

Prepared by:

TETRA TECH, INC.

17885 Von Karman, Suite 500
Irvine, CA 92614
(949) 809-5000

Under the supervision of:
Joseph E. Dietz, P.E.

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.

Joseph E. Dietz P.E. 67032 | 12.6.13 | Date | Seal

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C: HYDROLOGY MANUAL REFERENCES

D: PRE-/POST DEVELOPMENT ON-/OFF-SITE HYDROLOGIC CALCULATIONS – 2, 5, 10, 25, 50 YEAR EVENTS

E: IMPACT ANALYSIS CALCULATIONS

F: WATER QUALITY CALCULATIONS

G: DRAINAGE MAPS (ON-/OFF-SITE)

H: GEOTECHNICAL REPORT

I. INTRODUCTION

Project 1 North Lancaster Ranch is a solar power project located between 110th St. to the west, 100th St. to the east, and between W. Avenue B to the south, Avenue A to the north (see **Location Map, Appendix A**). The property is owned by Silverado Power (referred to as "applicant" for the remainder of this report). The scope of this hydrology report is to analyze the pre-development and post-development hydrological conditions (once the installation of the solar panels is complete) in order determine runoff effects on and off the site. The peak runoff calculations were developed for the 2-, 5-, 10-, 25-, and 50-year storm events. Currently, runoff from approximately 31.2 acres of offsite area enters the 237.2 acre project site from the north, creating a study watershed area of approximately 268.4 acres. Due to the elevated cross section of 110th St., the westerly portion of the watershed runoff does not make its way onto the site (see **Existing Drainage Condition, Appendix B).** The remaining off-site runoff north of the site was added into the on-site runoff areas as shown on the attached Drainage Maps (see **Appendix G**). The majority of the watershed consists of un-developed land.

II. PROJECT BACKGROUND

Due to the predominantly flat nature of the site (average 0.5% longitudinal slope), the project will involve minimal grading for construction of dirt access roads between the proposed arrays of solar panels. The project site currently drains from west to east. The post-development condition will maintain this flow path. The post-development runoff will continue to sheet flow in the pre-development condition in order to avoid disturbance to downstream drainage structures and wildlife. The construction of the solar panel arrays and other miscellaneous site development will be accounted for by increasing the site's impervious percentage from 1% to the Los Angeles County approved value of 10%. Per the LACDPW Flood Control Division, the additional amount of runoff generated by this increase in impervious surface will be collected onsite with the help of 3 reinforced elevated road sections that run north to south at various locations along the site (see **On-Site Drainage Map, Appendix G)**. The ponding water will infiltrate in about 4.4 hours (see **Water Quality Calculations, Appendix F**). Additionally, the basins will ensure that the flow rate, volume, velocity, and depth corresponding to the 50-year storm event at the property boundary will only exceed pre-development values by a negligible amount (see **Impact Analysis Calculations, Appendix E**). The placement of these basins within the first half of the site will allow flows to normalize before leaving the site.

III. EXISTING DRAINAGE CONDITION

In order to delineate the existing drainage conditions for the North Lancaster Ranch project site and its watershed, USGS and site specific topographic data were reviewed. A watershed boundary was developed for the project site (see **Off-Site Drainage Map, Appendix G)**. A site visit was conducted on June 1, 2012 by Joe Dietz, PE to verify the delineated watersheds and to take site photos of the existing drainage features. A map showing locations where the photos were taken as well as photos identifying typical site drainage conditions are attached under the **Existing Drainage Condition Appendix B** of this report.

Review of the topographic information and results of the site survey found that storm runoff generally sheet flows in an eastern direction. Flow does not seem to concentrate anywhere on the site in any naturally formed channels. There are no signs of erosion due to the presence of vegetation and soils with high infiltration rates.

A Geotechnical Report (see **Appendix H**) was prepared for the site. The report shows site soils consist of fine sandy silt along with medium to course sand. The percolation test performed shows soil infiltration rates of 7 min/in, which is equivalent to 8.57 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 1.88 in/hr.

IV. METHODOLOGY

HYDROLOGIC CALCULATIONS

To determine the watershed boundaries tributary to the project site, existing USGS and site specific topographic data were reviewed. Hydrologic Calculations for the proposed project site were performed in conformance with the Los Angeles County Hydrology Manual, dated January 2006, utilizing the Modified Rational Method TC Calculator. The Modified Rational Method was used to estimate the runoff flows for each sub-area of the watershed, which were limited to 40 acres (see **Appendix D**). The Modified Rational Method equation relates rainfall intensity, time of concentration, runoff coefficient, and drainage area size to the direct runoff from each drainage sub-area. The TC Calculator along with rainfall intensity maps from the Los Angeles County Hydrology Manual were used to model the various watersheds and determine the peak flows.

Hydrologic Soil number 120 was used as the soils group for the project site per the Los Angeles County Hydrology Manual, Map 1-H1.76 (see **Appendix C**). Times of concentration for the various sub-areas were calculated by the TC Calculator based on the approximate length and the elevation difference over that length. Lastly, peak flows from each sub-area were summed in order to achieve a total peak runoff for the entire watershed. This approach is conservative due to the fact that it yields a slightly higher peak runoff if compared to an alternative approach which analyzes all sub-areas and utilizes surface routing to generate lag times.

BASIN ROUTING CALCULATIONS

The Modified Puls Routing Method per Chapter 8 of the Los Angeles County Hydrology Manual was used to determine the development's impact on the 50-year storm event flow rates leaving the project site. The method routes the 50-year post-development hydrograph (obtained from the TC Calculator results) through the proposed infiltration basins using storage-elevation and outflow-elevation relationships, along with Continuity Equation 8.1 and Equation 8.2 in a series of time steps. The results are included within **Appendix E** of this report.

FLOOD DEPTH AND VELOCITY CALCULATIONS

To determine the development's impact on the 50-year storm event flood depth and velocity leaving the site, Bently FlowMaster V8i was used to calculate the pre-development and post-development 50-year flood depths and velocities. FlowMaster uses the Manning's Formula to calculate the normal depth and velocity for a given cross-section given information for the slope, peak flow rate, and roughness coefficient for the section. The peak flow rate from the TC Calculator was used for the pre-development condition, while the peak flow rate after basin routing was used for the post-development condition. The results are included within **Appendix E** of this report.

DEBRIS POTENTIAL CALCULATIONS

A debris production rate was calculated for the site using the Debris Production Rate figure for the Antelope Valley from Appendix B of the LACDPW Sedimentation Manual (see **Appendix C**). This rate multiplied by the square mileage of the site provides the debris potential for the site (see **Appendix G**). The site does not produce high levels of debris due to its relatively flat nature. Therefore, no debris protection will be provided for the low levels of debris produced.

V. SUMMARY OF RESULTS

Hydrologic calculations were performed for the pre-/post development conditions. Summary tables and detailed calculations for the 2-, 5-, 10-, 25-, and 50-year storm events showing drainage area size, soil type, storm frequency, flow length, slope, flow rate, burned flow rate, storm volumes, etc., are located in **Appendices D and G** of this report. The pre-development 25-year storm event (including the off-site area) yielded a clean runoff of 18.01 cfs and a storm volume of 5.76 ac-ft. The proposed use of the project site as a solar farm is not expected to significantly change the imperviousness of the site. With the addition of the solar panel arrays and other miscellaneous development, the site's impervious surface was increased to the Los Angeles County approved value of 10%. With this increase in impervious surface, the post development 25-year storm event (including the off-site area) yielded a clean runoff of 28.14 cfs and a storm volume of 8.99 ac-ft. The additional runoff of 10.13 cfs and the additional storm volume of 3.23 ac-ft represent the delta quantities which require mitigation in order for the pre- and post-development flow rate and storm volume to be the same for the 25-year storm event. The off-site and on-site clean runoffs and storm volumes from the Modified Rational Method TC Calculator are shown in Table 1, 2, and 3 below.

Table 1 – Pre/Post Development Off-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A1	2-YEAR	0.93	0.29
	5-YEAR	1.41	0.45
	10-YEAR	1.72	0.55
	25-YEAR	2.09	0.67
	50-YEAR	3.02	0.77

Table 2 – Pre Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A	2-YEAR	1.19	0.38
	5-YEAR	1.80	0.57
	10-YEAR	2.20	0.70
	25-YEAR	2.68	0.86
	50-YEAR	3.86	0.99
	MITIGATION	0.83	0.27
B	2-YEAR	1.18	0.37
	5-YEAR	1.80	0.57
	10-YEAR	2.19	0.70
	25-YEAR	2.67	0.85
	50-YEAR	3.85	0.98
	MITIGATION	0.83	0.27
C	2-YEAR	1.19	0.38
	5-YEAR	1.80	0.57
	10-YEAR	2.20	0.70
	25-YEAR	2.68	0.86
	50-YEAR	3.86	0.99
	MITIGATION	0.84	0.27
D	2-YEAR	1.18	0.37
	5-YEAR	1.79	0.57
	10-YEAR	2.19	0.69
	25-YEAR	2.67	0.85
	50-YEAR	3.84	0.98
	MITIGATION	0.83	0.27
E	2-YEAR	1.13	0.36
	5-YEAR	1.72	0.55
	10-YEAR	2.10	0.67
	25-YEAR	2.56	0.82
	50-YEAR	3.68	0.94
	MITIGATION	0.80	0.26
F	2-YEAR	1.18	0.37
	5-YEAR	1.79	0.57
	10-YEAR	2.18	0.69
	25-YEAR	2.66	0.85
	50-YEAR	3.83	0.98
	MITIGATION	0.83	0.27

Table 3 – Post Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)	ΔQ (CFS)	ΔV (AC-FT)
A	2-YEAR	1.94	0.61	0.75	0.23
	5-YEAR	2.95	0.93	1.15	0.36
	10-YEAR	3.59	1.14	1.39	0.44
	25-YEAR	4.38	1.40	1.70	0.54
	50-YEAR	5.78	1.61	1.92	0.62
	MITIGATION	1.37	0.44	0.54	0.17
B	2-YEAR	1.94	0.61	0.76	0.24
	5-YEAR	2.94	0.93	1.14	0.36
	10-YEAR	3.58	1.14	1.39	0.44
	25-YEAR	4.37	1.40	1.70	0.55
	50-YEAR	5.77	1.60	1.92	0.62
	MITIGATION	1.36	0.44	0.53	0.17
C	2-YEAR	1.94	0.62	0.75	0.24
	5-YEAR	2.95	0.93	1.15	0.36
	10-YEAR	3.60	1.14	1.40	0.44
	25-YEAR	4.39	1.40	1.71	0.54
	50-YEAR	5.79	1.61	1.93	0.62
	MITIGATION	1.37	0.44	0.53	0.17
D	2-YEAR	1.93	0.61	0.75	0.24
	5-YEAR	2.93	0.93	1.14	0.36
	10-YEAR	3.58	1.14	1.39	0.45
	25-YEAR	4.36	1.39	1.69	0.54
	50-YEAR	5.76	1.60	1.92	0.62
	MITIGATION	1.36	0.44	0.53	0.17
E	2-YEAR	1.85	0.59	0.72	0.23
	5-YEAR	2.81	0.89	1.09	0.34
	10-YEAR	3.43	1.09	1.33	0.42
	25-YEAR	4.19	1.34	1.63	0.52
	50-YEAR	5.52	1.53	1.84	0.59
	MITIGATION	1.30	0.42	0.50	0.16
F	2-YEAR	1.93	0.61	0.75	0.24
	5-YEAR	2.93	0.93	1.14	0.36
	10-YEAR	3.57	1.13	1.39	0.44
	25-YEAR	4.36	1.39	1.70	0.54
	50-YEAR	5.75	1.60	1.92	0.62
	MITIGATION	1.36	0.44	0.53	0.17

Basin routing calculations were performed to determine the post-development 50-year storm event flow rates. Calculations are included within **Appendix E** of this report. After routing through basins created by 9 inch road sections, the 50-year storm event yielded a clean runoff of 25.55 cfs, which represents a 1.5% decrease from the pre-development value of 25.94 cfs. Likewise, the post-development 50-year storm event yielded a flow volume of 7.09 ac-ft after accounting for the ΔV_{25} storage of the infiltration basins. This represents a 2.4% increase over the pre-development value of 2.92 ac-ft. This value is conservative as the proposed basins have storage greater than the ΔV_{25} (see **Appendix** F). For both cases, the post-development condition experiences a negligible change from the pre-development.

Flood depth and velocity calculations were performed for the 50-year storm event to determine the site's impact. Results are included within **Appendix E** of this report. The pre-development calculations used the peak flow results from the TC Calculator calculations, while the post-development calculations considered the peak flow rate after basin routing. The results yielded a pre-development maximum normal depth of 1 inch and a post-development maximum normal depth of 1 inch. This represents a 0% increase. Furthermore, the results yielded a pre-development velocity of 0.62 ft/s and a post-development velocity of 0.62 ft/s. This represents a 0.0% increase. For both cases, the post-development condition experiences a negligible change from the pre-development.

As discussed further in the Water Quality Calculations, the peak mitigation flow rate (Q_{PM}) of 8.12 cfs and the mitigation volume (V_M) of 2.62 ac-ft from the post-development condition represent required mitigation quantities (see **Water Quality Calculations, Appendix F**). The LID mitigation measures will be sized to account for the 25-year storm event pre-/post-development delta quantities since they exceed the mitigation quantities.

The proposed infiltration basins were sized to meet the ΔV_{25} of 3.23 ac-ft. The proposed basins will be created by 3 north to south reinforced elevated access road sections located at various locations throughout the site. The calculations resulted in a minimum road height of 4.6 inches. Since the basin routing calculations called for a minimum road height of 9 inches, a height of 9 inches governed the design. (see **Appendix E and F**). The role of the 9 inch tall road sections is to capture the ΔV_{25} and allow it to infiltrate. In doing so, the whole V_M will be infiltrated and treated by the existing soils. At capacity, additional flow will continue over the road toward the eastern part of the project site, therefore mimicking pre-development sheet flow patterns.

Due to the predominantly flat nature of the site, no points of concentration exist such as natural channels. Therefore, the 545 cubic yards of debris produced (see **Appendix G**) will be spread evenly over the 268.4 acre project site and watershed. This amounts to approximately 0.02 inches of debris depth spread evenly across the 268.4 acres. Since the debris production volume is very small, protections measures will not be implemented at the project site.

APPENDIX A:
LOCATION MAP

TETRA TECH
17885 VON KARMAN AVE., STE. 500
IRVINE, CA 92614-6213
949-809-5000

Scale:

Date: 9-5-2013

LOS ANGELES COUNTY

PROJECT 1
NORTH LANCASTER RANCH
LOCATION MAP

FIGURE A

File Location:
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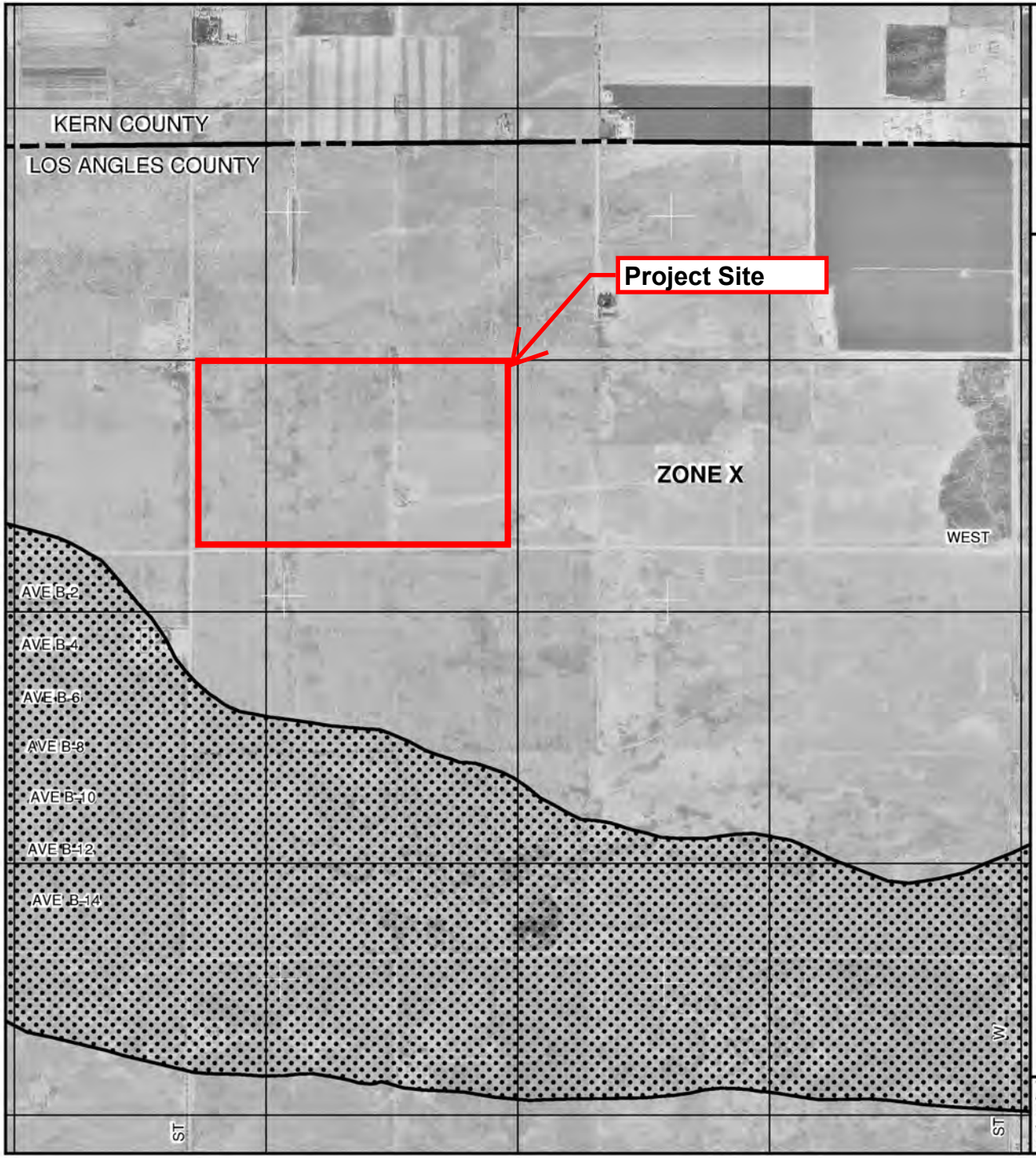
APPENDIX B:
EXISTING DRAINAGE CONDITION



MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0150F

FIRM

FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 150 OF 2350

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES COUNTY	065043	0150	F
LANCASTER, CITY OF	060672	0150	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

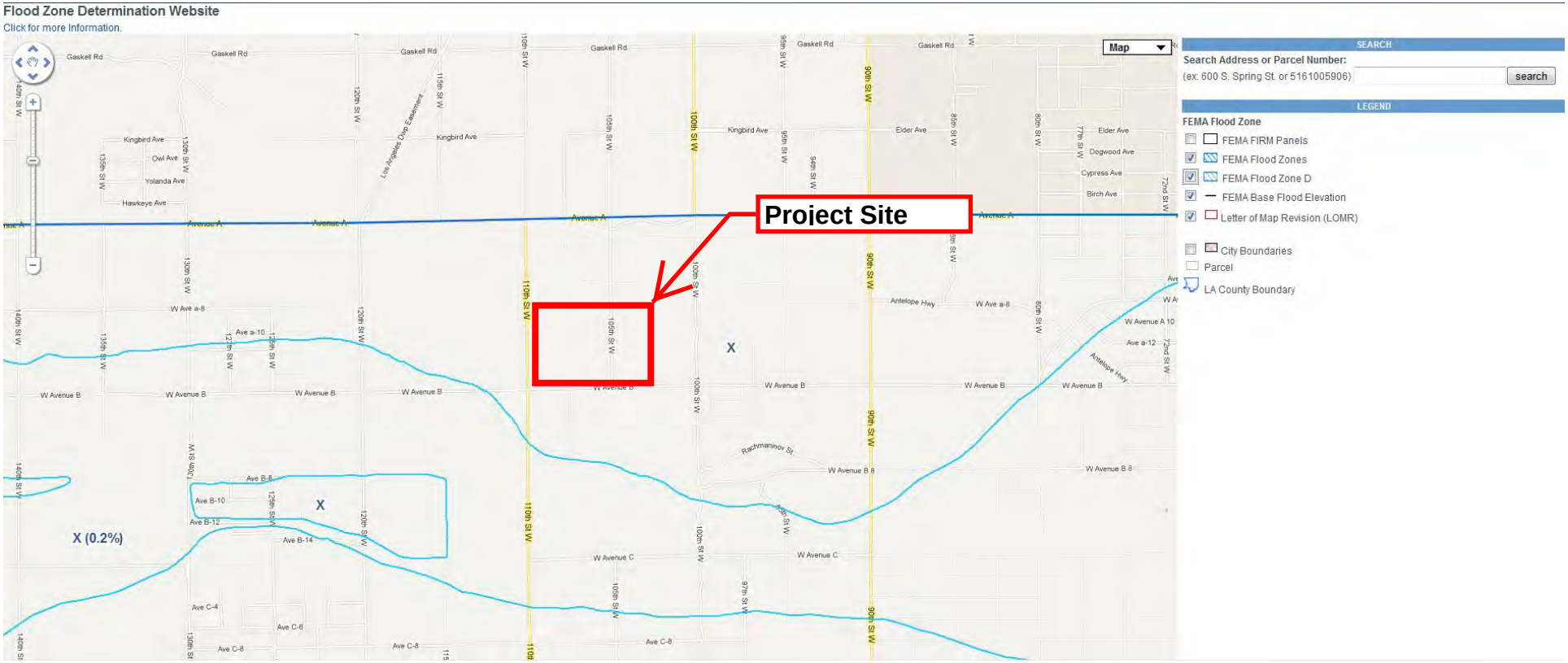
MAP NUMBER
06037C0150F

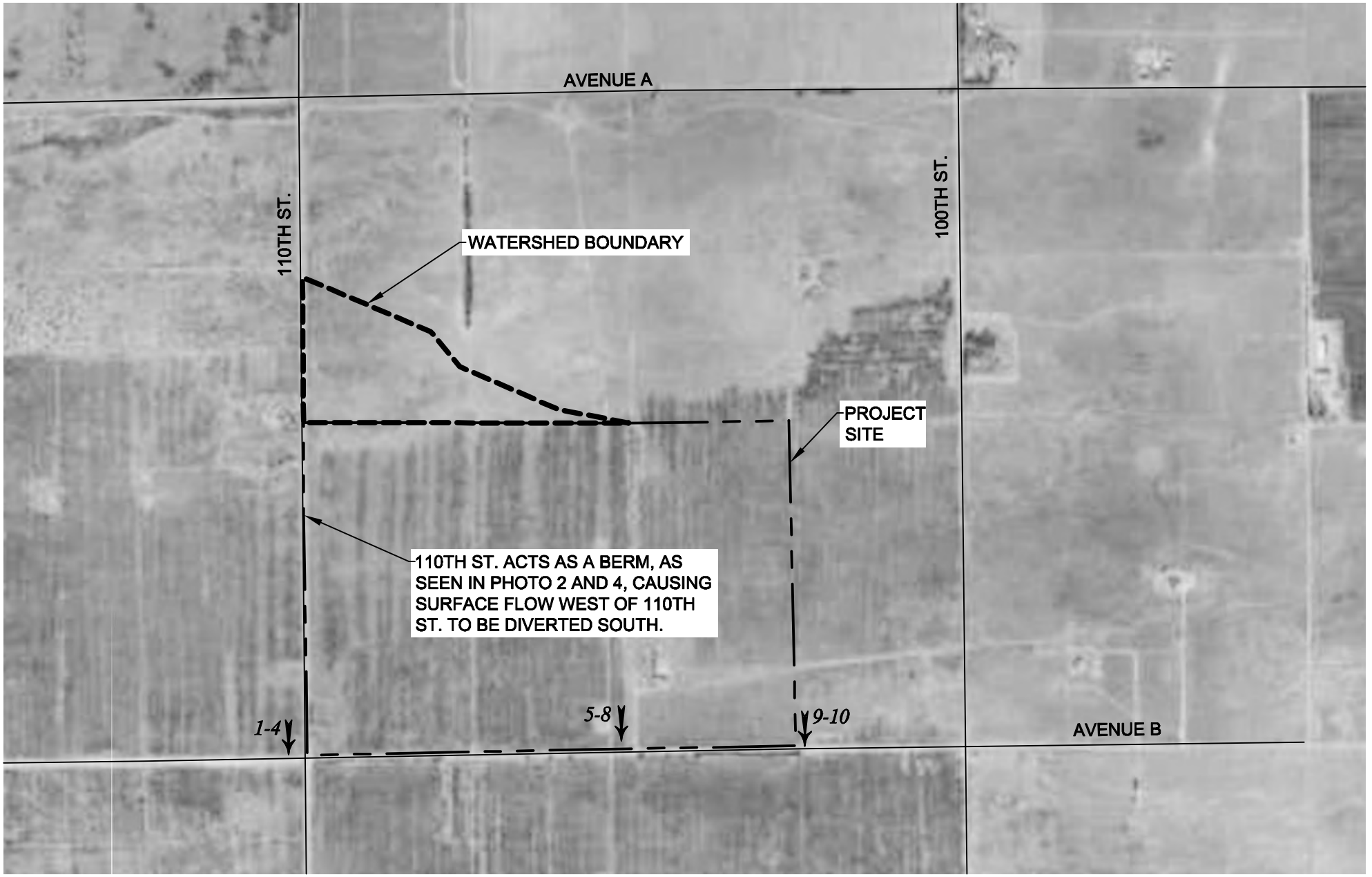
EFFECTIVE DATE
SEPTEMBER 26, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Los Angeles County Flood Control





LEGEND

PROJECT BOUNDARY

WATERSHED BOUNDARY

3,4 PHOTO ID AND LOCATION

N

TETRA TECH
17885 VON KARMAN AVE., STE. 500
IRVINE, CA 92614-6213
949-809-5000

Scale: N.T.S.

Date: 9-5-2013

LOS ANGELES COUNTY

PROJECT 1 NORTH LANCASTER RANCH
EXISTING DRAINAGE STRUCTURES
PHOTO LOCATIONS

FIGURE 1

File Location: P:\04546\135-04546-12001\SupportDocs\Calcs\Hydrology\CUP6\FINAL DESIGN\Photo Locations.dwg 12/02/2013 14:26

Photo 1 (Southward Facing):
View of 110th St. Cross-Section

Photo 2 (Northward Facing):
View of 110th St. Cross-Section

Photo 3 (North-Eastward Facing):
View of south-west portion of the watershed.
Majority of the watershed experiences a typical sheet flow condition.

Photo 4 (Eastward Facing):
View of 110th St. and Avenue B Cross-Sections

Photo 5 (Eastward Facing):
View of Avenue B Cross-Section

Photo 6 (Northward Facing):
View of south portion of the watershed.
Majority of the watershed experiences a typical sheet flow condition.

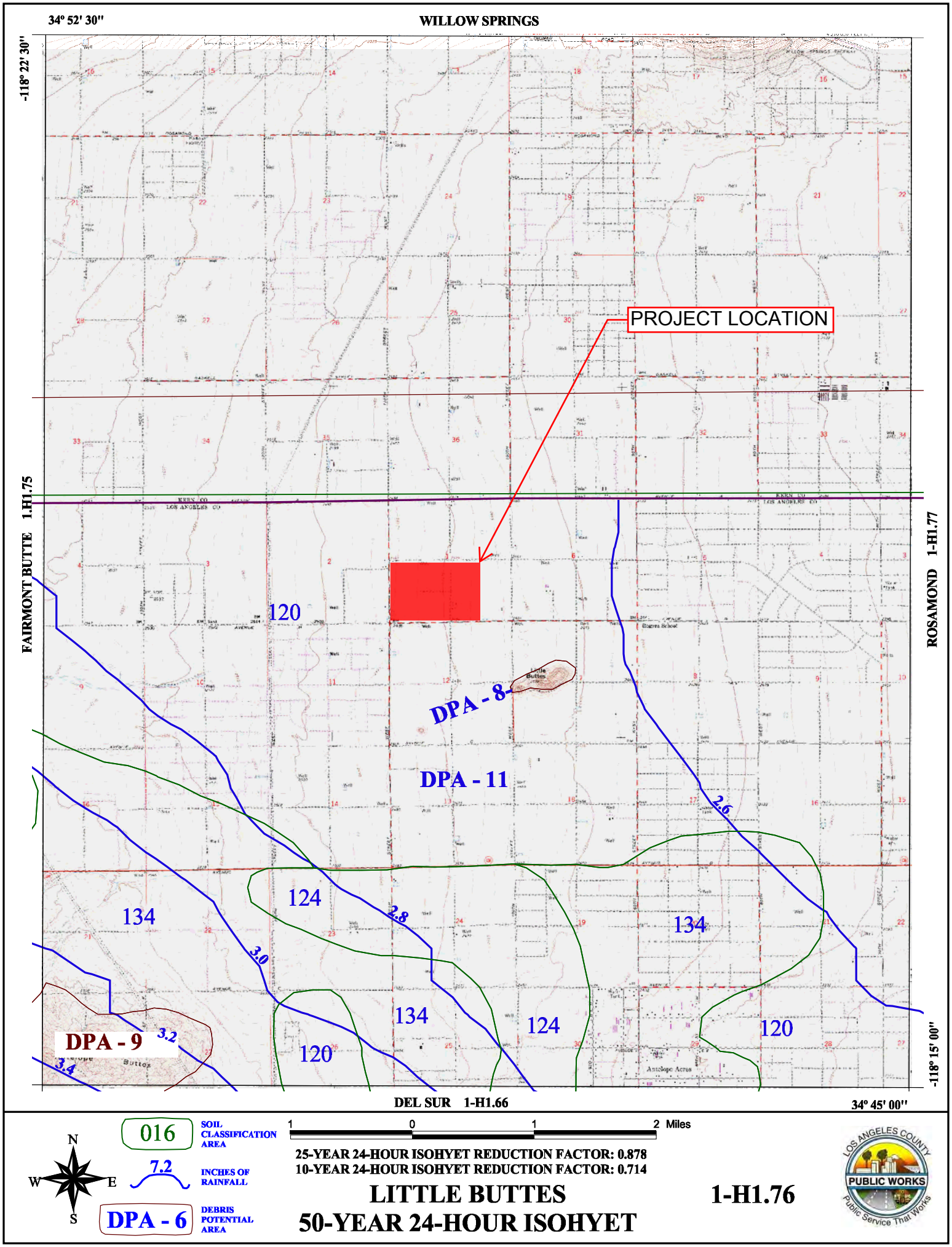
Photo 7 (Northward Facing):
View of south portion of the watershed.
Majority of the watershed experiences a typical sheet flow condition.

Photo 8 (North-Westward Facing):
View of south portion of the watershed.
Majority of the watershed experiences a typical sheet flow condition.

Photo 9 (Northward Facing):
View of south-west portion of the watershed.
Majority of the watershed experiences a typical sheet flow condition.

Photo 10 (North-Westward Facing):
View of south-west portion of the watershed.
Majority of the watershed experiences a typical sheet flow condition.

APPENDIX C:
HYDROLOGY MANUAL REFERENCES

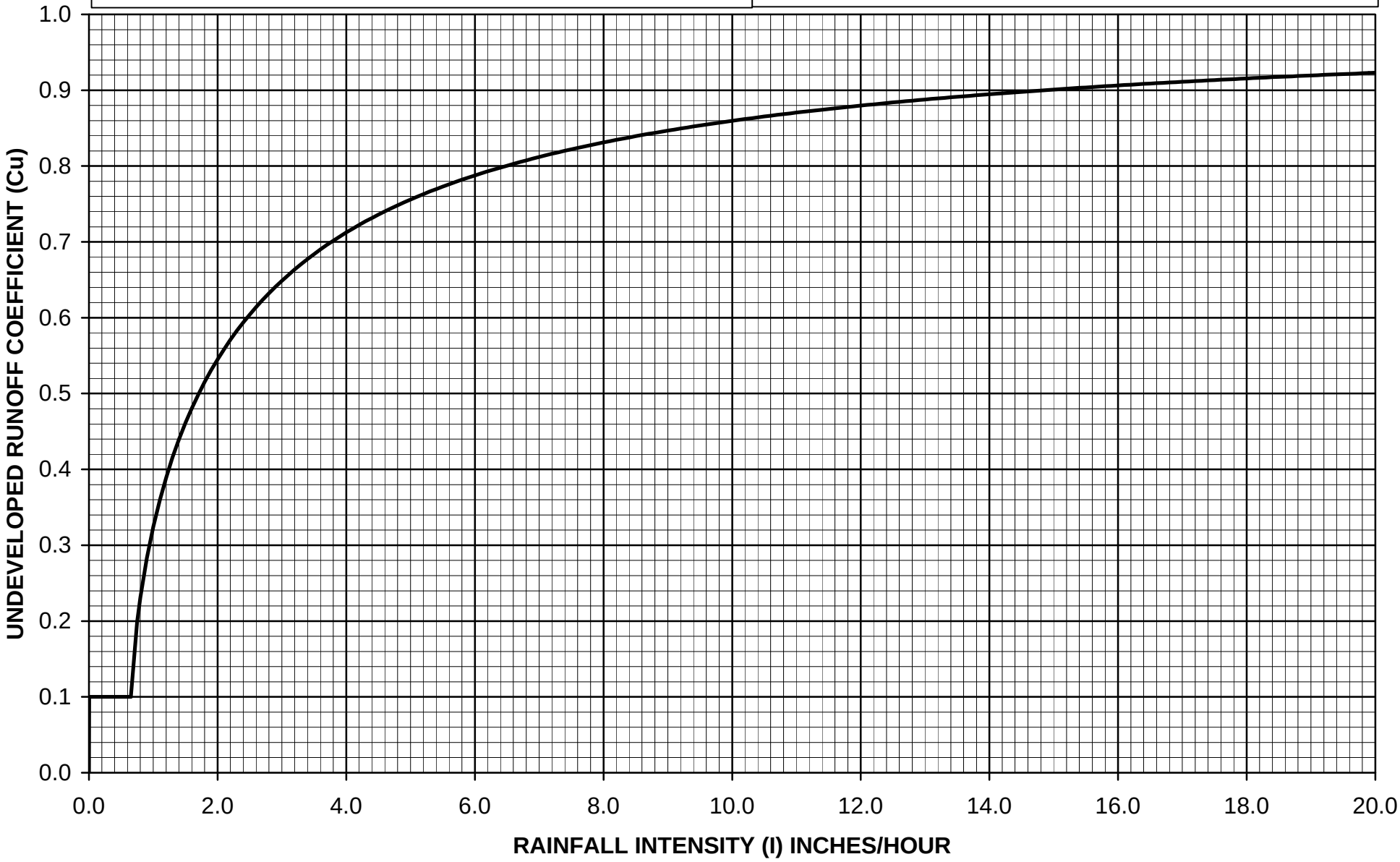

34° 52' 30"
WILLOW SPRINGS
-118° 22' 30"
PROJECT LOCATION
FAIRMONT BUTTE 1-H1.75
ROSAMOND 1-H1.77
120
DPA - 8
DPA - 11
2.6
124
134
2.8
3.0
134
124
120
DPA - 9
3.2
3.4
120
134
Little Buttes
Antelope Acres
DEL SUR 1-H1.66
34° 45' 00"
-118° 15' 00"
016
SOIL CLASSIFICATION AREA
7.2
INCHES OF RAINFALL
DPA - 6
DEBRIS POTENTIAL AREA
N
W
E
S
1 0 1 2 Miles
25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714
LITTLE BUTTES
50-YEAR 24-HOUR ISOHYET
1-H1.76
LOS ANGELES COUNTY
PUBLIC WORKS
Public Service That Works

$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

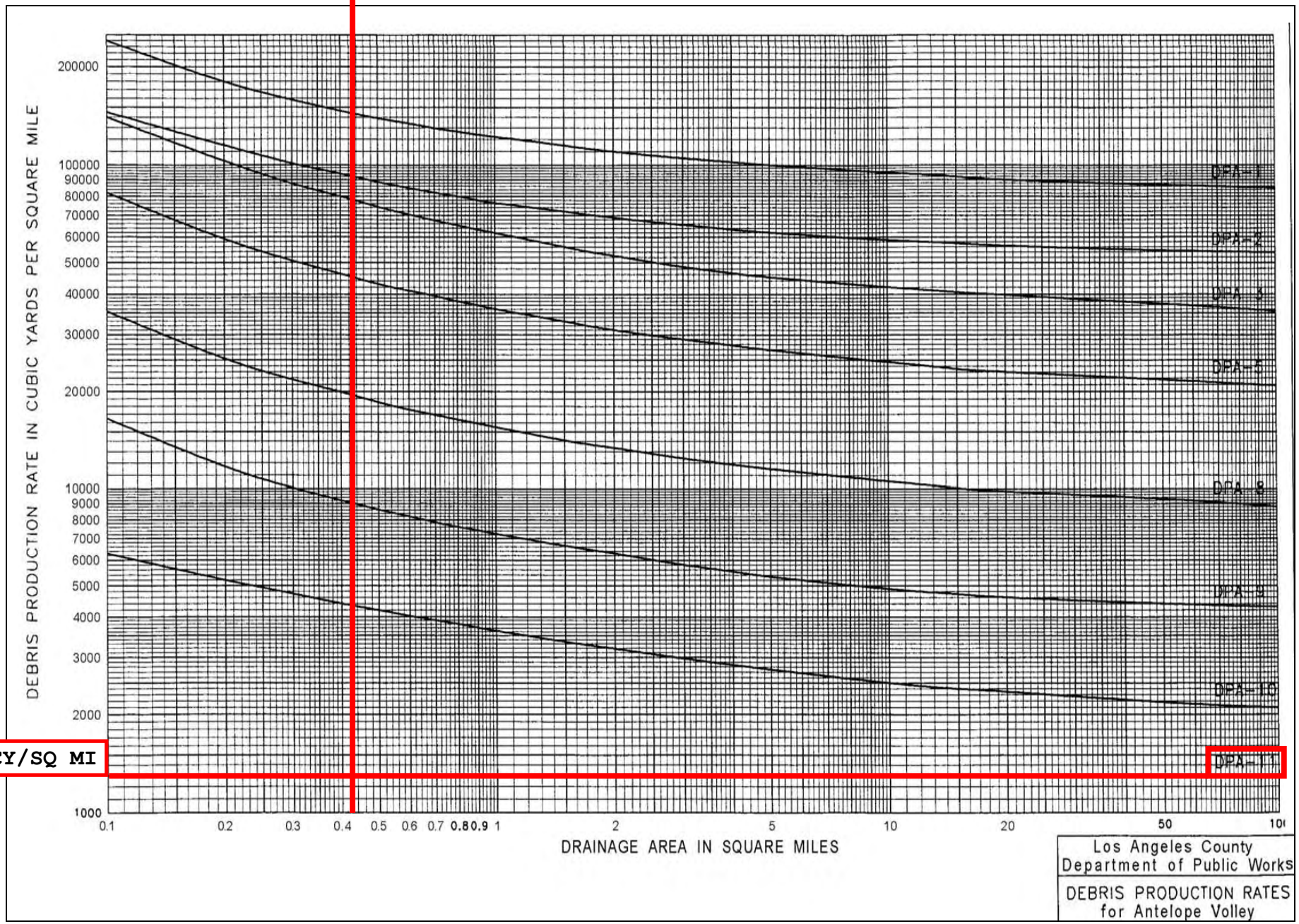
Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 120



TOTAL WATERSHED AREA 268.4 AC = 0.419 SQ. MI.



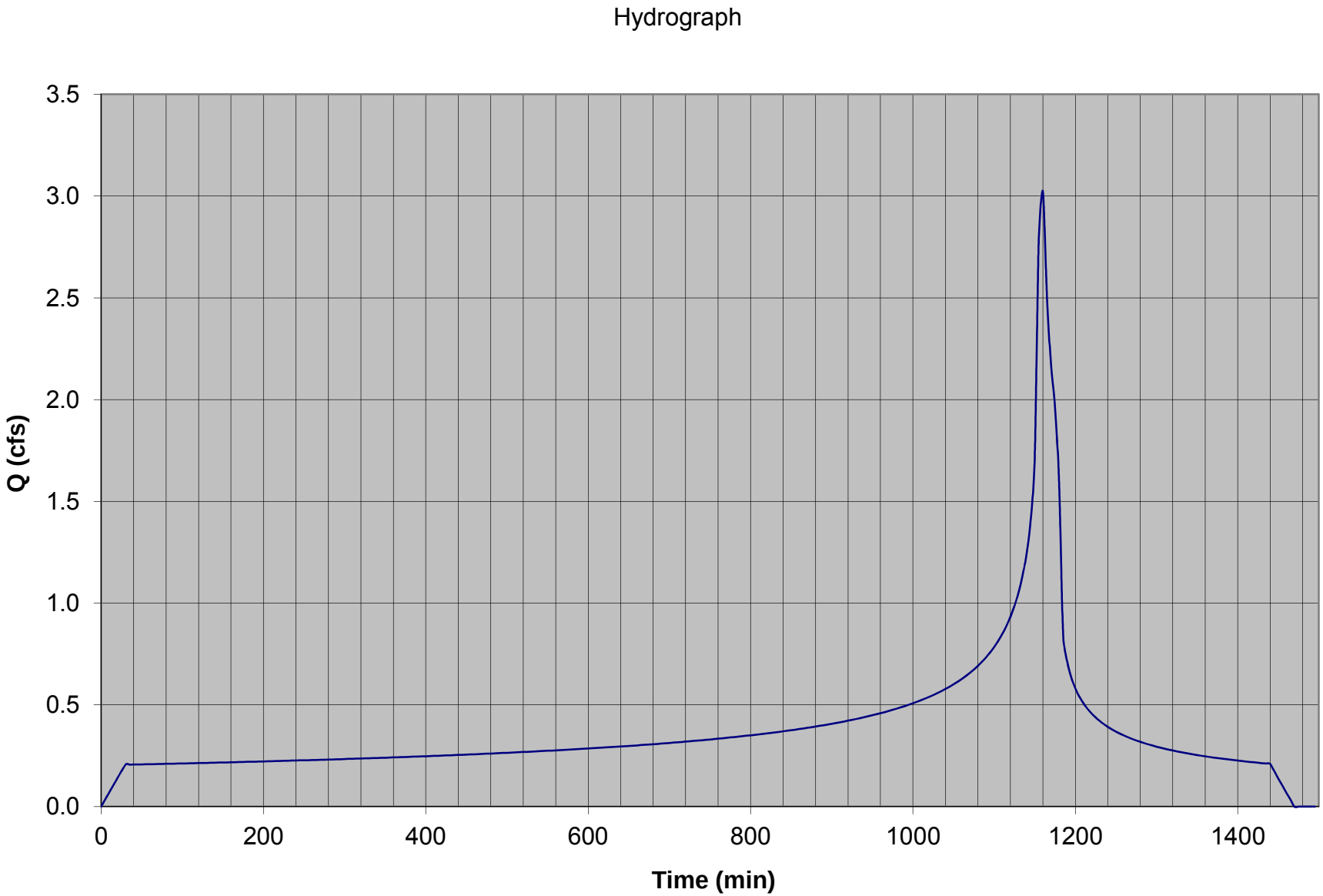
1,300 CY/SQ MI

APPENDIX D:
PRE-/POST DEVELOPMENT ON-/OFF-SITE HYDROLOGIC CALCULATIONS – 2, 5, 10, 25, 50 YEAR EVENTS

OFF-SITE PRE-/POST DEVELOPMENT HYDROLOGIC CALCULATIONS

OFF-SITE HYDROLOGY																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 1	A1	31.22	0.01	2	120	1789	0.0045	1.0	30	0.27	0.10	0.11	0.93	0.34	1.50	0.29
Project 1	A1	31.22	0.01	5	120	1789	0.0045	1.6	30	0.41	0.10	0.11	1.41	0.34	2.41	0.45
Project 1	A1	31.22	0.01	10	120	1789	0.0045	1.9	30	0.50	0.10	0.11	1.72	0.34	3.01	0.55
Project 1	A1	31.22	0.01	25	120	1789	0.0045	2.4	30	0.61	0.10	0.11	2.09	0.34	3.75	0.67
Project 1	A1	31.22	0.01	50	120	1789	0.0045	2.7	30	0.69	0.13	0.14	3.02	0.34	4.88	0.77

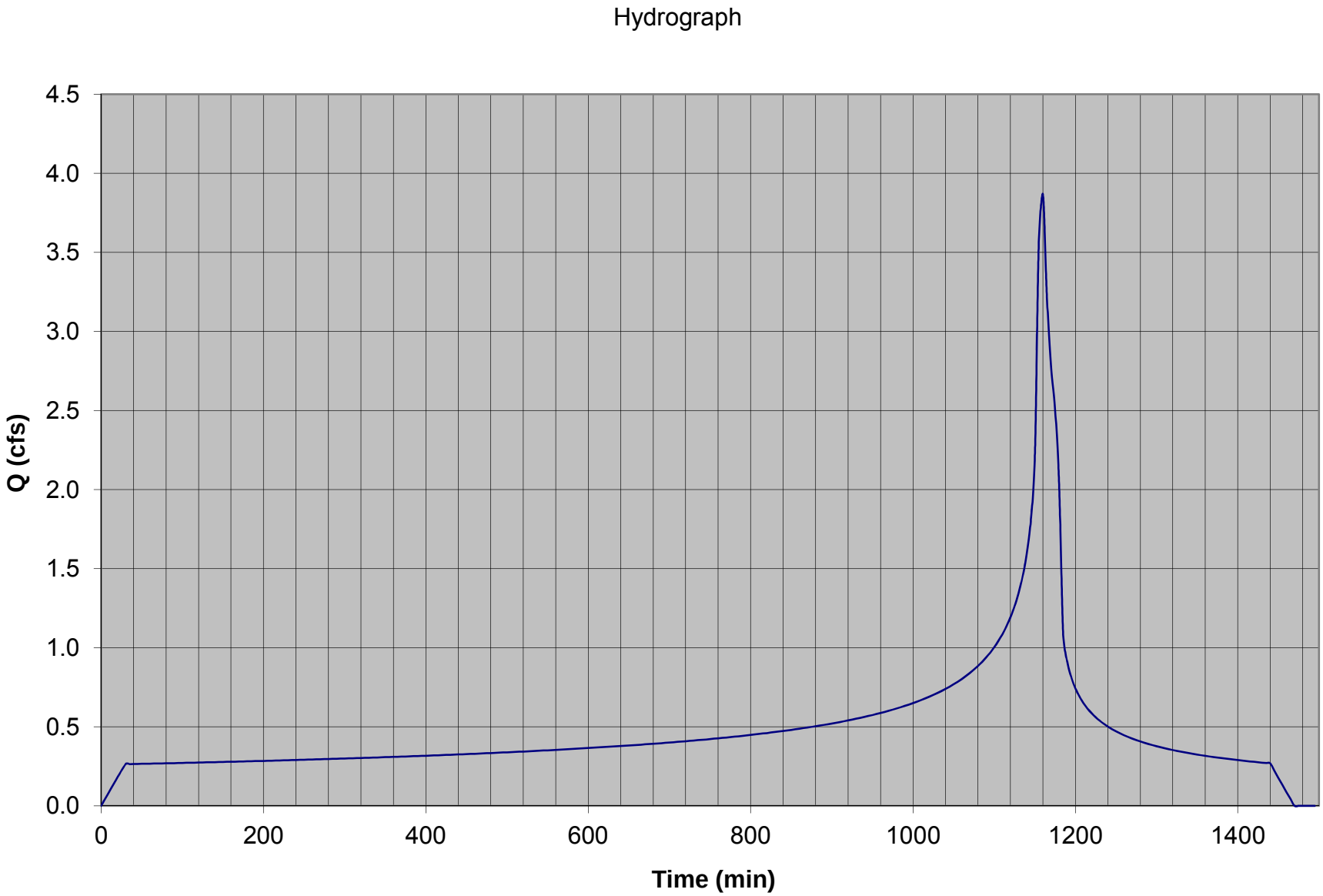
DRAINAGE AREA 1A 50-YEAR STORM EVENT



ON-SITE PRE-DEVELOPMENT HYDROLOGIC CALCULATIONS

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 1	A	39.92	0.01	2	120	678	0.0074	1.0	30	0.27	0.10	0.11	1.19	0.34	1.92	0.38
Project 1	B	39.83	0.01	2	120	683	0.0044	1.0	30	0.27	0.10	0.11	1.18	0.34	1.92	0.37
Project 1	C	39.96	0.01	2	120	707	0.0057	1.0	30	0.27	0.10	0.11	1.19	0.34	1.92	0.38
Project 1	D	39.73	0.01	2	120	704	0.0043	1.0	30	0.27	0.10	0.11	1.18	0.34	1.91	0.37
Project 1	E	38.12	0.01	2	120	641	0.0047	1.0	30	0.27	0.10	0.11	1.13	0.34	1.84	0.36
Project 1	F	39.67	0.01	2	120	657	0.0030	1.0	30	0.27	0.10	0.11	1.18	0.34	1.91	0.37
Project 1	A	39.92	0.01	5	120	678	0.0074	1.6	30	0.41	0.10	0.11	1.80	0.34	3.08	0.57
Project 1	B	39.83	0.01	5	120	683	0.0044	1.6	30	0.41	0.10	0.11	1.80	0.34	3.07	0.57
Project 1	C	39.96	0.01	5	120	707	0.0057	1.6	30	0.41	0.10	0.11	1.80	0.34	3.08	0.57
Project 1	D	39.73	0.01	5	120	704	0.0043	1.6	30	0.41	0.10	0.11	1.79	0.34	3.06	0.57
Project 1	E	38.12	0.01	5	120	641	0.0047	1.6	30	0.41	0.10	0.11	1.72	0.34	2.94	0.55
Project 1	F	39.67	0.01	5	120	657	0.0030	1.6	30	0.41	0.10	0.11	1.79	0.34	3.06	0.57
Project 1	A	39.92	0.01	10	120	678	0.0074	1.9	30	0.50	0.10	0.11	2.20	0.34	3.85	0.70
Project 1	B	39.83	0.01	10	120	683	0.0044	1.9	30	0.50	0.10	0.11	2.19	0.34	3.84	0.70
Project 1	C	39.96	0.01	10	120	707	0.0057	1.9	30	0.50	0.10	0.11	2.20	0.34	3.85	0.70
Project 1	D	39.73	0.01	10	120	704	0.0043	1.9	30	0.50	0.10	0.11	2.19	0.34	3.83	0.69
Project 1	E	38.12	0.01	10	120	641	0.0047	1.9	30	0.50	0.10	0.11	2.10	0.34	3.67	0.67
Project 1	F	39.67	0.01	10	120	657	0.0030	1.9	30	0.50	0.10	0.11	2.18	0.34	3.82	0.69
Project 1	A	39.92	0.01	25	120	678	0.0074	2.4	30	0.61	0.10	0.11	2.68	0.34	4.80	0.86
Project 1	B	39.83	0.01	25	120	683	0.0044	2.4	30	0.61	0.10	0.11	2.67	0.34	4.79	0.85
Project 1	C	39.96	0.01	25	120	707	0.0057	2.4	30	0.61	0.10	0.11	2.68	0.34	4.80	0.86
Project 1	D	39.73	0.01	25	120	704	0.0043	2.4	30	0.61	0.10	0.11	2.67	0.34	4.78	0.85
Project 1	E	38.12	0.01	25	120	641	0.0047	2.4	30	0.61	0.10	0.11	2.56	0.34	4.58	0.82
Project 1	F	39.67	0.01	25	120	657	0.0030	2.4	30	0.61	0.10	0.11	2.66	0.34	4.77	0.85
Project 1	A	39.92	0.01	50	120	678	0.0074	2.7	30	0.69	0.13	0.14	3.86	0.34	6.24	0.99
Project 1	B	39.83	0.01	50	120	683	0.0044	2.7	30	0.69	0.13	0.14	3.85	0.34	6.23	0.98
Project 1	C	39.96	0.01	50	120	707	0.0057	2.7	30	0.69	0.13	0.14	3.86	0.34	6.25	0.99
Project 1	D	39.73	0.01	50	120	704	0.0043	2.7	30	0.69	0.13	0.14	3.84	0.34	6.21	0.98
Project 1	E	38.12	0.01	50	120	641	0.0047	2.7	30	0.69	0.13	0.14	3.68	0.34	5.96	0.94
Project 1	F	39.67	0.01	50	120	657	0.0030	2.7	30	0.69	0.13	0.14	3.83	0.34	6.21	0.98
Project 1	A	39.92	0.01	MIT.	120	678	0.0074	0.75	30	0.19	0.10	0.11	0.83	0.34	1.29	0.27
Project 1	B	39.83	0.01	MIT.	120	683	0.0044	0.75	30	0.19	0.10	0.11	0.83	0.34	1.29	0.27
Project 1	C	39.96	0.01	MIT.	120	707	0.0057	0.75	30	0.19	0.10	0.11	0.84	0.34	1.29	0.27
Project 1	D	39.73	0.01	MIT.	120	704	0.0043	0.75	30	0.19	0.10	0.11	0.83	0.34	1.28	0.27
Project 1	E	38.12	0.01	MIT.	120	641	0.0047	0.75	30	0.19	0.10	0.11	0.80	0.34	1.23	0.26
Project 1	F	39.67	0.01	MIT.	120	657	0.0030	0.75	30	0.19	0.10	0.11	0.83	0.34	1.28	0.27

DRAINAGE AREA A 50-YEAR STORM EVENT



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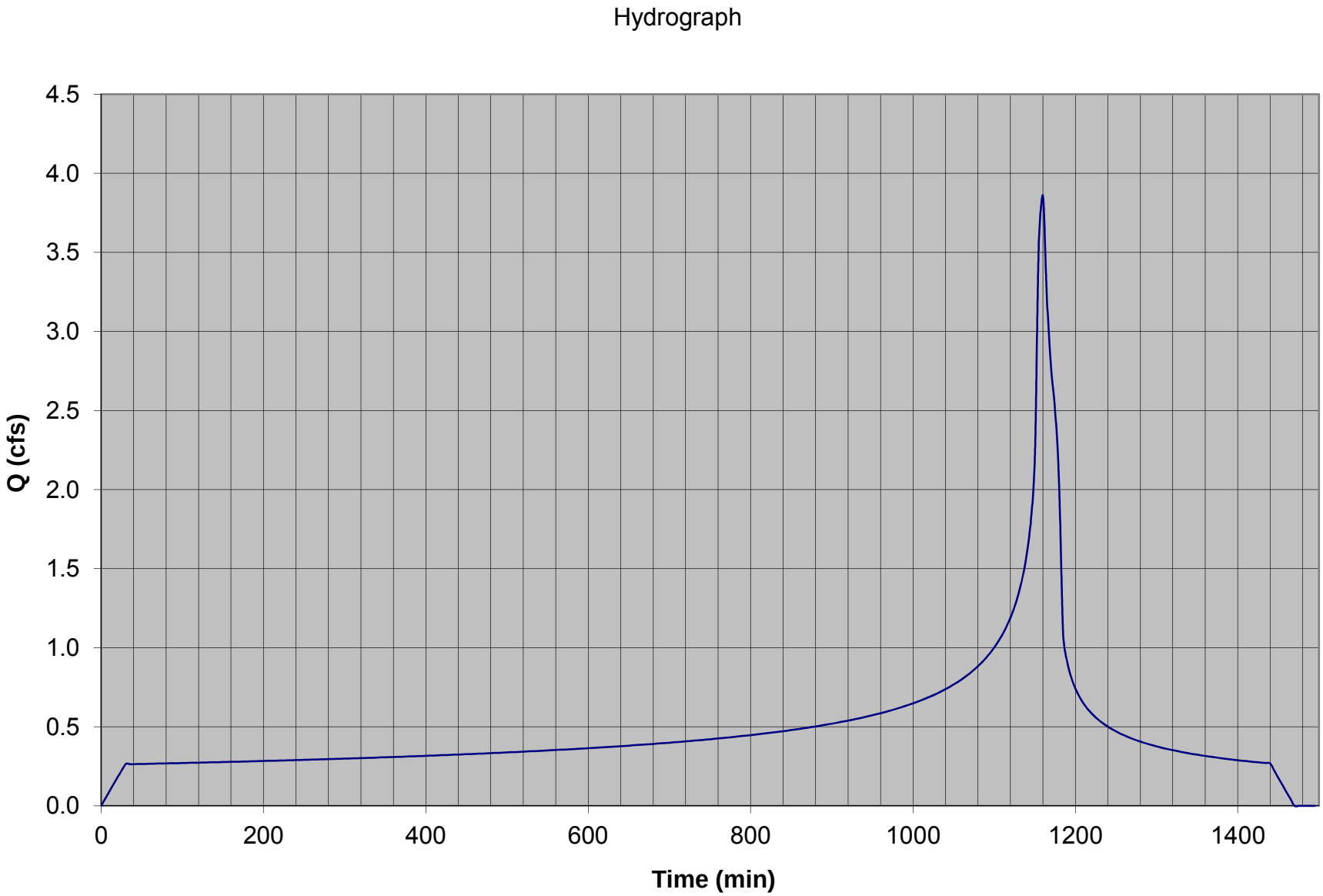
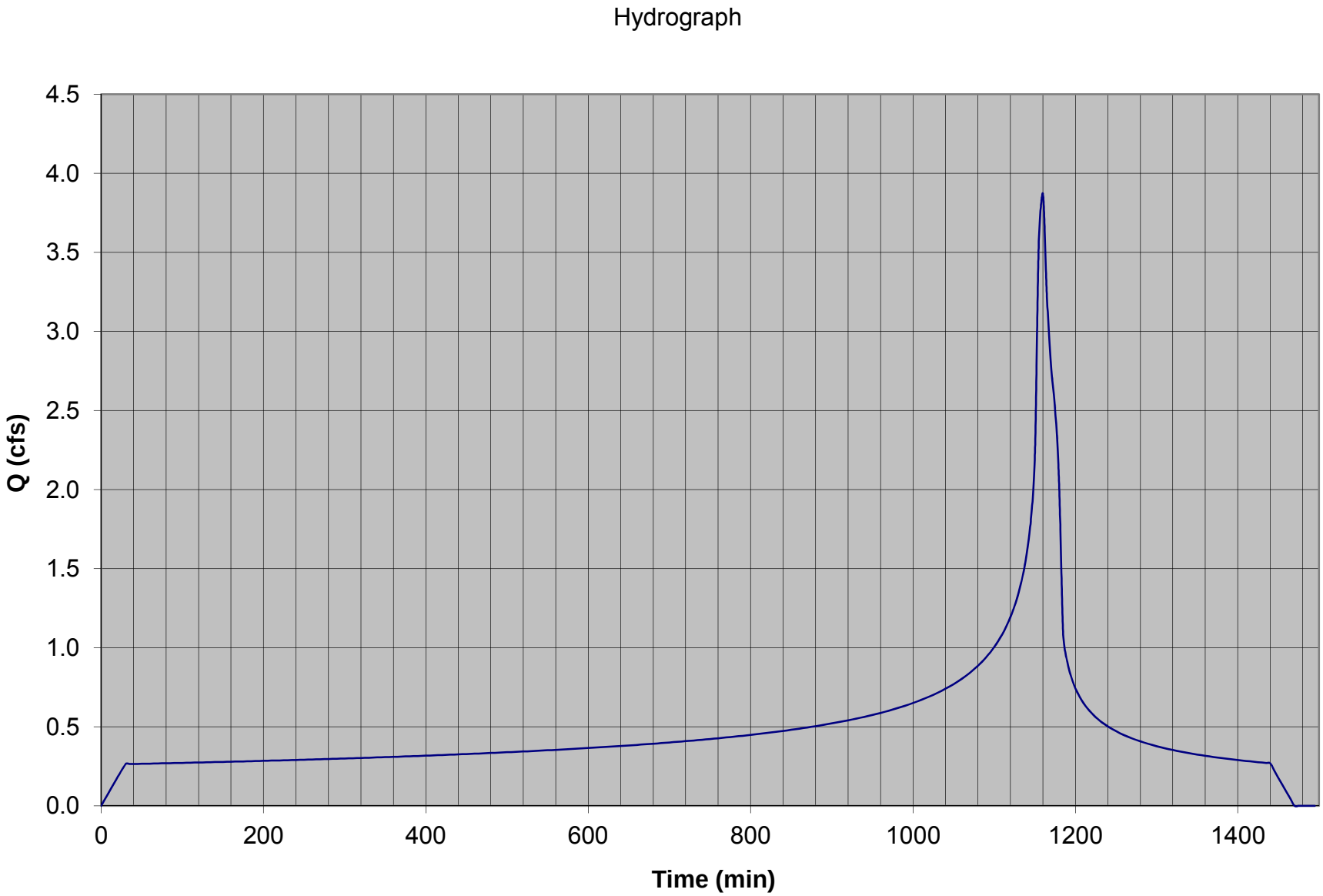
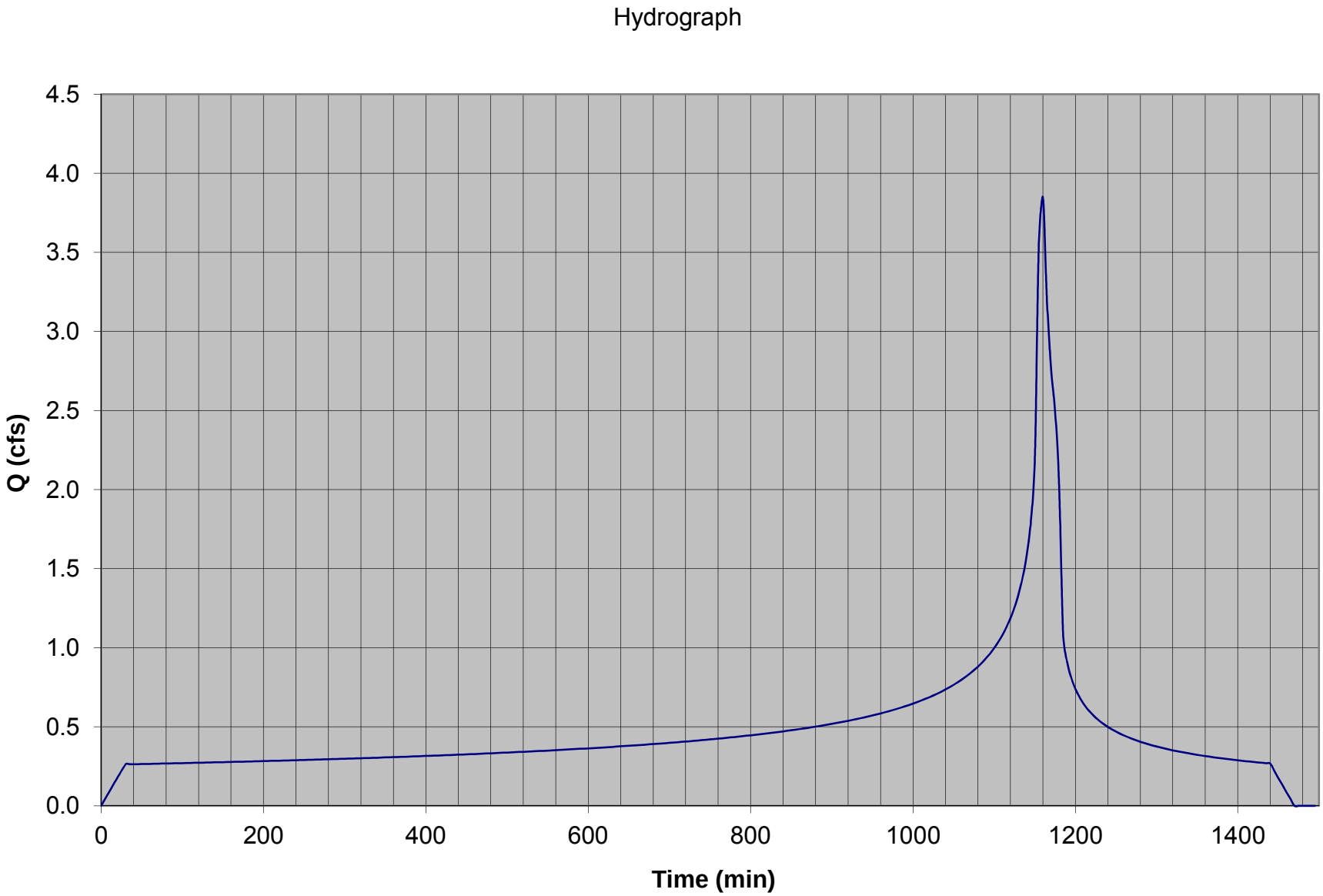


DRAINAGE AREA C 50-YEAR STORM EVENT



DRAINAGE AREA D 50-YEAR STORM EVENT



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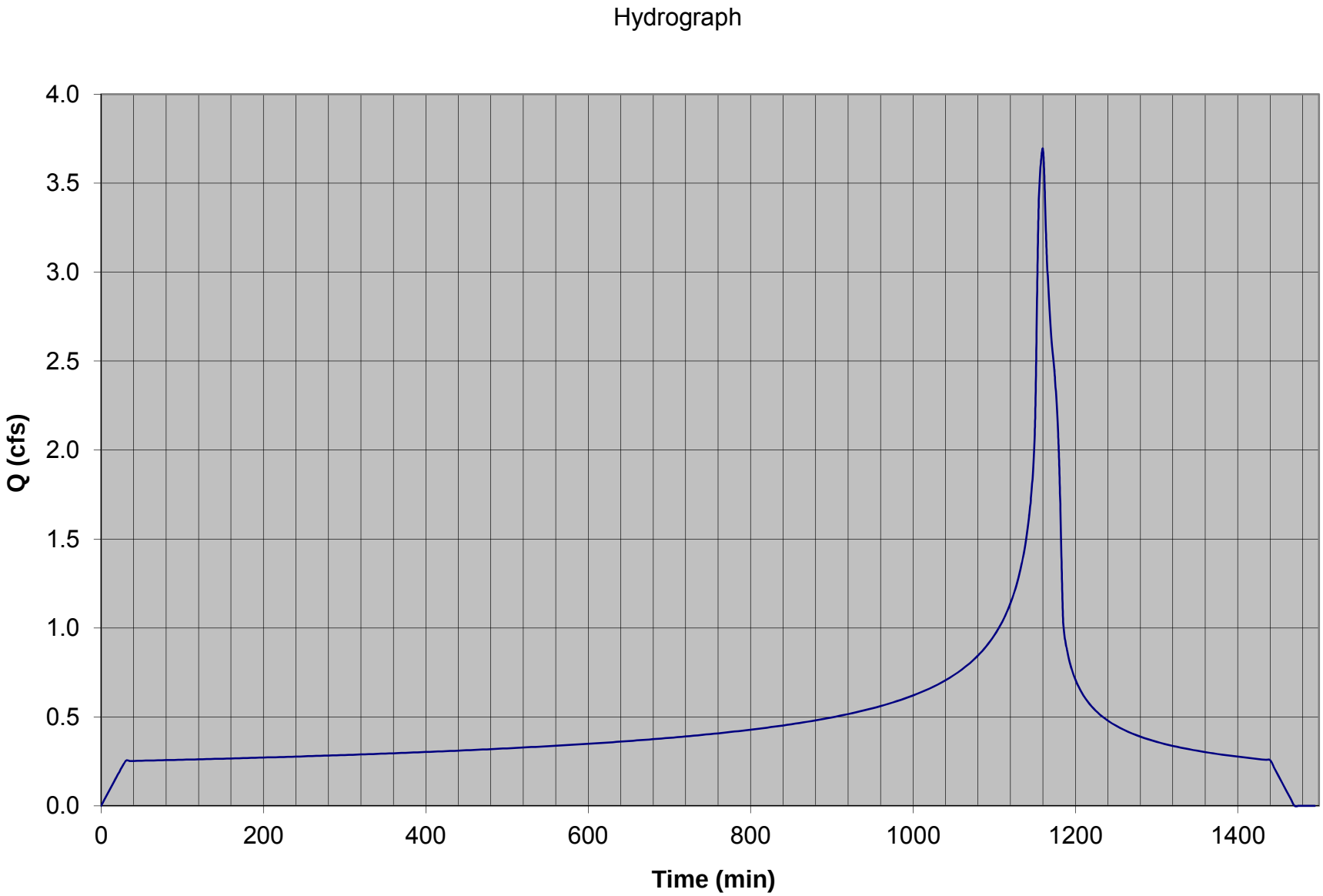

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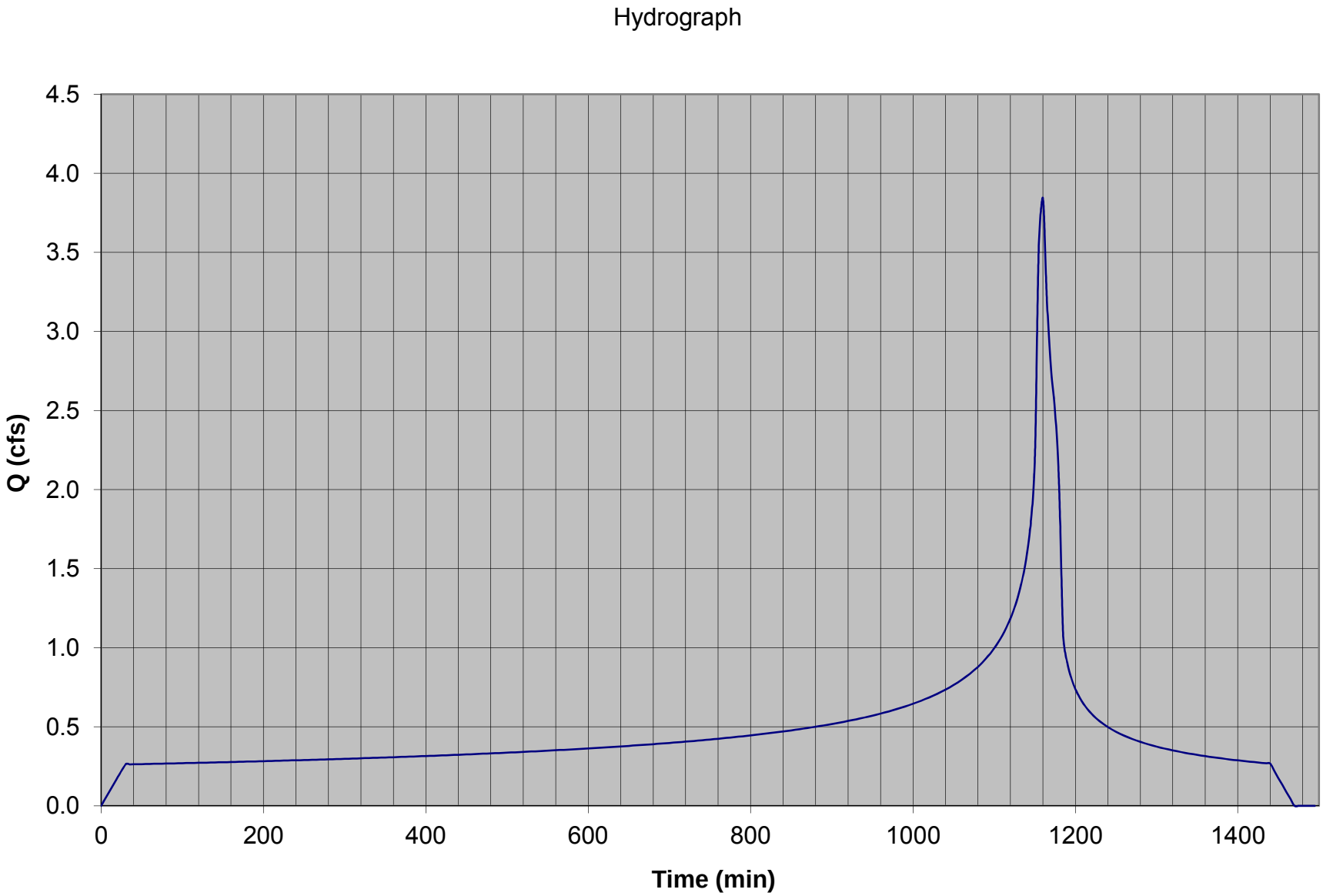
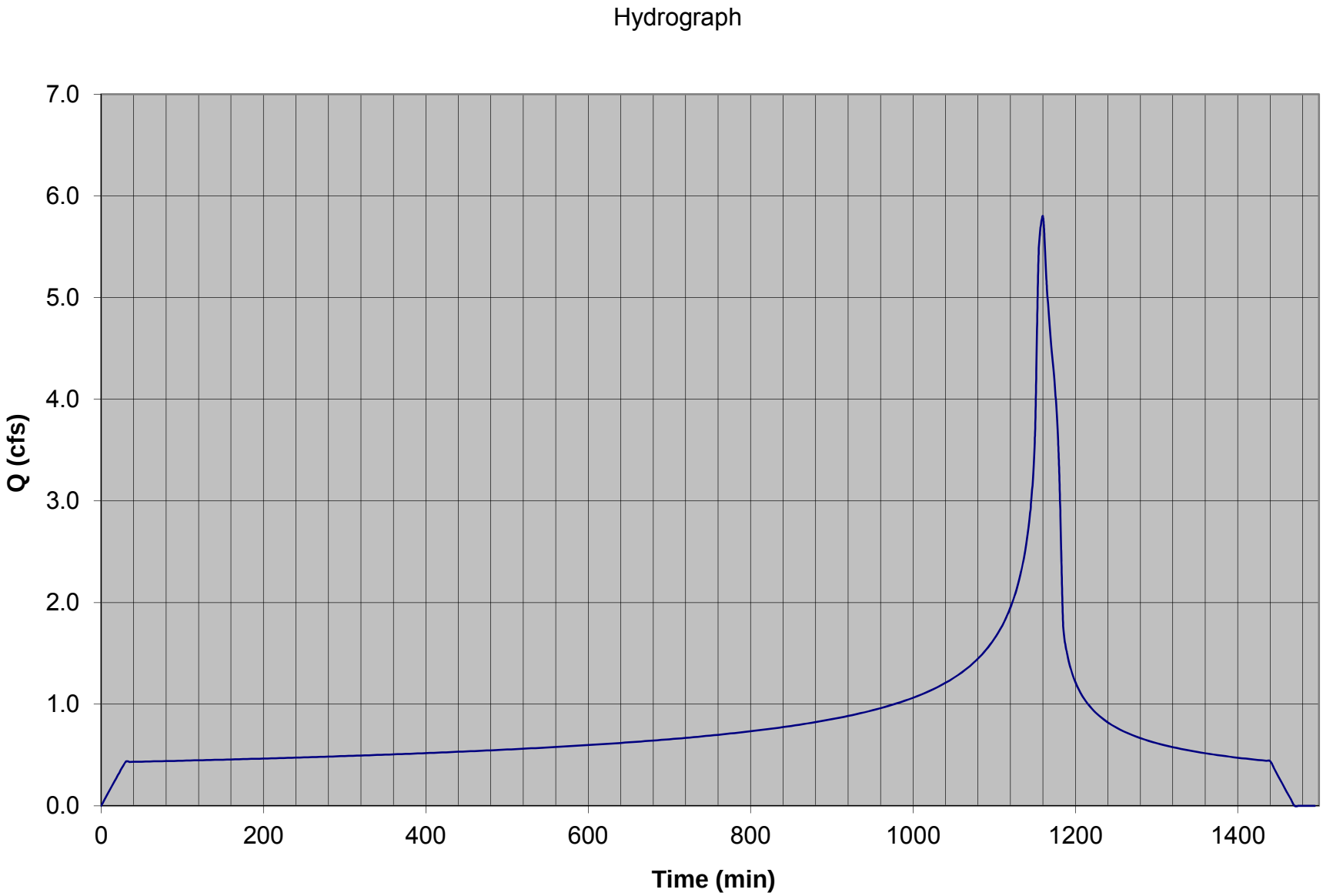


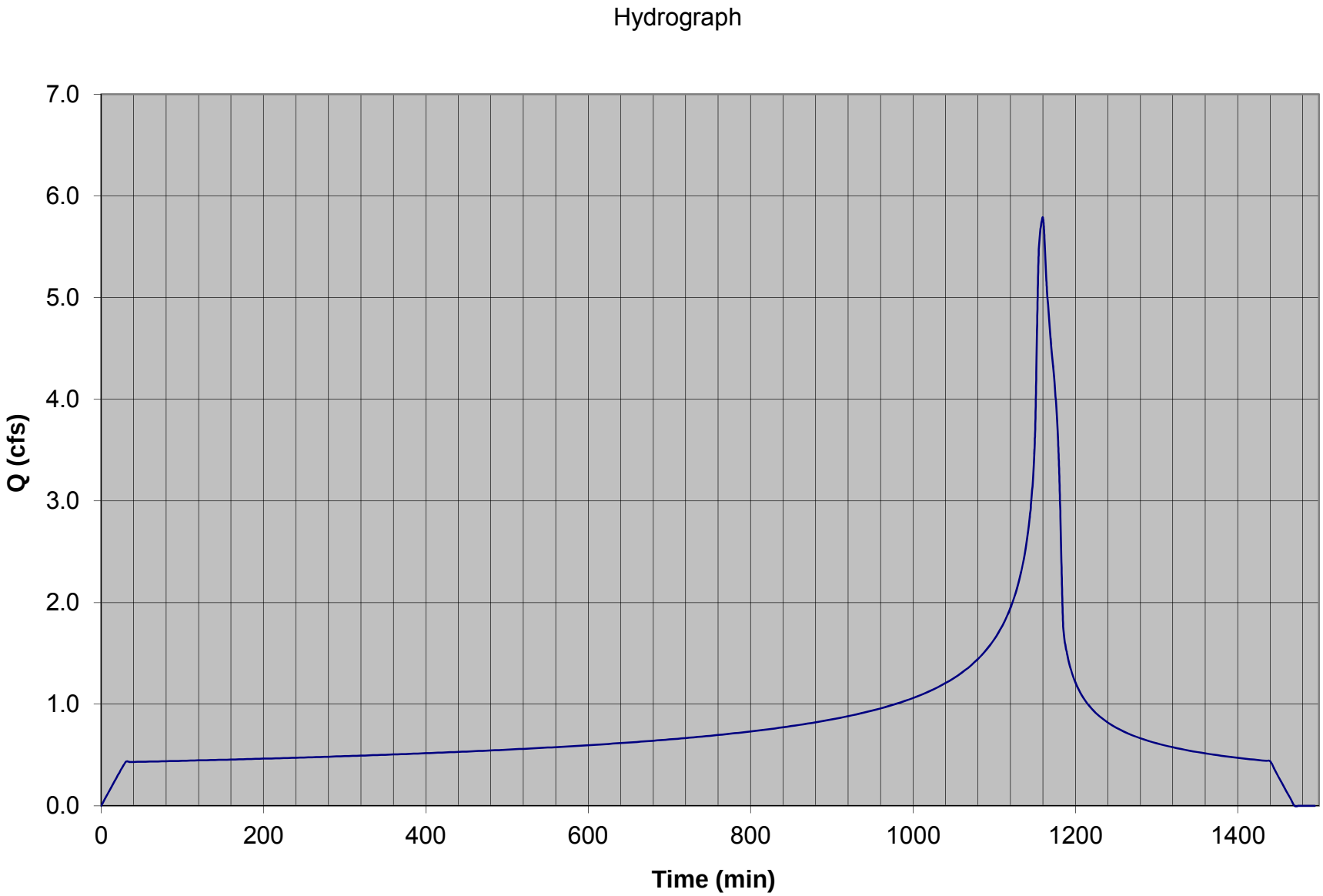
ON-SITE POST DEVELOPMENT HYDROLOGIC CALCULATIONS

ON-SITE HYDROLOGY (POST-DEVELOPMENT)																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 1	A	39.92	0.1	2	120	678	0.0074	1.0	30	0.27	0.10	0.18	1.94	0.34	2.61	0.61
Project 1	B	39.83	0.1	2	120	683	0.0044	1.0	30	0.27	0.10	0.18	1.94	0.34	2.61	0.61
Project 1	C	39.96	0.1	2	120	707	0.0057	1.0	30	0.27	0.10	0.18	1.94	0.34	2.61	0.62
Project 1	D	39.73	0.1	2	120	704	0.0043	1.0	30	0.27	0.10	0.18	1.93	0.34	2.60	0.61
Project 1	E	38.12	0.1	2	120	641	0.0047	1.0	30	0.27	0.10	0.18	1.85	0.34	2.49	0.59
Project 1	F	39.67	0.1	2	120	657	0.0030	1.0	30	0.27	0.10	0.18	1.93	0.34	2.60	0.61
Project 1	A	39.92	0.1	5	120	678	0.0074	1.6	30	0.41	0.10	0.18	2.95	0.34	4.11	0.93
Project 1	B	39.83	0.1	5	120	683	0.0044	1.6	30	0.41	0.10	0.18	2.94	0.34	4.10	0.93
Project 1	C	39.96	0.1	5	120	707	0.0057	1.6	30	0.41	0.10	0.18	2.95	0.34	4.12	0.93
Project 1	D	39.73	0.1	5	120	704	0.0043	1.6	30	0.41	0.10	0.18	2.93	0.34	4.09	0.93
Project 1	E	38.12	0.1	5	120	641	0.0047	1.6	30	0.41	0.10	0.18	2.81	0.34	3.93	0.89
Project 1	F	39.67	0.1	5	120	657	0.0030	1.6	30	0.41	0.10	0.18	2.93	0.34	4.09	0.93
Project 1	A	39.92	0.1	10	120	678	0.0074	1.9	30	0.50	0.10	0.18	3.59	0.34	5.10	1.14
Project 1	B	39.83	0.1	10	120	683	0.0044	1.9	30	0.50	0.10	0.18	3.58	0.34	5.08	1.14
Project 1	C	39.96	0.1	10	120	707	0.0057	1.9	30	0.50	0.10	0.18	3.60	0.34	5.10	1.14
Project 1	D	39.73	0.1	10	120	704	0.0043	1.9	30	0.50	0.10	0.18	3.58	0.34	5.07	1.14
Project 1	E	38.12	0.1	10	120	641	0.0047	1.9	30	0.50	0.10	0.18	3.43	0.34	4.87	1.09
Project 1	F	39.67	0.1	10	120	657	0.0030	1.9	30	0.50	0.10	0.18	3.57	0.34	5.06	1.13
Project 1	A	39.92	0.1	25	120	678	0.0074	2.4	30	0.61	0.10	0.18	4.38	0.34	6.31	1.40
Project 1	B	39.83	0.1	25	120	683	0.0044	2.4	30	0.61	0.10	0.18	4.37	0.34	6.30	1.40
Project 1	C	39.96	0.1	25	120	707	0.0057	2.4	30	0.61	0.10	0.18	4.39	0.34	6.32	1.40
Project 1	D	39.73	0.1	25	120	704	0.0043	2.4	30	0.61	0.10	0.18	4.36	0.34	6.28	1.39
Project 1	E	38.12	0.1	25	120	641	0.0047	2.4	30	0.61	0.10	0.18	4.19	0.34	6.03	1.34
Project 1	F	39.67	0.1	25	120	657	0.0030	2.4	30	0.61	0.10	0.18	4.36	0.34	6.28	1.39
Project 1	A	39.92	0.1	50	120	678	0.0074	2.7	30	0.69	0.13	0.21	5.78	0.34	7.95	1.61
Project 1	B	39.83	0.1	50	120	683	0.0044	2.7	30	0.69	0.13	0.21	5.77	0.34	7.94	1.60
Project 1	C	39.96	0.1	50	120	707	0.0057	2.7	30	0.69	0.13	0.21	5.79	0.34	7.96	1.61
Project 1	D	39.73	0.1	50	120	704	0.0043	2.7	30	0.69	0.13	0.21	5.76	0.34	7.92	1.60
Project 1	E	38.12	0.1	50	120	641	0.0047	2.7	30	0.69	0.13	0.21	5.52	0.34	7.59	1.53
Project 1	F	39.67	0.1	50	120	657	0.0030	2.7	30	0.69	0.13	0.21	5.75	0.34	7.90	1.60
Project 1	A	39.92	0.1	MIT.	120	678	0.0074	0.75	30	0.19	0.10	0.18	1.37	0.34	1.78	0.44
Project 1	B	39.83	0.1	MIT.	120	683	0.0044	0.75	30	0.19	0.10	0.18	1.36	0.34	1.77	0.44
Project 1	C	39.96	0.1	MIT.	120	707	0.0057	0.75	30	0.19	0.10	0.18	1.37	0.34	1.78	0.44
Project 1	D	39.73	0.1	MIT.	120	704	0.0043	0.75	30	0.19	0.10	0.18	1.36	0.34	1.77	0.44
Project 1	E	38.12	0.1	MIT.	120	641	0.0047	0.75	30	0.19	0.10	0.18	1.30	0.34	1.70	0.42
Project 1	F	39.67	0.1	MIT.	120	657	0.0030	0.75	30	0.19	0.10	0.18	1.36	0.34	1.77	0.44

DRAINAGE AREA A 50-YEAR STORM EVENT



DRAINAGE AREA B 50-YEAR STORM EVENT



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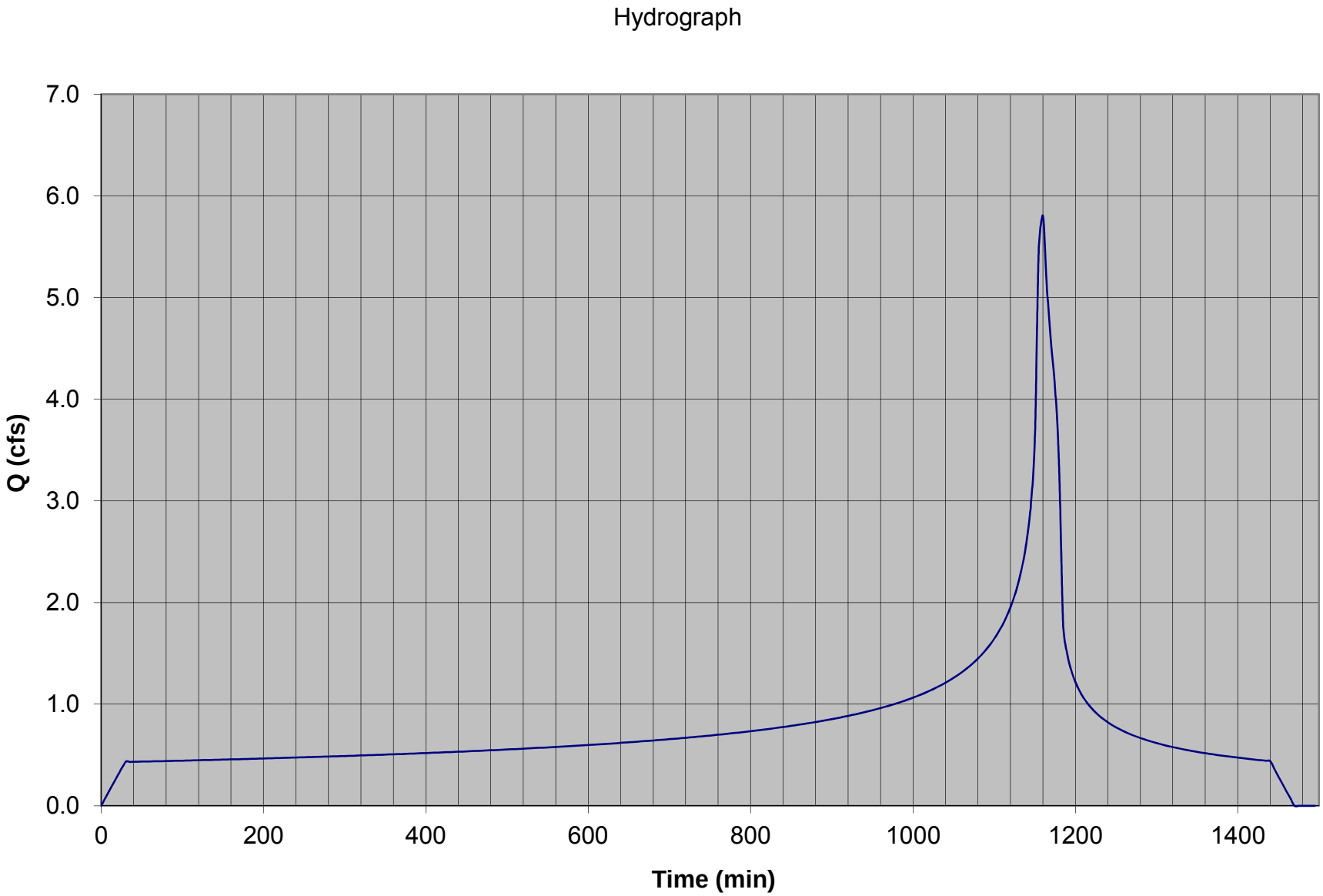

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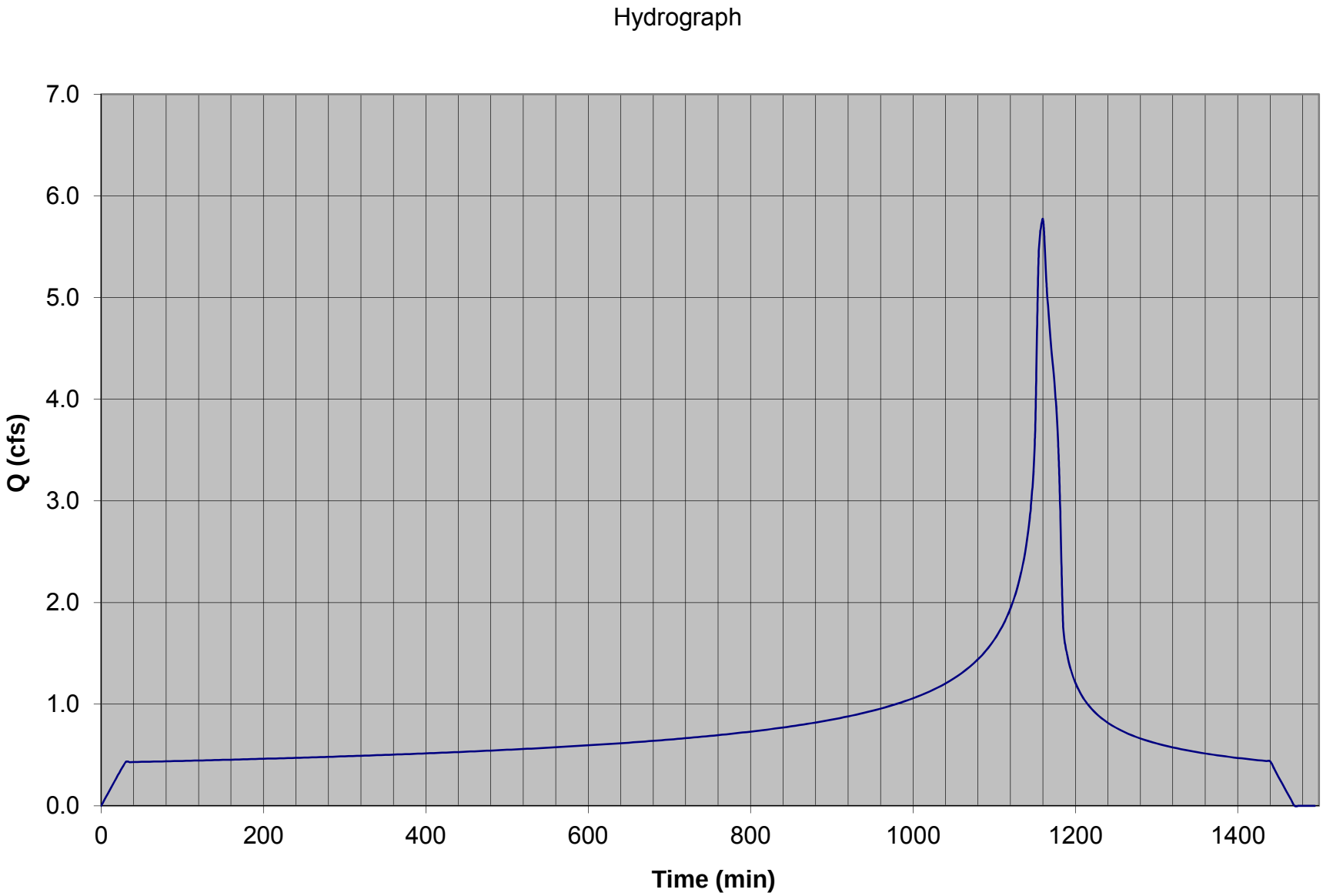
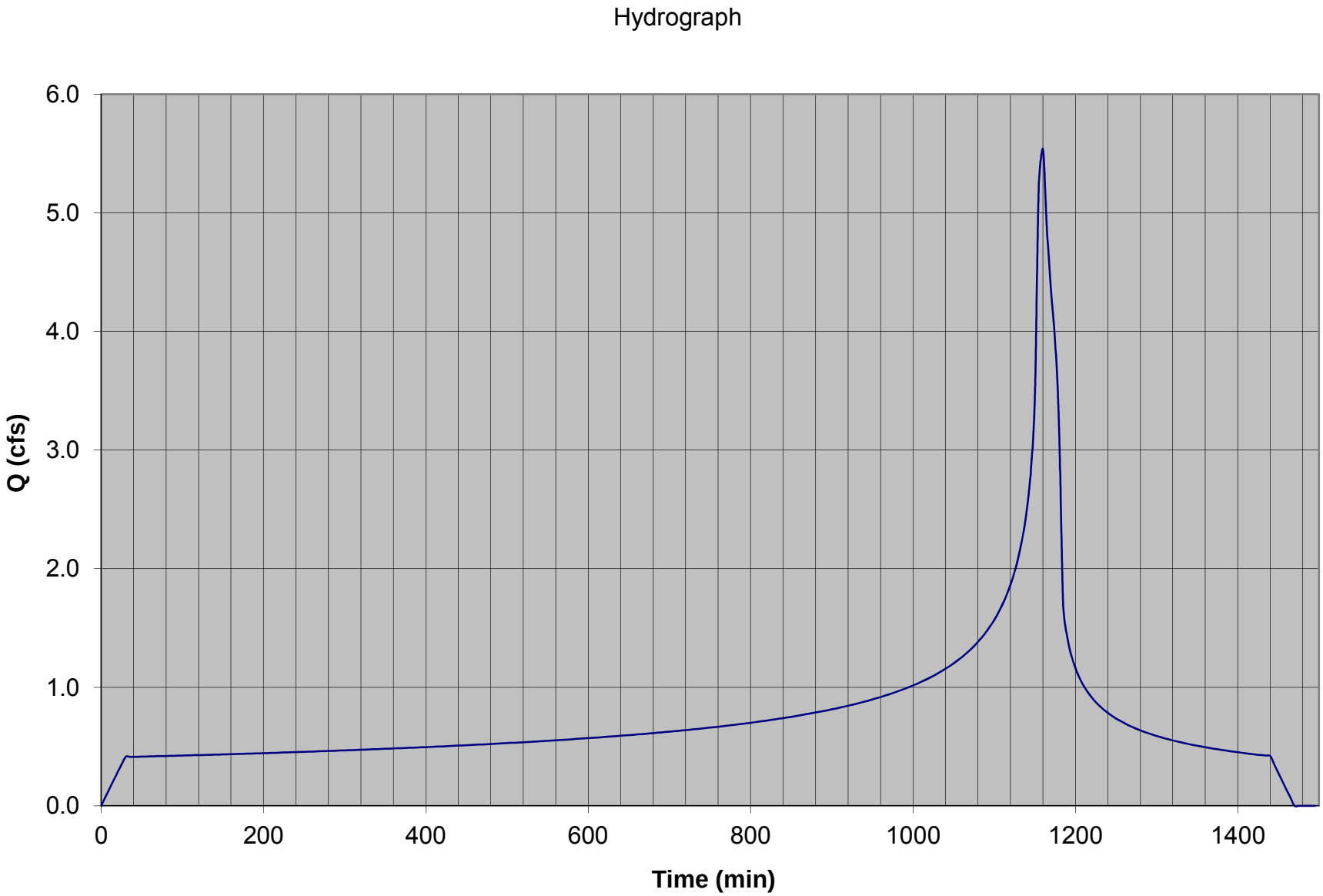


DRAINAGE AREA E 50-YEAR STORM EVENT



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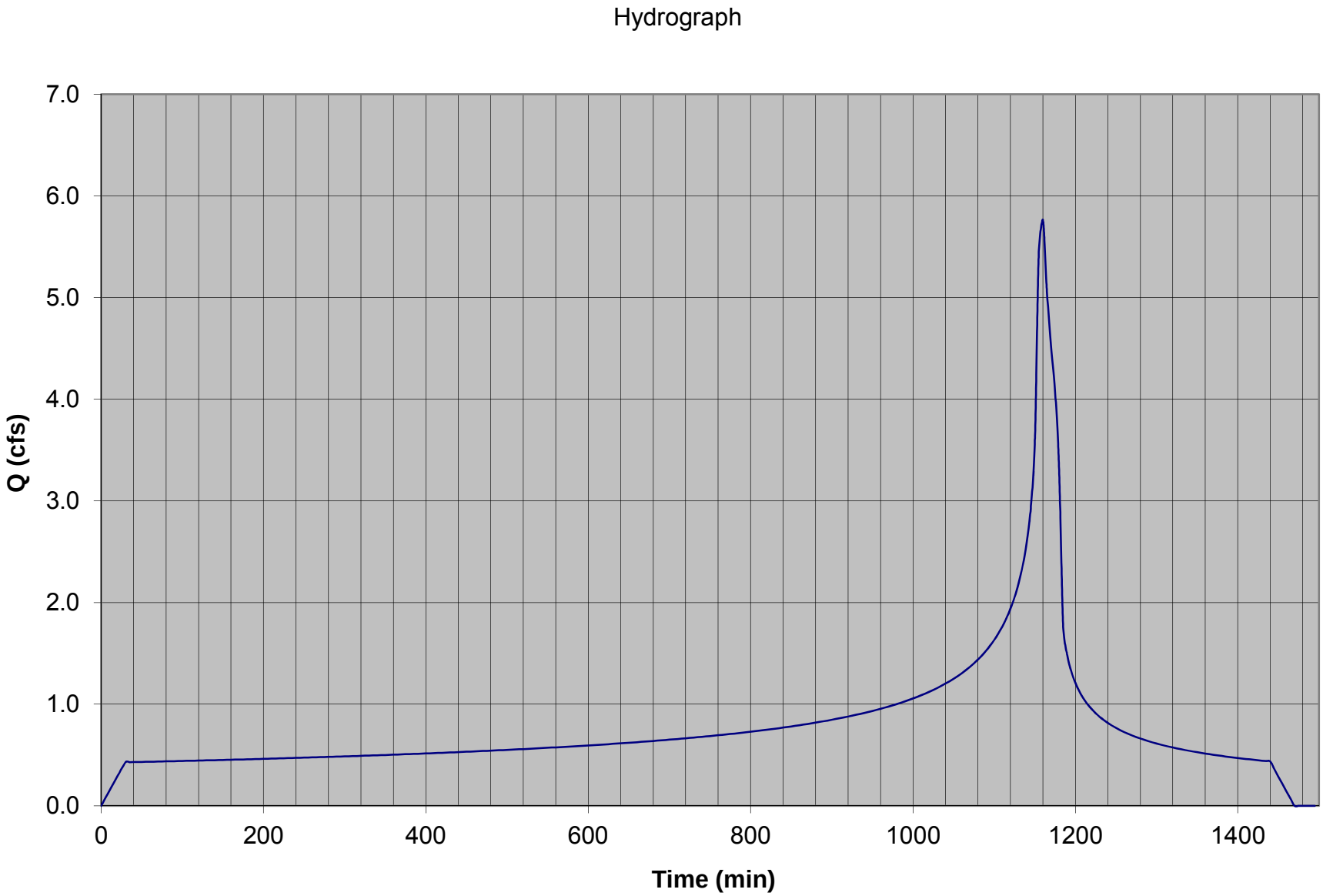


APPENDIX E:
IMPACT ANALYSIS CALCULATIONS

TETRA TECH, INC.

CLIENT SILVERADO POWER JOB NO. 135-04546-12001 PAGE 1 OF 14

PROJECT PROJECT 1 DATE CHECKED DATE DECEMBER 2013

DETAIL BASIN ROUTING CHECKED BY JD COMPUTED BY JS

Length (L)	1220 ft	C	3
Depth (D)	0.75 ft	Δt	40 mins.
Slope (Sl)	0.005	Infil. (I)	0.1 ft/40mins

Storage and Outflow Relationships			
Water El. (H) (Ft)	Storage (S) (ft^3)	Weir Outflow (O) (cfs)	2S/Δt + O (cfs)
0.000	0.00	0.00	0.00
0.750	86925.00	0.00	72.44
0.751	87132.52	0.12	72.73
0.752	87340.29	0.33	73.11
0.753	87548.30	0.60	73.56
0.754	87756.55	0.93	74.06
0.755	87965.05	1.29	74.60
0.756	88173.79	1.70	75.18
0.757	88382.78	2.14	75.80
0.758	88592.01	2.62	76.45
0.759	88801.48	3.12	77.13
0.760	89011.20	3.66	77.84
0.761	89221.16	4.22	78.57
0.762	89431.37	4.81	79.34
0.763	89641.82	5.42	80.13
0.764	89852.51	6.06	80.94
0.765	90063.45	6.72	81.78
0.766	90274.63	7.41	82.64
0.767	90486.06	8.11	83.52
0.768	90697.73	8.84	84.42
0.769	90909.64	9.59	85.34
0.770	91121.80	10.35	86.29
0.771	91334.20	11.14	87.25
0.772	91546.85	11.94	88.23
0.773	91759.74	12.77	89.23
0.774	91972.87	13.61	90.25
0.775	92186.25	14.47	91.29
0.776	92399.87	15.34	92.34
0.777	92613.74	16.24	93.42
0.778	92827.85	17.15	94.50
0.779	93042.20	18.07	95.61
0.780	93256.80	19.02	96.73
0.781	93471.64	19.98	97.87
0.782	93686.73	20.95	99.02
0.783	93902.06	21.94	100.19
0.784	94117.63	22.95	101.38
0.785	94333.45	23.97	102.58
0.786	94549.51	25.00	103.79
0.787	94765.82	26.05	105.02
0.788	94982.37	27.11	106.26
0.789	95199.16	28.19	107.52
0.790	95416.20	29.28	108.79
0.791	95633.48	30.38	110.08
0.792	95851.01	31.50	111.38
0.793	96068.78	32.64	112.69
0.794	96286.79	33.78	114.02
0.795	96505.05	34.94	115.36

$S = (1/2)*H*(H/Sl)*L + I*L*(H/Sl)$

$O = C * L * (H - D)^{1.5}$

*I(n) + I(n+1) + ((2*S(n)/**Δt**) - O(n)) =*
*((2*S(n+1)/**Δt**) + O(n+1))*

*((2*S(n+1)/**Δt**) - O(n+1)) =*
*((2*S(n+1)/**Δt**) + O(n+1)) - 2* O(n+1)*

O(n+1) = See Storage and Outflow Relationships

Infiltration Basin #1 of 3						
Step (n)	Time (min.)	I(n) (cfs)	I(n)+I(n+1) (cfs)	2S(n)/Δt-O(n) (cfs)	2S(n+1)/Δt + O(n+1) (cfs)	O(n+1) (cfs)
1	0	0.00	2.78	0.00	2.78	0.00
2	40	2.78	5.61	2.78	8.39	0.00
3	80	2.83	5.70	8.39	14.09	0.00
4	120	2.88	5.81	14.09	19.90	0.00
5	160	2.93	5.92	19.90	25.82	0.00
6	200	2.99	6.03	25.82	31.85	0.00
7	240	3.05	6.16	31.85	38.01	0.00
8	280	3.11	6.29	38.01	44.30	0.00
9	320	3.18	6.43	44.30	50.73	0.00
10	360	3.25	6.58	50.73	57.31	0.00
11	400	3.33	6.75	57.31	64.05	0.00
12	440	3.42	6.92	64.05	70.98	0.00
13	480	3.51	7.12	70.98	78.09	3.86
14	520	3.61	7.33	70.38	77.71	3.56
15	560	3.72	7.56	70.58	78.14	3.89
16	600	3.84	7.81	70.36	78.17	3.91
17	640	3.97	8.10	70.34	78.44	4.12
18	680	4.12	8.42	70.20	78.62	4.26
19	720	4.29	8.78	70.11	78.88	4.46
20	760	4.49	9.20	69.96	79.16	4.67
21	800	4.71	9.68	69.81	79.50	4.93
22	840	4.97	10.26	69.63	79.89	5.24
23	880	5.29	10.96	69.41	80.37	5.62
24	920	5.67	11.84	69.14	80.98	6.09
25	960	6.17	12.99	68.79	81.78	6.73
26	1000	6.82	14.59	68.33	82.92	7.63
27	1040	7.77	17.06	67.65	84.72	9.08
28	1080	9.30	21.82	66.56	88.38	12.06
29	1120	12.52	50.01	64.25	114.26	33.99
30	1160	37.49	45.30	46.28	91.58	14.71
31	1200	7.81	13.08	62.16	75.24	1.75
32	1240	5.27	9.55	71.75	81.30	6.35
33	1280	4.28	7.99	68.61	76.59	2.73
34	1320	3.71	7.03	71.14	78.17	3.91
35	1360	3.32	6.14	70.34	76.49	2.65
36	1400	2.82	5.64	71.19	76.83	2.91
37	1440	2.82	2.82	71.02	73.84	0.79
38	1480	0.00	0.00	72.27	72.27	0.00

*I(n) + I(n+1) + ((2*S(n)/**Δ**t) - O(n)) =*
*((2*S(n+1)/**Δ**t) + O(n+1))*

*((2*S(n+1)/**Δ**t) - O(n+1)) =*
*((2*S(n+1)/**Δ**t) + O(n+1)) - 2* O(n+1)*

O(n+1) = See Storage and Outflow Relationships

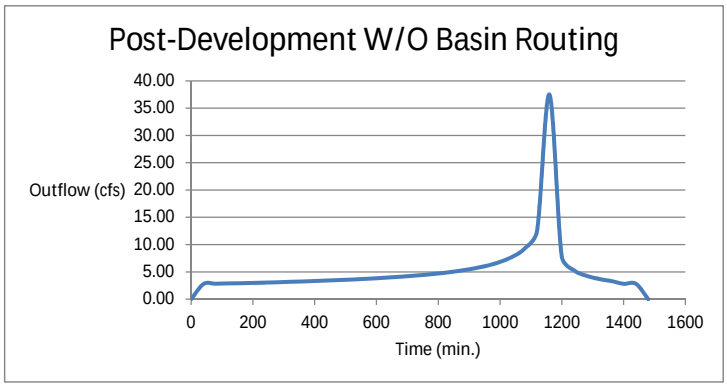
Infiltration Basin #2 of 3						
Step (n)	Time (min.)	I(n) (cfs)	I(n)+I(n+1) (cfs)	2S(n)/Δt-O(n) (cfs)	2S(n+1)/Δt + O(n+1) (cfs)	O(n+1) (cfs)
1	0	0.00	0.00	0.00	0.00	0.00
2	40	0.00	0.00	0.00	0.00	0.00
3	80	0.00	0.00	0.00	0.00	0.00
4	120	0.00	0.00	0.00	0.00	0.00
5	160	0.00	0.00	0.00	0.00	0.00
6	200	0.00	0.00	0.00	0.00	0.00
7	240	0.00	0.00	0.00	0.00	0.00
8	280	0.00	0.00	0.00	0.00	0.00
9	320	0.00	0.00	0.00	0.00	0.00
10	360	0.00	0.00	0.00	0.00	0.00
11	400	0.00	0.00	0.00	0.00	0.00
12	440	0.00	3.86	0.00	3.86	0.00
13	480	3.86	7.42	3.86	11.27	0.00
14	520	3.56	7.45	11.27	18.73	0.00
15	560	3.89	7.80	18.73	26.53	0.00
16	600	3.91	8.03	26.53	34.56	0.00
17	640	4.12	8.37	34.56	42.94	0.00
18	680	4.26	8.72	42.94	51.66	0.00
19	720	4.46	9.13	51.66	60.79	0.00
20	760	4.67	9.61	60.79	70.40	0.00
21	800	4.93	10.17	70.40	80.57	5.77
22	840	5.24	10.86	69.02	79.88	5.23
23	880	5.62	11.71	69.41	81.12	6.21
24	920	6.09	12.82	68.71	81.53	6.53
25	960	6.73	14.36	68.47	82.83	7.56
26	1000	7.63	16.71	67.70	84.41	8.83
27	1040	9.08	21.14	66.75	87.89	11.66
28	1080	12.06	46.06	64.56	110.62	30.85
29	1120	33.99	48.70	48.92	97.62	19.77
30	1160	14.71	16.46	58.09	74.54	1.26
31	1200	1.75	8.09	72.03	80.12	5.42
32	1240	6.35	9.07	69.28	78.35	4.05
33	1280	2.73	6.64	70.24	76.88	2.95
34	1320	3.91	6.56	70.99	77.56	3.45
35	1360	2.65	5.56	70.66	76.21	2.45
36	1400	2.91	3.69	71.32	75.01	1.58
37	1440	0.79	0.79	71.85	72.63	0.08
38	1480	0.00	0.00	72.48	72.48	0.02

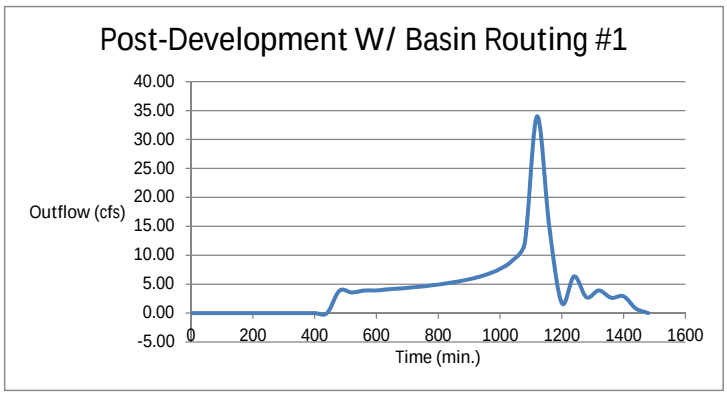
*I(n) + I(n+1) + ((2*S(n)/**Δ**t) - O(n)) =*
*((2*S(n+1)/**Δ**t) + O(n+1))*

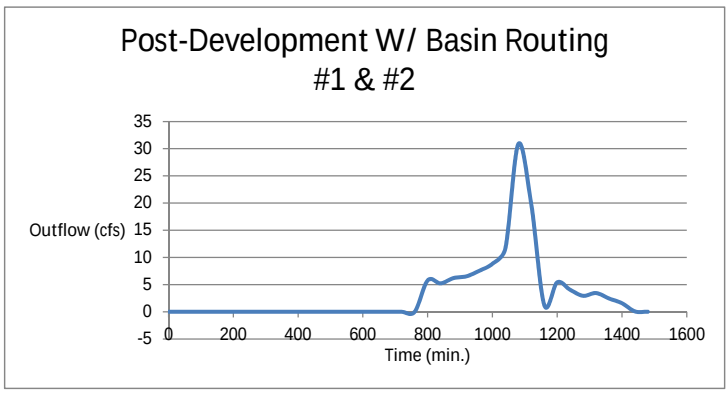
*((2*S(n+1)/**Δ**t) - O(n+1)) =*
*((2*S(n+1)/**Δ**t) + O(n+1)) - 2* O(n+1)*

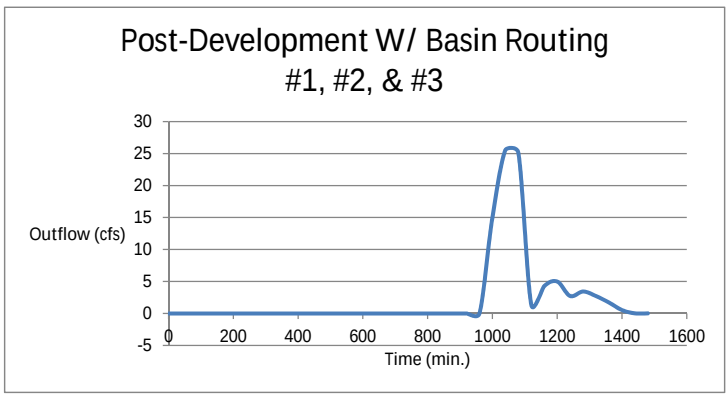
O(n+1) = See Storage and Outflow Relationships

Infiltration Basin #3 of 3						
Step (n)	Time (min.)	I(n) (cfs)	I(n)+I(n+1) (cfs)	2S(n)/Δt-O(n) (cfs)	2S(n+1)/Δt + O(n+1) (cfs)	O(n+1) (cfs)
1	0	0.00	0.00	0.00	0.00	0.00
2	40	0.00	0.00	0.00	0.00	0.00
3	80	0.00	0.00	0.00	0.00	0.00
4	120	0.00	0.00	0.00	0.00	0.00
5	160	0.00	0.00	0.00	0.00	0.00
6	200	0.00	0.00	0.00	0.00	0.00
7	240	0.00	0.00	0.00	0.00	0.00
8	280	0.00	0.00	0.00	0.00	0.00
9	320	0.00	0.00	0.00	0.00	0.00
10	360	0.00	0.00	0.00	0.00	0.00
11	400	0.00	0.00	0.00	0.00	0.00
12	440	0.00	0.00	0.00	0.00	0.00
13	480	0.00	0.00	0.00	0.00	0.00
14	520	0.00	0.00	0.00	0.00	0.00
15	560	0.00	0.00	0.00	0.00	0.00
16	600	0.00	0.00	0.00	0.00	0.00
17	640	0.00	0.00	0.00	0.00	0.00
18	680	0.00	0.00	0.00	0.00	0.00
19	720	0.00	0.00	0.00	0.00	0.00
20	760	0.00	5.77	0.00	5.77	0.00
21	800	5.77	11.01	5.77	16.78	0.00
22	840	5.23	11.44	16.78	28.22	0.00
23	880	6.21	12.74	28.22	40.96	0.00
24	920	6.53	14.09	40.96	55.06	0.00
25	960	7.56	16.40	55.06	71.45	0.00
26	1000	8.83	20.50	71.45	91.95	15.02
27	1040	11.66	42.51	61.92	104.43	25.55
28	1080	30.85	50.62	53.34	103.96	25.14
29	1120	19.77	21.03	53.67	74.70	1.36
30	1160	1.26	6.68	71.97	78.65	4.28
31	1200	5.42	9.48	70.09	79.56	4.99
32	1240	4.05	7.00	69.59	76.59	2.73
33	1280	2.95	6.39	71.14	77.53	3.43
34	1320	3.45	5.90	70.67	76.57	2.71
35	1360	2.45	4.03	71.15	75.18	1.70
36	1400	1.58	1.66	71.78	73.44	0.53
37	1440	0.08	0.09	72.38	72.48	0.02
38	1480	0.02	0.02	72.45	72.46	0.01


Post-Development W/O Basin Routing
Outflow (cfs)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0
200
400
600
800
1000
1200
1400
1600
Time (min.)


Post-Development W/ Basin Routing #1
Outflow (cfs)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-5.00
0
200
400
600
800
1000
1200
1400
1600
Time (min.)


Post-Development W/ Basin Routing
#1 & #2
Outflow (cfs)
35
30
25
20
15
10
5
0
-5
0
200
400
600
800
1000
1200
1400
1600
Time (min.)


Post-Development W/ Basin Routing
#1, #2, & #3
Outflow (cfs)
30
25
20
15
10
5
0
-5
0
200
400
600
800
1000
1200
1400
1600
Time (min.)

Project 1 (Pre-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Discharge	25.94	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2472.08
11+54	2471.43
13+54	2471.05
15+54	2470.63
17+54	2470.44
19+54	2470.27
21+54	2470.22
23+54	2470.10
25+54	2470.00
27+54	2470.10
29+54	2470.00
31+54	2470.29
33+54	2470.63
35+54	2470.95

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2472.08)	(11+54, 2471.43)	0.020
(11+54, 2471.43)	(13+54, 2471.05)	0.020
(13+54, 2471.05)	(15+54, 2470.63)	0.020
(15+54, 2470.63)	(17+54, 2470.44)	0.020
(17+54, 2470.44)	(19+54, 2470.27)	0.020
(19+54, 2470.27)	(21+54, 2470.22)	0.020
(21+54, 2470.22)	(23+54, 2470.10)	0.020

Project 1 (Pre-Development)

Input Data

Start Station	Ending Station	Roughness Coefficient
(23+54, 2470.10)	(25+54, 2470.00)	0.020
(25+54, 2470.00)	(27+54, 2470.10)	0.020
(27+54, 2470.10)	(29+54, 2470.00)	0.020
(29+54, 2470.00)	(31+54, 2470.29)	0.020
(31+54, 2470.29)	(33+54, 2470.63)	0.020
(33+54, 2470.63)	(35+54, 2470.95)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		0.11	ft
Elevation Range	2470.00 to 2472.08 ft		
Flow Area		41.70	ft²
Wetted Perimeter		697.42	ft
Hydraulic Radius		0.06	ft
Top Width		697.42	ft
Normal Depth		0.11	ft
Critical Depth		0.08	ft
Critical Slope		0.01691	ft/ft
Velocity		0.62	ft/s
Velocity Head		0.01	ft
Specific Energy		0.12	ft
Froude Number		0.45	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

Project 1 (Pre-Development)

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.11	ft
Critical Depth	0.08	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.01691	ft/ft

Cross Section for Project 1 (Pre-Development)

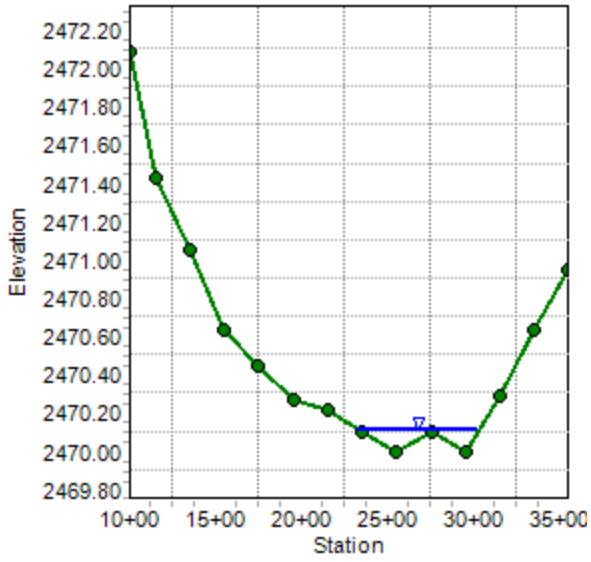
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Normal Depth	0.11	ft
Discharge	25.94	ft³/s

Cross Section Image



Project 1 (Post-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Discharge	25.55	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2472.08
11+54	2471.43
13+54	2471.05
15+54	2470.63
17+54	2470.44
19+54	2470.27
21+54	2470.22
23+54	2470.10
25+54	2470.00
27+54	2470.10
29+54	2470.00
31+54	2470.29
33+54	2470.63
35+54	2470.95

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2472.08)	(11+54, 2471.43)	0.020
(11+54, 2471.43)	(13+54, 2471.05)	0.020
(13+54, 2471.05)	(15+54, 2470.63)	0.020
(15+54, 2470.63)	(17+54, 2470.44)	0.020
(17+54, 2470.44)	(19+54, 2470.27)	0.020
(19+54, 2470.27)	(21+54, 2470.22)	0.020
(21+54, 2470.22)	(23+54, 2470.10)	0.020

Project 1 (Post-Development)

Input Data

Start Station	Ending Station	Roughness Coefficient
(23+54, 2470.10)	(25+54, 2470.00)	0.020
(25+54, 2470.00)	(27+54, 2470.10)	0.020
(27+54, 2470.10)	(29+54, 2470.00)	0.020
(29+54, 2470.00)	(31+54, 2470.29)	0.020
(31+54, 2470.29)	(33+54, 2470.63)	0.020
(33+54, 2470.63)	(35+54, 2470.95)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		0.11	ft
Elevation Range	2470.00 to 2472.08 ft		
Flow Area		41.29	ft²
Wetted Perimeter		696.03	ft
Hydraulic Radius		0.06	ft
Top Width		696.03	ft
Normal Depth		0.11	ft
Critical Depth		0.08	ft
Critical Slope		0.01691	ft/ft
Velocity		0.62	ft/s
Velocity Head		0.01	ft
Specific Energy		0.12	ft
Froude Number		0.45	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

Project 1 (Post-Development)

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.11	ft
Critical Depth	0.08	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.01691	ft/ft

Cross Section for Project 1 (Post-Development)

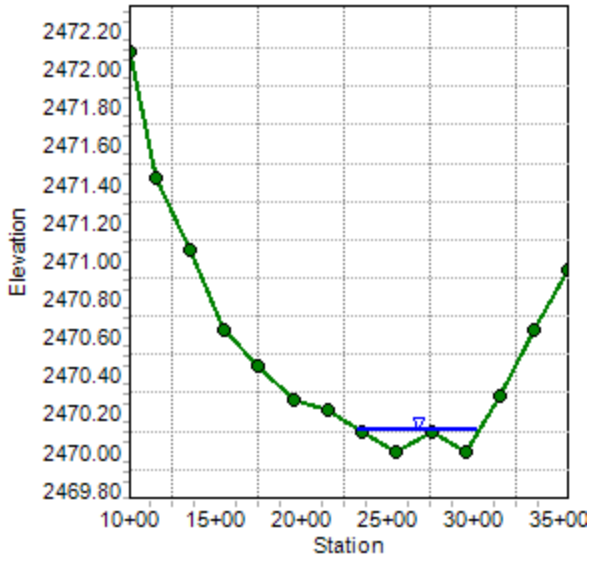
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Normal Depth	0.11	ft
Discharge	25.55	ft³/s

Cross Section Image



TETRATECH

Sheet No. 14 of 14 Date:
Checked By: Office:
Telephone:
Engineer: Job No.:
Subject: % INCREASE PRE- TO POST-DEVELOPMENT

PROJECT 1:

PRE-DEVELOPMENT: Q_{50} = 25.94 CFS

V_{50} = 6.63 AC·FT

POST-DEVELOPMENT: Q_{50} = 25.55 CFS (BASIN ROUTING)

V_{50} = 10.32 AC·FT − 3.23 AC·FT = 7.09 AC·FT
(3.23 AC·FT → BASIN STORAGE Δ25; 7.09 AC·FT * CONSERVATIVE SINCE HOLDS MORE THAN THE Δ25.)

% INC: Q_{50} ⇒ $\frac{25.55\text{ CFS} - 25.94\text{ CFS}}{25.94\text{ CFS}} = -1.5\% < 10\%$ OK

V_{50} ⇒ $\frac{7.09\text{ AC·FT} - 6.63\text{ AC·FT}}{6.63\text{ AC·FT}} = 6.9\% < 10\%$ OK

CHECK DEPTH & VELOCITY PER FLOWMASTER

PRE-DEVELOPMENT: MAX DEPTH = 0.11 FT

VELOCITY = 0.62 FT/S

POST-DEVELOPMENT: MAX DEPTH = 0.11 FT

VELOCITY = 0.62 FT/S

% INC: DEPTH ⇒ $\frac{0.11\text{ FT} - 0.11\text{ FT}}{0.11\text{ FT}} = 0\% < 10\%$ OK

VELOCITY ⇒ $\frac{0.62\text{ FT/S} - 0.62\text{ FT/S}}{0.62\text{ FT/S}} = 0\% < 10\%$ OK

APPENDIX F:
WATER QUALITY CALCULATIONS

OWNER'S CERTIFICATION

HYDROLOGY STUDY/DRAINAGE CONCEPT/ LID

for

PROJECT 1 NORTH LANCASTER RANCH

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID for NORTH LANCASTER RANCH has been prepared for the Applicant, by Tetra Tech, Inc. This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is intended to comply with the requirements of the County of Los Angeles, requiring the preparation of a project specific HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.

I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for the gathered information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Los Angeles County Stormwater Quality Management Plan (SQMP), and the intent of the stormwater and urban runoff NPDES Permit and Waste Discharge Requirements for the County of Los Angeles, Los Angeles County Flood Control District and the incorporated Cities of Los Angeles County under the jurisdiction of the Los Angeles Regional Water Quality Control Board. A copy of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID will be maintained at the project site/office.

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party having responsibility for implementing portions of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID. At least one copy of the approved and certified copy of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID shall be available on the subject property in perpetuity. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.

OWNER:	Silverado Power
BY: (Garret Bean)	
Title:	
Address:	2 Embarcadero Center, Ste. 410
	San Francisco, California 94111
Telephone:	(415) 692 - 7740
Date:	

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II. Discretionary Permit(s) and Water Quality Conditions

III. Project Description

IV. Site Description

V. Best Management Practices

VI. Implementation, Maintenance and Inspection Responsibility for BMPs

VII. Appendices

Appendix A: Operations and Maintenance Plan

Appendix B: Treatment BMPs Calculations

Background

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is prepared by the developer's engineer. These are documents required by the Stormwater Quality Management Program (SQMP). It requires run-off, from all new development or significant re-development, to be managed during a project's planning phase, implemented during construction and ultimately maintained for the life of the project.

The HYDROLOGY STUDY/DRAINAGE CONCEPT/LID deals with the long-term post-construction of a project and describes the commitment to installation and maintenance of appropriate structural and non-structural Best Management Practices (BMPs).

BMPs are intended to provide measures that minimize or eliminate the introduction of pollutants into the storm water system. Non-Structural and Structural BMPs include education, clean up, and facility maintenance to prevent pollutants from entering the storm water system.

Compliance is MANDATORY and severe penalties may be levied for any violations. It is the duty of the owner or his designated representative to ensure that all BMPs are followed.

Discretionary Permit(s) and Water Quality Conditions

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is intended to comply with the requirements of the County of Los Angeles.

Project Description

The name of the project is NORTH LANCASTER RANCH. The applicant is the owner of the property. The project is located between 110th St. to the west and 100th St. to the east, and between W Avenue B to the south and Avenue A to the north (see Location Map, Appendix A). The property is currently a dirt lot with scarce native vegetation. Site soils consist of fine sandy silt and medium to coarse sand with infiltration rates of 7 min/in, which equates to 8.57 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 1.88 in/hr (see Geotechnical Report, Appendix H). The property is predominantly flat (average 0.5% slopes) and therefore will only be minimally graded to avoid ponding. The property will accommodate 9 foot wide arrays of solar panels spaced at approximately 11 feet (see On-Site Drainage Map, Appendix G). The post-development project area is approximately 237.2 acres with 90% of the site being pervious. Construction of the solar panel arrays and other miscellaneous development accounts for the Los Angeles County approved 10% impervious surface. This combined impervious foot print equates to approximately 23.7 acres.

In the post-development condition, the majority of the runoff sheet flows off the site from west to east, therefore mimicking pre-development conditions. As calculated later in this report, the ΔQ_{25} and $\Delta V_{25,}$ which are greater than the peak mitigation flow rate (Q_{PM}) and the mitigation volume (V_M), will be collected onsite with the help of 3 reinforced elevated road sections that run north to south at various locations along the site (see On-Site Drainage Map, Appendix G). The required treatment runoff (Q_{PM} & V_M) consists of the initial 0.75 inches of rain, which will infiltrate in the existing soil and also be treated by the existing soil due to being less than the delta runoff.

The project will have a substation for utility interconnection on the site. The majority of the area within the substation fence will be soil, covered with a layer of gravel. The majority of the substation equipment will be supported on steel or concrete piers or footings, with the exception of the main step-up transformer. The transformer will be located on a reinforced concrete slab and subsurface foundation, and enclosed in a secondary containment structure. The impervious area from the transformer footprint will be covered with the secondary containment structure, and any rain falling on the transformer area will be collected and held in the containment basin until the rainstorm has passed and the water can be inspected. If the collected water shows any oil sheen it will be pumped out and disposed at a permitted, offsite treatment facility by a licensed hazardous waste contractor. If the rainwater does not exhibit any sheen it will either be allowed to evaporate, or will be manually pumped out onto the ground and allowed to infiltrate. Any transformer oil that is released into the containment will be vacuumed out and disposed at a permitted, offsite treatment facility by a licensed hazardous waste contractor.

The applicant, the property owner, is responsible for all on-site maintenance activities.

Per the U.S. Census Bureau, the 2007 Standard Industrial Classification (SIC) Code is 221119 – "Other Electric Power Generation" for solar power sites.

The Anticipated and Potential Pollutants Generated by the proposed facility may be: TSS, nutrients, heavy metals, bacteria/virus, pesticides, organic compounds, trash and debris (litter), oxygen-demanding substances, and oil and grease.

The storage of outdoor materials is not a planned activity. Car washing, auto repair and/or vehicle fueling are also not a part of this facility.

The 85th % BMP peak mitigation flow rate (Q_{PM}) is 8.12 cfs, while ΔQ_{25} is 10.13 cfs.

The mitigation volume (V_M) for the on-site watershed area of 237.2 acres is 2.62 ac-ft and ΔV_{25} is 3.23 ac-ft. The ΔV_{25} will be split among 3 infiltration basins, resulting in a mitigation volume of 1.08 ac-ft or 46,900 cf per individual mitigation area.

Site Description

The site is approximately 237.2 acres and is located between 110th St. to the west and 100th St. to the east, and between W Avenue B to the south and Avenue A to the north, within an unincorporated region of Los Angeles County (see Location Map, Appendix A). The site is predominantly flat (average 0.5% slopes).

The site is located within the Antelope Valley Watershed.

The site has previously been graded, but is mostly reverted to a naturally vegetated state. No pre–existing watershed problems seem to be present.

Per the Geotechnical Report (see Appendix H) and per LA County Hydrology Manual, the project soil type consists of the following:

- Fine Sandy Silt and Medium to Coarse Sand

Soil Type 120 was used in the hydrology calculations.

Drainage and Permeability: Well-drained; slow runoff, fair soil permeability. Infiltration rates of 7 min/in, which is equivalent to 8.57 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 1.88 in/hr.

The Total Maximum Daily Loads (TMDLs) have been established as "not applicable" for the Antelope Valley Watershed. The 303(d) List has no pollutants of concern for the Antelope Valley Watershed.

The Project site is not within the immediate vicinity of any known Environmentally Sensitive Areas (ESAs) and Areas of Special Biological Significance (ASBSs).

Best Management Practices

The following indicates the source control BMPs (routine non-structural and routine structural) included in this project and those that were not included.

Routine Non-Structural BMPs

Education for Property Owners, Tenants, Occupants and Employees. Best Management Practices (BMP) Fact Sheets for preventing stormwater pollution from the California Stormwater Best Management Practice Handbooks can be found at www.cabmphandbooks.com.

Activity Restrictions. The list of restrictions and guidelines for implementation and maintenance of all Best Management Practices specified herein include, but will not be limited to:

- TRASH: No rubbish, trash or other material shall be kept on site or on any street abutting the properties, except in sanitary containers located in an appropriate trash containment area.
- DRAINAGE: There shall be no interference or alteration of the established drainage pattern unless an alternative is approved by the regulatory agency.
- DUMPSTER LIDS: Dumpster lids shall be closed at all times.
- DEBRIS: No blowing or sweeping of litter anywhere at the site.

BMP Maintenance. Appendix A indicates the person(s) responsible for the implementation and maintenance of the non-structural and structural BMPs.

Title 22 CCR Compliance. Not applicable, per Title 22., Division 4.5., Chapter 11. of the California Code of Regulations definition of hazardous wastes. No Hazardous Materials are anticipated to be onsite.

Local Industrial Permit Compliance. Not applicable, there are no fuel dispensing areas and/or other areas of concern to the public proposed.

Spill Contingency Plan. A spill contingency plan will be prepared by the owner/building operator. As a minimum the Spill Contingency Plan will "mandate the stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials and documentation."

Hazardous Materials Disclosure Compliance. No hazardous materials are anticipated to be stored on-site. If deemed otherwise, a designated representative of the owner shall provide information to the Fire Authority in accordance with requirements of the Health & Safety Code.

Uniform Fire Code Implementation. A designated representative of the owner shall provide information to the Fire Authority in compliance with Article 80 of the UNIFORM FIRE CODE (UFC).

Common Area Litter Control. Site litter shall be strictly controlled by onsite maintenance personnel (not yet determined).

Employee Training. A representative of the owner will provide information available from the City/County on education regarding good housekeeping practices that contribute to the protection of storm water quality. Practical information material will be provided to employees on general good housekeeping practices. These materials will describe, but are not limited to, spill prevention and control and the use of chemicals, petroleum products, pesticides and fertilizers that should be limited to the property, with no discharge of wastes directly or indirectly to gutters, catch basins or the storm drain system. Information will be distributed directly to the employees as well as being posted in public areas. In addition to the attachments, the following resource can be contacted to obtain updated educational materials at no cost: American Oceans – www.americanoceans.org/runoff/epa-bro.htm

Routine Non-Structural BMPs

Properly Design Trash Storage Areas. Site waste receptacles shall be emptied on a weekly basis or more often if containers are overflowing. Upon inspection any debris or rubbish will be picked up and the site cleaned. The trash area/room is NOT to be cleaned by hosing down. The type of materials used to clean the area and storage of said materials will be determined by the Contractor. Signage will be posted that lids shall be kept closed at all times. The trash room(s) will be located inside the parking structures.

Protect Slopes and Channels. The protection of slopes and irrigation shall be implemented as indicated on the County of Los Angeles' approved Landscape Plans and shall be consistent with the County Water Conservation Resolution or County equivalent. Slope protection will be achieved through landscaping of the slopes. Runoff from irrigation shall be kept to a minimum. A designated representative of the owner will be responsible for continual maintenance of landscaped areas.

Site Design BMPs

The following table shows the site design BMPs that are included in this project. A description of each BMPs follows:

Technique	Included		Brief Description of Method
	Yes	No	
Minimize Impervious Area/Maximize Permeability (C-Factor Reduction)		√	
Minimize Directly Connected Impervious Areas (DCIAs) (C-Factor Reduction)		√	
Create Reduced or "Zero Discharge" Areas (Runoff Volume Reduction)	√		Infiltration basins
Conserve Natural Areas (C-Factor Reduction)		√	

The site design BMPs that were used extensively in this design were to create "Runoff Volume Reduction" by utilizing the infiltration basin system design concept. The mitigation volume is captured behind the reinforced elevated roads and is allowed to infiltrate in the ground.

Treatment BMPs

The following table shows the treatment BMPs that are included in this project. A description of each BMPs follows:

Name	Included		If not applicable, state brief description
	Yes	No	
Vegetated (Grass) Strips		√	Not proposed.
Vegetated (Grass) Swales		√	Not proposed.
Proprietary Control Measures		√	Not proposed.
Dry Detention Basin		√	Not proposed.
Wet Detention Basin		√	Not proposed.
Constructed Wetland		√	Not proposed.
Detention Basin/Sand Filter		√	Not proposed.
Porous Pavement Detention		√	Not proposed.
Porous Landscape Detention		√	Not proposed.
Infiltration Basin	√		
Infiltration Trench		√	Not proposed.
Media Filter		√	Not proposed.
Proprietary Control Measures		√	Not proposed.

This Project is considered a Priority Project. This section of the HYDROLOGY STUDY/DRAINAGE CONCEPT/LID addresses Treatment Control BMPs. The primary control strategy for design Treatment Control BMPs is to treat the frequent, low-flow storm events. The selected treatment controls for this project is the Infiltration Basins. Appendix B – Verification Calculations for Treatment BMPs has the Calculations and Detail Drawings for these Treatment BMPs.

Implementation, Maintenance and Inspection Responsibility for BMPs

A schedule will be established for all maintenance and a log for all cleanups shall be recorded (see Appendix A – Operations and Maintenance Plan). All documents relating to site maintenance and Best Management Practices (BMP) will be kept for a minimum of 5 years and be made available to Federal, State, County, or City Inspectors upon request.

The party responsible for all structural and non-structural BMPs and contact information for site maintenance records is as follows:

SILVERADO POWER

2 Embarcadero Center, STE. 410
SAN FRANCISCO, CA 94111
(415) 692 - 7740

Contact Person: Garret Bean

Appendices

APPENDIX A

Operations and Maintenance Plan

OPERATIONS AND MAINTENANCE PLAN

BMP Applicable? Yes/No	BMP Name and Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	Non-Structural Source Control BMPs		
Yes	Education for Property Owners, Tenants and Occupants Applicant will educate all onsite occupants. Education shall be given using the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.	New onsite employees to be educated within 2 weeks of hire. Each onsite employee shall receive an annual review	Applicant is responsible for educating all onsite occupants.
Yes	Activity Restrictions Ensure all users are adhering to activity restrictions as outlined in the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID and the County of Los Angeles' zoning ordinance and standards.	If a user is observed engaging in activity that may adverse impacts on stormwater, the authorized representative shall take corrective actions as necessary. Ongoing basis.	Applicant is responsible for educating all onsite employees.
Yes	Spill Containment Plan A spill contingency plan is not available. As a minimum the spill contingency plan will "mandate the stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials and documentation."	When spill occurs.	Through a maintenance firm that will be contracted with applicant.
Yes	Common Area Litter Control Perform parking lot/common area maintenance that will include the removal of litter from around the trash storage receptacles, drive aisles, parking lot and outdoor areas. All litter shall be placed in appropriate trash receptacles.	Weekly	Through a maintenance firm that will be contracted with applicant.
Yes	Employee Training Applicant will educate all onsite employees. Education shall be given using the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.	New onsite employees to be educated within 2 weeks of hire. Each onsite employee shall receive an annual review	Applicant is responsible for educating all onsite employees.
Yes	Design and Construct Trash and Waste Storage Areas to Reduce Pollution Introduction Site waste receptacles shall be emptied on a weekly basis or more often if overflowing. Signage will be posted that lids shall be kept closed at all times. Inspect the waste receptacles area for any loose trash on the ground. Inspect for damage to the structural elements of the waste receptacles.	Daily and weekly basis. Replace/Repair structural elements as needed.	Applicant through a maintenance firm.

BMP Applicable? Yes/No	BMP Name and Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	Non-Structural Source Control BMPs		
Yes	Protect Slopes and Channels The protection of slopes shall be implemented as indicated on the County of Los Angeles' approved Landscape Plans and shall be consistent with the County Water Conservation Resolution or County equivalent.	After each major storm event	Applicant through a maintenance firm.
	Treatment BMPs		
Yes	Infiltration Basin Infiltration basins shall be constructed concurrently with the solar arrays and shall be inspected of and cleaned from heavy silt deposits.	After each major storm event	Applicant through a maintenance firm.

APPENDIX B
Verification Calculations for Treatment BMPs

1.0 HYDROLOGIC ANALYSIS

The project size is 237.2 acres. Utilizing Appendix A of the Los Angeles County Department of Public Works Hydrology Manual and a Geotechnical Report for the site (see Appendix H), a predominating soil type of 120 and an infiltration rate of 7 min/in were found, which is equivalent to 8.57 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 1.88 in/hr. A small portion of the site, amounting to the Los Angeles County approved value of 10%, is impervious with the remaining balance being pervious.

On-Site Hydrology Maps showing the drainage area, BMP and Drainage Structures are found in Appendix G. The peak mitigation flow rate (Q_{PM}) and the mitigation volume (V_M) found in Appendix D of this report are based on 0.75-inches of rainfall.

2.0 BMP SIZING

Infiltration Basins

Using the LA County Modified Rational Method TC Calculator, the Peak Mitigation Flow Rate (Q_{PM}) based on 0.75-inches of rainfall is 8.12 cfs and the total Mitigation Volume (V_M) 2.62 ac-ft (see Post-Development On-Site Hydrologic Calculation, Appendix D). Since ΔV_{25} exceeds the mitigation volume (see Appendix D), it will be captured in 3 infiltration basins designed per the 2009 Los Angeles County LID Manual and Los Angeles County Stormwater BMP Design and Maintenance Manual; therefore the required individual basin capacity is 1.08 ac-ft or 46,900 cf. By infiltrating the ΔV_{25}, the V_M will also infiltrate and be treated by the existing soils.

The proposed LID infiltration basins span north to south at various locations within the first half of the site. The basin routing minimum road height of 9 inches governs the design, since it is greater than the minimum road height required to infiltrate the ΔV_{25} (see Water Quality Calculations, Appendix E) Therefore, the basins will be created by constructing 9 inch high reinforced road sections which span approximately 1,220 feet north to south. The flood width is approximately 150 feet. The infiltration area created is 183,000 square feet which will allow the volume of 2.89 ac*ft to infiltrate in about 4.4 hours with the Los Angeles County approved rate of 1.88 in/hr.

Treatment BMPs Calculations

TETRA TECH, INC.

CLIENT SILVERADO POWER JOB NO. 135-04546-12001 PAGE 1 OF 2

PROJECT PROJECT 1 DATE CHECKED DATE DECEMBER 2013

DETAIL INFILTRATION BASIN CHECKED BY JD COMPUTED BY JS

LINE ID	DESCRIPTION	VALUE	COMMENTS:
A	MITIGATION VOLUME (AC-FT)	2.62	PER POST DEVELOPMENT ON-SITE HYDROLOGIC CALCS, APPENDIX D
B	ΔV25 (AC*FT)	3.23	PER PRE/POST DEVELOPMENT ON-SITE HYDROLOGIC CALCS, APPENDIX D
C	NUMBER OF BASINS	3	PER ON-SITE DRAINAGE MAP, APPENDIX F

SINCE ΔV25>MITIGATION VOLUME, ΔV25 TO BE MITIGATED BY 3 INFILTRATION BASINS CREATED BY 3 N-S REINFORCED ELEVATED ROADS

D	INFILTRATION RATE (IN/HR)	1.88	PER GEOTECHNICAL REPORT, APPENDIX H (7 MIN/IN = 8.57 IN/HR) * FACTORS
E	BASIN LENGTH (FT)	1220	PER ON-SITE DRAINAGE MAP, APPENDIX F
F	VOLUME PER BASIN (CF)	46899.6	(F) = (B) * 43,560 / (C)

BASIN SIZED ACCORDING TO THE LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL

G	REQUIRED DRAIN TIME (HR)	72	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
H	MAX. PONDING DEPTH (FT)	11.28	PER EQUATION 6-3, (H) = (D) / 12 * (G)
I	BASIN PONDING DEPTH (IN)	2.29	INITIAL ASSUMED AVERAGE PONDING DEPTH CREATED BY RAISED ROAD SECTION

SINCE THE BASIN HAS A TRIANGULAR CROSS-SECTION, THE AVERAGE PONDING DEPTH OF THE BASIN WILL BE USED TO FIND THE INFILTRATING SURFACE AREA. IN ORDER TO USE THE AVERAGE PONDING DEPTH OF 2.29 IN., THE REINFORCED ROAD SECTION WILL NEED TO BE RAISED BY 4.6 IN.

J	MAX. BASIN FILL TIME (HR)	2	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
K	BASIN SURFACE AREA (SF)	93050.9	PER EQUATION 6-6, (K) = (F) / ((J) * (D) / 12 + (I) / 12)
L	FLOOD WIDTH (FT)	76.3	(L) = (K) / (E)

CHECK TO SEE IF INFILTRATION BASIN SLOPE MATCHES EXISTING AVERAGE SLOPE OF SITE.

M	AVERAGE SITE SLOPE (%)	0.50	PER ON-SITE DRAINAGE MAP, APPENDIX F
N	INFIL. BASIN SLOPE (%)	0.50	(N) = ((I) * 2 / (L) * 12) * 100

COMPARE RESULTS WITH MIN. ROAD HEIGHT FROM IMPACT ANALYSIS, APPENDIX E.

O	MIN. ROAD HEIGHT (IN)	9	IMPACT ANALYSIS, APPENDIX E

IMPACT ANALYSIS GOVERNS. CALCULATE FLOOD WIDTH AND INFILTRATION VOLUME.

P	FLOOD WIDTH (FT)	150	(P) = ((O) / 12) / ((M) / 100)
Q	INFIL. VOLUME (CF)	125965	PER EQUATION 6-6, (P) * (E) = (Q) / ((J) * ((D) / 12) + ((O) / 2) / 12)
R	INFIL. VOLUME (AC*FT)	2.89	(R) = (Q) / 43560

Conclusion:

ΔV25 INFILTRATED BY 3 INFILTRATION BASINS WITH A LENTH OF 1220 FT AND A FLOOD WIDTH OF 150 FT CREATED BY 3 REINFORCED ELEVATED ROAD SECTIONS RAISED 9 IN.

TOTAL DRAINAGE TIME (HR) = (Q) / ((P) *(E)) * (D) / 12) = 4.4 < 72 HRS

TETRATECH

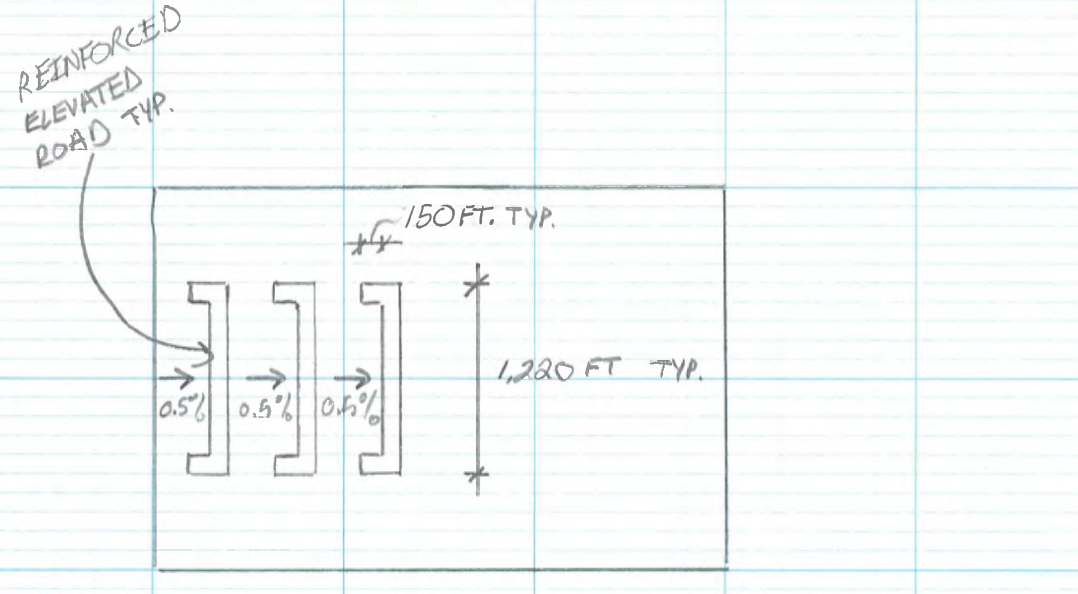
Sheet No. 2 of 2 Date:

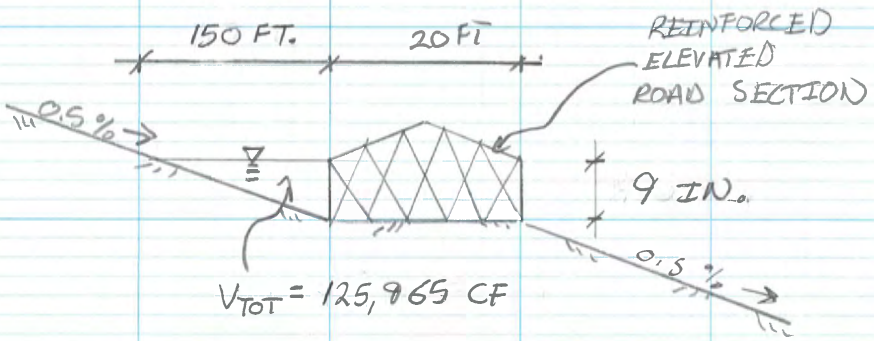
Checked By: Office:

Telephone:

Engineer: Job No.:

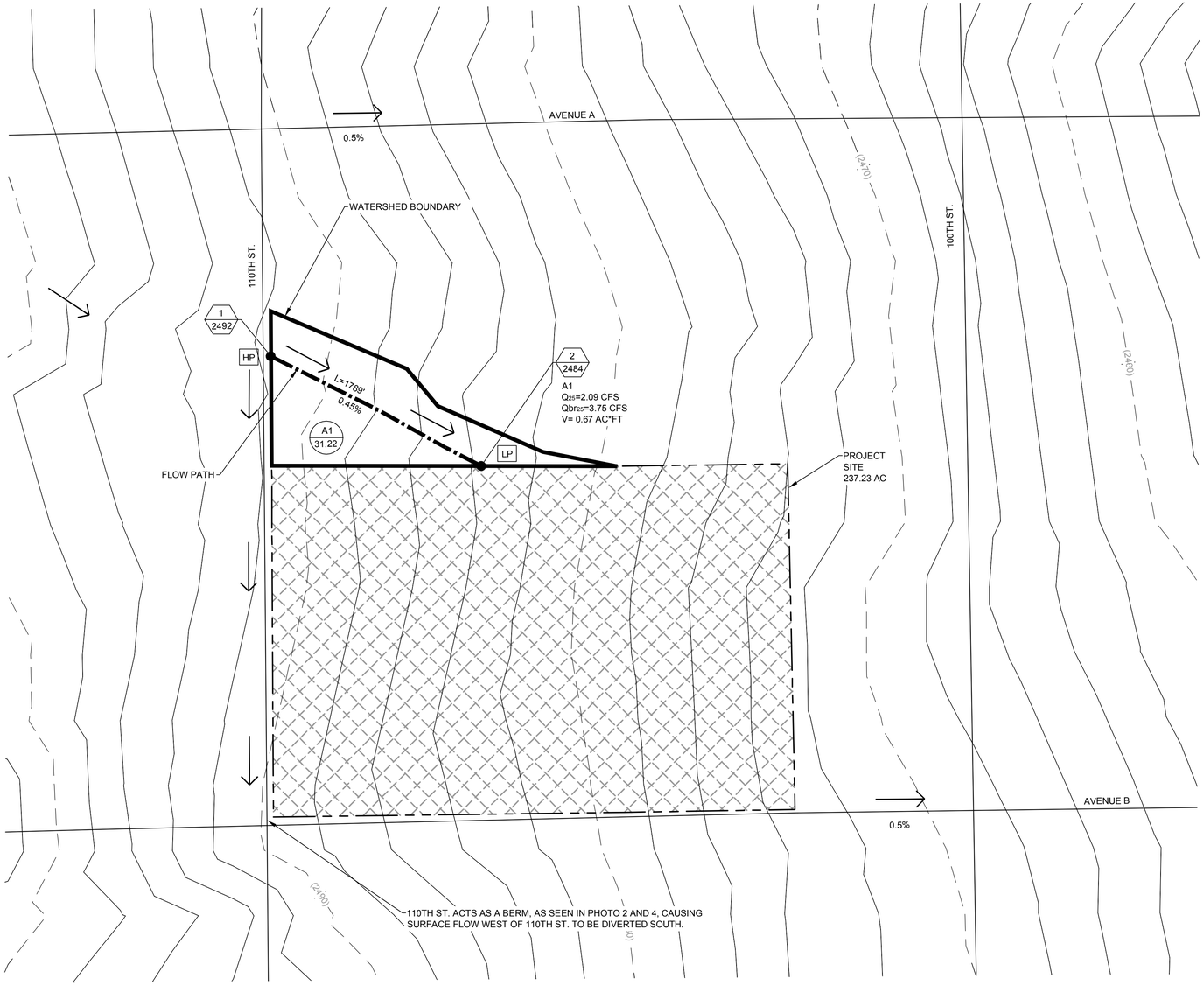
Subject: NORTH LANCASTER RANCH ELEVATED ROAD SECTION AND INFILTRATION BASIN





APPENDIX G:
DRAINAGE MAPS (ON-/OFF-SITE)

OFF-SITE DRAINAGE MAP



LOCATION MAP
NOT TO SCALE
(THOMAS GUIDE PAGE 3833, GRID D-4, D-5, E-4, E-5, F-4, & F-5)

LEGEND:

XX / XX.X	SUBAREA ID / ACREAGE
XX / XXX	NODE ID / ELEVATION
HP	HIGH POINT
LP	LOW POINT
———	WATERSHED BOUNDARY
— — —	PROJECT BOUNDARY
— • —	FLOW LINE

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Qbr_{25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.419 SQ. MI.) = 545 CY

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

OFF-SITE HYDROLOGY																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 1	A1	31.22	0.01	2	120	1789	0.0045	1.0	30	0.27	0.10	0.11	0.93	0.34	1.50	0.29
Project 1	A1	31.22	0.01	5	120	1789	0.0045	1.6	30	0.41	0.10	0.11	1.41	0.34	2.41	0.45
Project 1	A1	31.22	0.01	10	120	1789	0.0045	1.9	30	0.50	0.10	0.11	1.72	0.34	3.01	0.55
Project 1	A1	31.22	0.01	25	120	1789	0.0045	2.4	30	0.61	0.10	0.11	2.09	0.34	3.75	0.67
Project 1	A1	31.22	0.01	50	120	1789	0.0045	2.7	30	0.69	0.13	0.14	3.02	0.34	4.88	0.77

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY: _____ RCE NO: _____ DATE _____
CHECKED BY: _____ DATE _____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

0 250' 500' 1000' N
SCALE: 1" = 500'

2011-00833 (RCUP201100079) H-1

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER
JOSEPH E. DIETZ
No. 67032
EXP: 9-30-14
CIVIL
STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch
Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100079
OFF-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 1 NORTH
LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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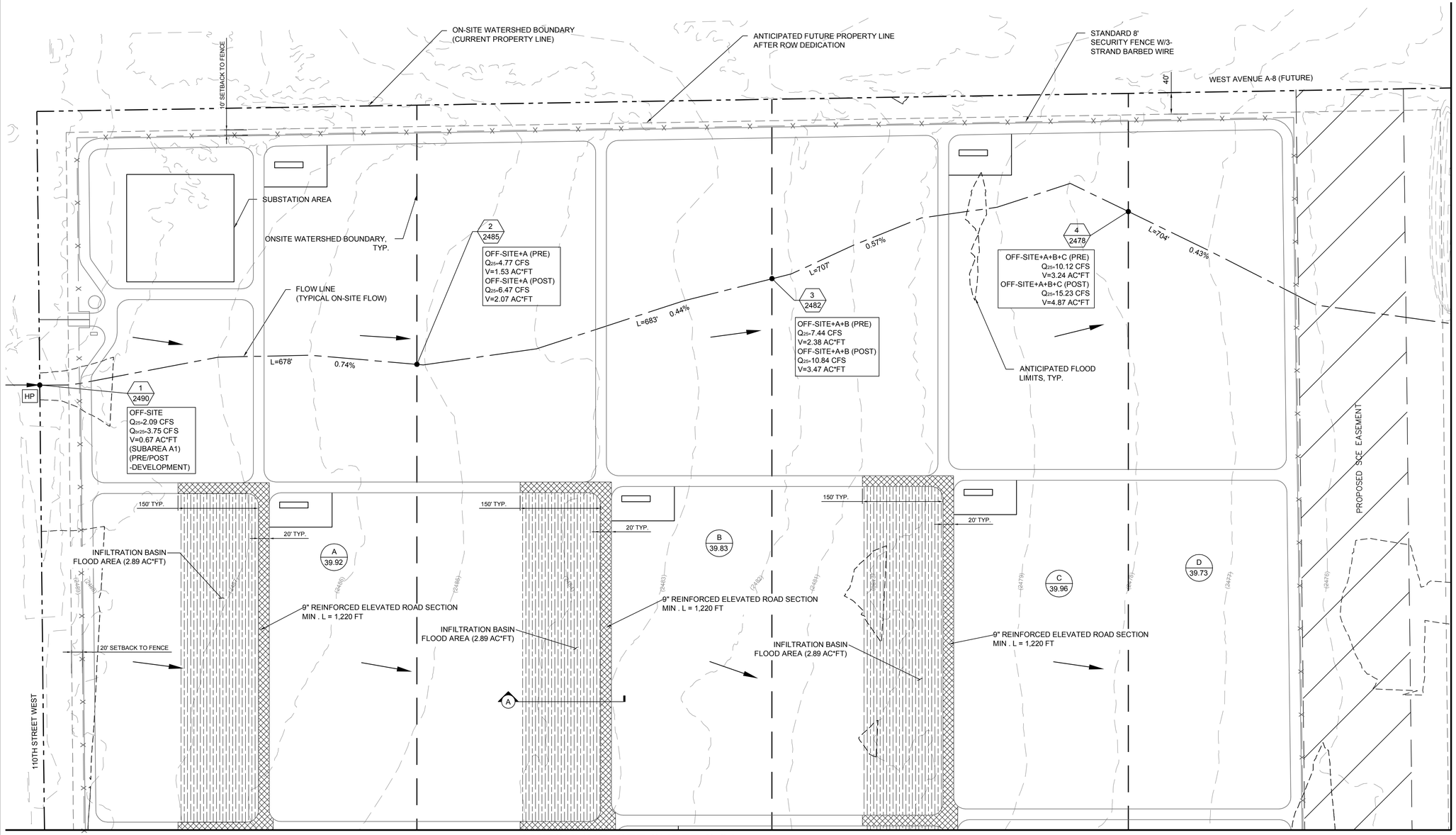
ON-SITE DRAINAGE MAP



LEGEND:

- SUBAREA ID / ACREAGE
- NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.419 SQ. MI.) = 545 CY

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
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8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA FLOOD ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATE (Q_{50}) DECREASED BY 1.5%, THE VOLUME (V_{50}) INCREASED BY 6.9%, THE DEPTH INCREASED BY 0.0%, AND THE VELOCITY INCREASED BY 0.0%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____ RCE NO:_____ DATE_____
CHECKED BY:_____ DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N

0 50 100 200
SCALE: 1":100' (ON FULL SIZE DWG.)

2011-00833 (RCUP201100079) C-03

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch
Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100079
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 1 NORTH
LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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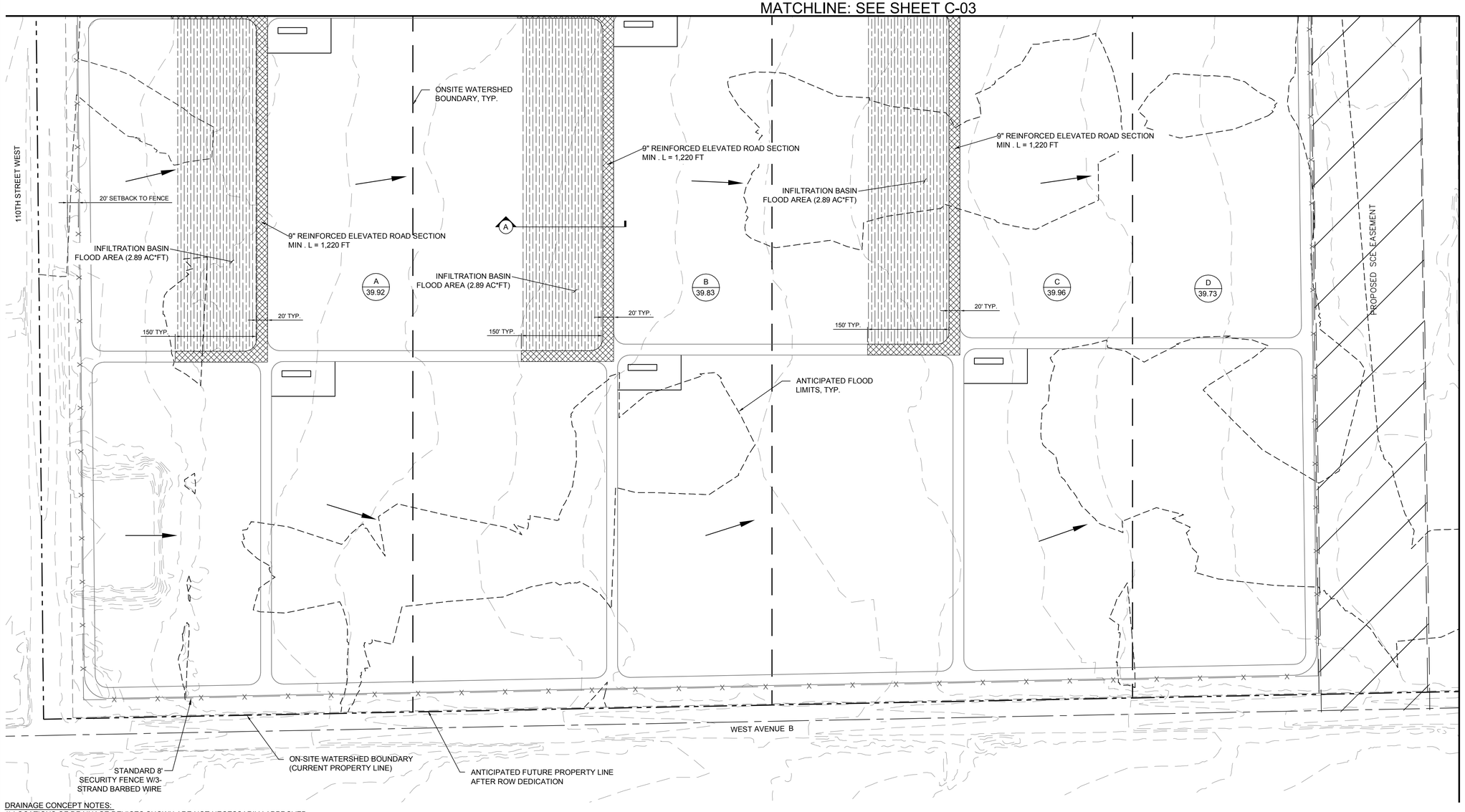

MATCHLINE: SEE SHEET C-06

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

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Q_{br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
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6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA FLOOD ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATE (Q_{50}) DECREASED BY 1.5%, THE VOLUME (V_{50}) INCREASED BY 6.9%, THE DEPTH INCREASED BY 0.0%, AND THE VELOCITY INCREASED BY 0.0%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N
0 50 100 200
SCALE: 1":100' (ON FULL SIZE DWG.)

2011-00833 (RCUP201100079) C-04

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch
Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100079
ON-SITE DRAINAGE MAP

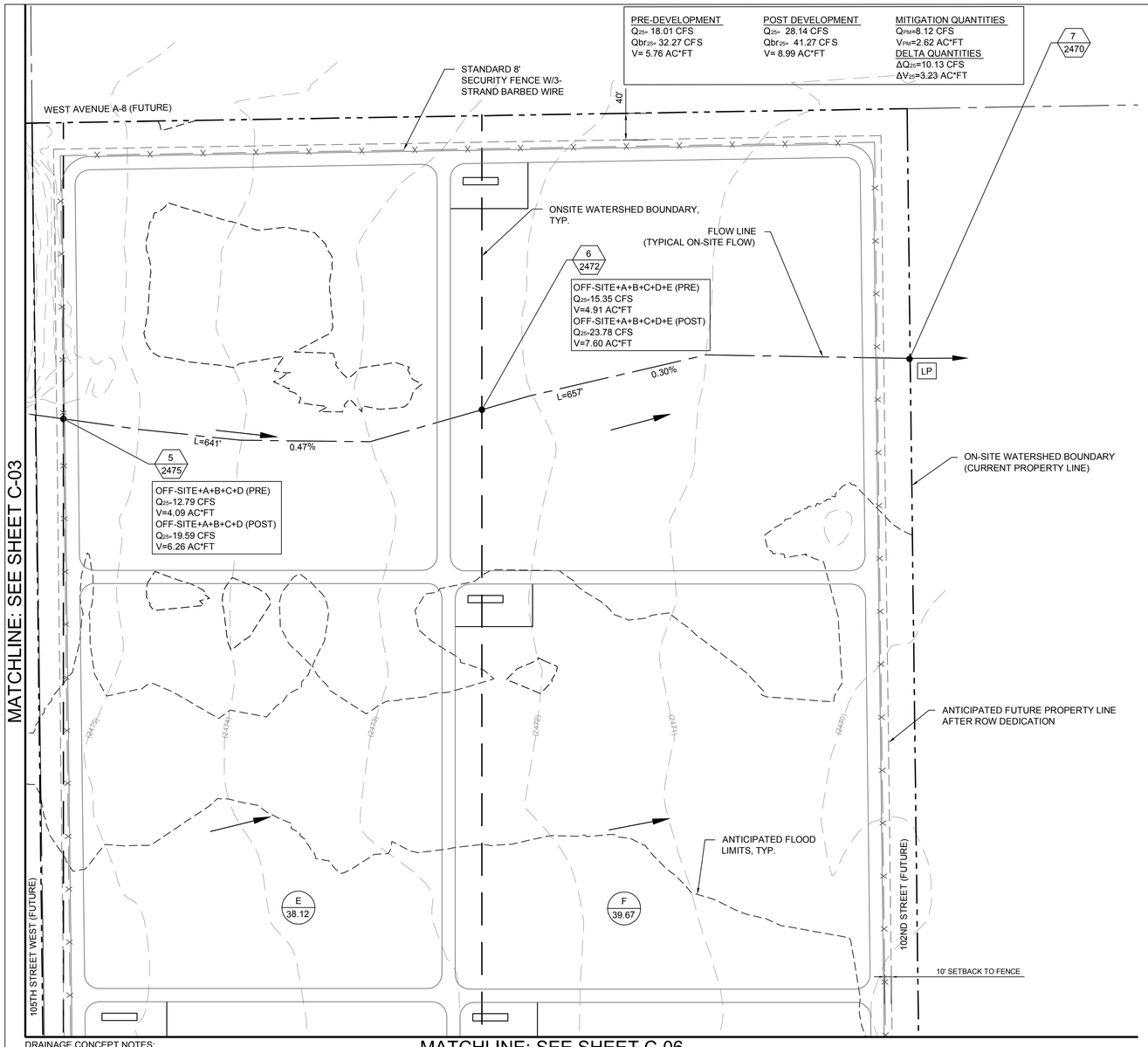
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 1 NORTH
LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\04546\133--04546-12001\SUPPORTDOCS\CALCS\HYDROLOGY\SUPPLYFINAL DESIGN\ONSITE HYDROLOGY C04.DWG
PLOT_DATE: Dec 6, 2013 10:39:57 AM



HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc calculated (min.)	Intensity (in./hr)	Co	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 1	A	39.92	0.01	2	120	678	0.0074	1.0	30	0.27	0.10	0.11	1.19	0.34	1.92	0.38
Project 1	B	39.83	0.01	2	120	683	0.0044	1.0	30	0.27	0.10	0.11	1.18	0.34	1.92	0.37
Project 1	C	39.96	0.01	2	120	707	0.0057	1.0	30	0.27	0.10	0.11	1.19	0.34	1.92	0.38
Project 1	D	39.73	0.01	2	120	704	0.0043	1.0	30	0.27	0.10	0.11	1.18	0.34	1.91	0.37
Project 1	E	38.12	0.01	2	120	641	0.0047	1.0	30	0.27	0.10	0.11	1.13	0.34	1.94	0.36
Project 1	F	39.67	0.01	2	120	657	0.0030	1.0	30	0.27	0.10	0.11	1.18	0.34	1.91	0.37
Project 1	A	39.92	0.01	5	120	678	0.0074	1.6	30	0.41	0.10	0.11	1.80	0.34	3.08	0.57
Project 1	B	39.83	0.01	5	120	683	0.0044	1.6	30	0.41	0.10	0.11	1.80	0.34	3.07	0.57
Project 1	C	39.96	0.01	5	120	707	0.0057	1.6	30	0.41	0.10	0.11	1.80	0.34	3.08	0.57
Project 1	D	39.73	0.01	5	120	704	0.0043	1.6	30	0.41	0.10	0.11	1.79	0.34	3.06	0.57
Project 1	E	38.12	0.01	5	120	641	0.0047	1.6	30	0.41	0.10	0.11	1.72	0.34	2.94	0.55
Project 1	F	39.67	0.01	5	120	657	0.0030	1.6	30	0.41	0.10	0.11	1.79	0.34	3.06	0.57
Project 1	A	39.92	0.01	10	120	678	0.0074	1.9	30	0.50	0.10	0.11	2.20	0.34	3.85	0.70
Project 1	B	39.83	0.01	10	120	683	0.0044	1.9	30	0.50	0.10	0.11	2.19	0.34	3.84	0.70
Project 1	C	39.96	0.01	10	120	707	0.0057	1.9	30	0.50	0.10	0.11	2.20	0.34	3.85	0.70
Project 1	D	39.73	0.01	10	120	704	0.0043	1.9	30	0.50	0.10	0.11	2.19	0.34	3.83	0.69
Project 1	E	38.12	0.01	10	120	641	0.0047	1.9	30	0.50	0.10	0.11	2.10	0.34	3.67	0.67
Project 1	F	39.67	0.01	10	120	657	0.0030	1.9	30	0.50	0.10	0.11	2.18	0.34	3.82	0.69
Project 1	A	39.92	0.01	25	120	678	0.0074	2.4	30	0.61	0.10	0.11	2.68	0.34	4.80	0.86
Project 1	B	39.83	0.01	25	120	683	0.0044	2.4	30	0.61	0.10	0.11	2.67	0.34	4.79	0.85
Project 1	C	39.96	0.01	25	120	707	0.0057	2.4	30	0.61	0.10	0.11	2.68	0.34	4.80	0.86
Project 1	D	39.73	0.01	25	120	704	0.0043	2.4	30	0.61	0.10	0.11	2.67	0.34	4.78	0.85
Project 1	E	38.12	0.01	25	120	641	0.0047	2.4	30	0.61	0.10	0.11	2.56	0.34	4.58	0.82
Project 1	F	39.67	0.01	25	120	657	0.0030	2.4	30	0.61	0.10	0.11	2.66	0.34	4.77	0.85
Project 1	A	39.92	0.01	50	120	678	0.0074	2.7	30	0.69	0.13	0.14	3.86	0.34	6.24	0.99
Project 1	B	39.83	0.01	50	120	683	0.0044	2.7	30	0.69	0.13	0.14	3.85	0.34	6.23	0.98
Project 1	C	39.96	0.01	50	120	707	0.0057	2.7	30	0.69	0.13	0.14	3.86	0.34	6.25	0.99
Project 1	D	39.73	0.01	50	120	704	0.0043	2.7	30	0.69	0.13	0.14	3.84	0.34	6.21	0.98
Project 1	E	38.12	0.01	50	120	641	0.0047	2.7	30	0.69	0.13	0.14	3.68	0.34	5.96	0.94
Project 1	F	39.67	0.01	50	120	657	0.0030	2.7	30	0.69	0.13	0.14	3.83	0.34	6.21	0.98
Project 1	A	39.92	0.01	MIT.	120	678	0.0074	0.75	30	0.19	0.10	0.11	0.83	0.34	1.29	0.27
Project 1	B	39.83	0.01	MIT.	120	683	0.0044	0.75	30	0.19	0.10	0.11	0.83	0.34	1.29	0.27
Project 1	C	39.96	0.01	MIT.	120	707	0.0057	0.75	30	0.19	0.10	0.11	0.84	0.34	1.29	0.27
Project 1	D	39.73	0.01	MIT.	120	704	0.0043	0.75	30	0.19	0.10	0.11	0.83	0.34	1.28	0.27
Project 1	E	38.12	0.01	MIT.	120	641	0.0047	0.75	30	0.19	0.10	0.11	0.80	0.34	1.23	0.26
Project 1	F	39.67	0.01	MIT.	120	657	0.0030	0.75	30	0.19	0.10	0.11	0.83	0.34	1.28	0.27

ON-SITE HYDROLOGY (POST-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc calculated (min.)	Intensity (in./hr)	Co	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 1	A	39.92	0.1	2	120	678	0.0074	1.0	30	0.27	0.10	0.18	1.94	0.34	2.61	0.61
Project 1	B	39.83	0.1	2	120	683	0.0044	1.0	30	0.27	0.10	0.18	1.94	0.34	2.61	0.61
Project 1	C	39.96	0.1	2	120	707	0.0057	1.0	30	0.27	0.10	0.18	1.94	0.34	2.61	0.62
Project 1	D	39.73	0.1	2	120	704	0.0043	1.0	30	0.27	0.10	0.18	1.93	0.34	2.60	0.61
Project 1	E	38.12	0.1	2	120	641	0.0047	1.0	30	0.27	0.10	0.18	1.85	0.34	2.49	0.59
Project 1	F	39.67	0.1	2	120	657	0.0030	1.0	30	0.27	0.10	0.18	1.93	0.34	2.60	0.61
Project 1	A	39.92	0.1	5	120	678	0.0074	1.6	30	0.41	0.10	0.18	2.95	0.34	4.11	0.93
Project 1	B	39.83	0.1	5	120	683	0.0044	1.6	30	0.41	0.10	0.18	2.94	0.34	4.10	0.93
Project 1	C	39.96	0.1	5	120	707	0.0057	1.6	30	0.41	0.10	0.18	2.95	0.34	4.12	0.93
Project 1	D	39.73	0.1	5	120	704	0.0043	1.6	30	0.41	0.10	0.18	2.93	0.34	4.09	0.93
Project 1	E	38.12	0.1	5	120	641	0.0047	1.6	30	0.41	0.10	0.18	2.81	0.34	3.93	0.89
Project 1	F	39.67	0.1	5	120	657	0.0030	1.6	30	0.41	0.10	0.18	2.93	0.34	4.09	0.93
Project 1	A	39.92	0.1	10	120	678	0.0074	1.9	30	0.50	0.10	0.18	3.59	0.34	5.10	1.14
Project 1	B	39.83	0.1	10	120	683	0.0044	1.9	30	0.50	0.10	0.18	3.58	0.34	5.08	1.14
Project 1	C	39.96	0.1	10	120	707	0.0057	1.9	30	0.50	0.10	0.18	3.60	0.34	5.10	1.14
Project 1	D	39.73	0.1	10	120	704	0.0043	1.9	30	0.50	0.10	0.18	3.58	0.34	5.07	1.14
Project 1	E	38.12	0.1	10	120	641	0.0047	1.9	30	0.50	0.10	0.18	3.43	0.34	4.87	1.09
Project 1	F	39.67	0.1	10	120	657	0.0030	1.9	30	0.50	0.10	0.18	3.57	0.34	5.06	1.13
Project 1	A	39.92	0.1	25	120	678	0.0074	2.4	30	0.61	0.10	0.18	4.38	0.34	6.31	1.40
Project 1	B	39.83	0.1	25	120	683	0.0044	2.4	30	0.61	0.10	0.18	4.37	0.34	6.30	1.40
Project 1	C	39.96	0.1	25	120	707	0.0057	2.4	30	0.61	0.10	0.18	4.39	0.34	6.32	1.40
Project 1	D	39.73	0.1	25	120	704	0.0043	2.4	30	0.61	0.10	0.18	4.36	0.34	6.28	1.39
Project 1	E	38.12	0.1	25	120	641	0.0047	2.4	30	0.61	0.10	0.18	4.19	0.34	6.03	1.34
Project 1	F	39.67	0.1	25	120	657	0.0030	2.4	30	0.61	0.10	0.18	4.36	0.34	6.28	1.39
Project 1	A	39.92	0.1	50	120	678	0.0074	2.7	30	0.69	0.13	0.21	5.78	0.34	7.95	1.61
Project 1	B	39.83	0.1	50	120	683	0.0044	2.7	30	0.69	0.13	0.21	5.77	0.34	7.94	1.60
Project 1	C	39.96	0.1	50	120	707	0.0057	2.7	30	0.69	0.13	0.21	5.79	0.34	7.96	1.61
Project 1	D	39.73	0.1	50	120	704	0.0043	2.7	30	0.69	0.13	0.21	5.76	0.34	7.92	1.60
Project 1	E	38.12	0.1	50	120	641	0.0047	2.7	30	0.69	0.13	0.21	5.52	0.34	7.59	1.53
Project 1	F	39.67	0.1	50	120	657	0.0030	2.7	30	0.69	0.13	0.21	5.75	0.34	7.90	1.60
Project 1	A	39.92	0.1	MIT.	120	678	0.0074	0.75	30	0.19	0.10	0.18	1.37	0.34	1.78	0.44
Project 1	B	39.83	0.1	MIT.	120	683	0.0044	0.75	30	0.19	0.10	0.18	1.36	0.34	1.77	0.44
Project 1	C	39.96	0.1	MIT.	120	707	0.0057	0.75	30	0.19	0.10	0.18	1.37	0.34	1.78	0.44
Project 1	D	39.73	0.1	MIT.	120	704	0.0043	0.75	30	0.19	0.10	0.18	1.36	0.34	1.77	0.44
Project 1	E	38.12	0.1	MIT.	120	641	0.0047	0.75	30	0.19	0.10	0.18	1.30	0.34	1.70	0.42
Project 1	F	39.67	0.1	MIT.	120	657	0.0030	0.75	30	0.19	0.10	0.18	1.36	0.34	1.77	0.44

Incremental Flow and Volume Increase for Various Storm Events

Storm Event	Pre-Q (cfs)	Post-Q (cfs)	Delta Q (cfs)	Pre-V (acre-ft)	Post-V (acre-ft	Delta-V (acre-ft)
2.00	7.05	11.53	4.48	2.23	3.65	1.42
5.00	10.70	17.51	6.81	3.40	5.54	2.14
10.00	13.06	21.35	8.29	4.15	6.78	2.63
25.00	15.52	26.05	10.13	5.09	8.32	3.23
50.00	22.92	34.37	11.45	5.86	9.55	3.69

NOTE: FOR INFILTRATION BASIN MITIGATION VOLUME, SUM MIT. FREQUENCY VOLUMES UNDER POST-DEVELOPMENT TABLE. V_{PM}=2.62 AC*FT.

DELTA QUANTITIES FOR DRAINAGE AREA A:
ΔQ25 = 4.38 - 2.68 = 1.70 CFS
ΔV25 = 1.40 - 0.86 = 0.54 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA B:
ΔQ25 = 4.37 - 2.67 = 1.70 CFS
ΔV25 = 1.40 - 0.85 = 0.55 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA C
ΔQ25 = 4.39 - 2.68 = 1.71 CFS
ΔV25 = 1.32 - 0.86 = 0.54 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA D
ΔQ25 = 4.36 - 2.67 = 1.69 CFS
ΔV25 = 1.39 - 0.85 = 0.54 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA E
ΔQ25 = 4.19 - 2.56 = 1.63 CFS
ΔV25 = 1.34 - 0.82 = 0.52 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA F
ΔQ25 = 4.36 - 2.66 = 1.70 CFS
ΔV25 = 1.39 - 0.85 = 0.54 AC*FT

TOTAL DELTA QUANTITIES
ΔQ25 = 10.13 CFS
ΔV25 = 3.23 AC*FT

NOTE: DUE TO THE LID Δ QUANTITIES ABOVE BEING GREATER THAN THE MITIGATION QUANTITIES (Q_{PM} AND V_{PM}) THEY REPRESENT THE WORST CASE SCENARIO BETWEEN THE PRE-/POST DEVELOPMENT CONDITIONS AND THEREFORE SHALL BE USED FOR SIZING THE INFILTRATION BASINS.

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{Bf25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.419 SQ. MI.) = 545 CY

N
0 50 100 200
SCALE: 1":100' (ON FULL SIZE DWG.)

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA FLOOD ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATE (Q_{50}) DECREASED BY 1.5%, THE VOLUME (V_{50}) INCREASED BY 6.9%, THE DEPTH INCREASED BY 0.0%, AND THE VELOCITY INCREASED BY 0.0%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

2011-00833 (RCUP201100079) C-05

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER — JOSEPH E. DIETZ — No. 67032 EXP: 9-30-14 — CIVIL — STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch
Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100079 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 1 NORTH LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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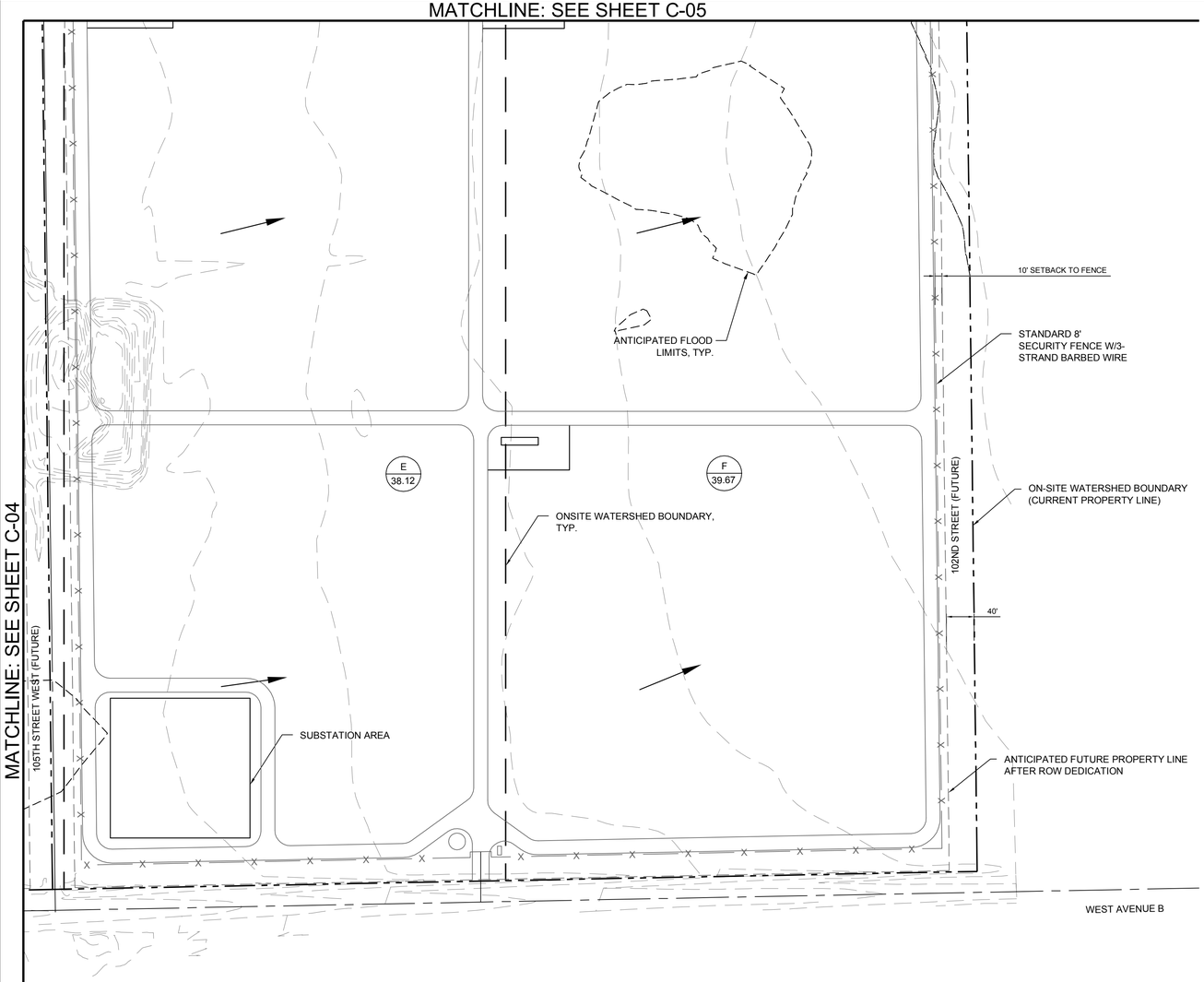
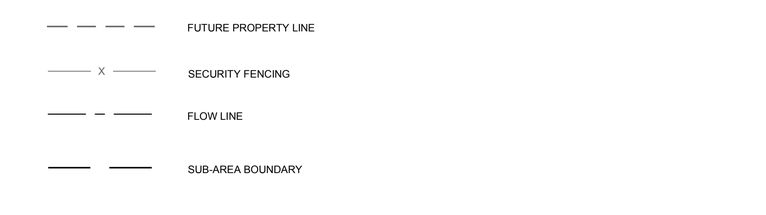


LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Qbr_{25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.419 SQ. MI.) = 545 CY

A INFILTRATION BASIN DETAIL
SCALE: NTS



B ACCESS ROAD DETAIL (TYP.)
SCALE: NTS

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA FLOOD ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATE (Q_{50}) DECREASED BY 1.5%, THE VOLUME (V_{50}) INCREASED BY 6.9%, THE DEPTH INCREASED BY 0.0%, AND THE VELOCITY INCREASED BY 0.0%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY: _____ RCE NO: _____ DATE _____
CHECKED BY: _____ DATE _____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N

0 50 100 200
SCALE: 1":100' (ON FULL SIZE DWG.)

2011-00833 (RCUP201100079) C-06

P:\04546\1_33--04546--12001\SUPPORTDOCS\CALCS\HYDROLOGY\SUPPLYFINAL DESIGN\ONSITE HYDROLOGY C06.DWG
PLOT/UPDATE: Dec 6, 2013 10:44:37 AM

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch
Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100079
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 1 NORTH
LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

APPENDIX H:
GEOTECHNICAL REPORT

TETRA TECH

August 7, 2013

Brian Smith
County of Los Angeles
Department of Public Works
900 South Fremont Ave
Alhambra, CA 91803

Reference: **Infiltration Rates for Silverado Solar Project Sites, Antelope Valley, CA**

Dear Brian:

The purpose of this letter is to establish a basis for the infiltration rates to be used for various Low Impact Development facilities to treat and infiltrate storm water to meet the Standard Urban Stormwater Mitigation Plan requirements. Currently, LA County Public Works has provided guidance to use an infiltration rate equal to .25 in/hr. We feel this value is extremely conservative based on our experience in the area, and in other high desert areas in the region. Bruin GSI performed preliminary percolation testing at each of the six solar project sites based on the Excavation Percolation Testing Procedure or Ryon Method as outlined in LA County Administrative Manual GS200.1. The results of these preliminary tests show percolation rates much higher than the LA County provided rate of .25 in/hr. The table below shows the preliminary percolation rates recorded by Bruin GSI, the corresponding Reduction Factor, Factor of Safety and requested site specific Infiltration Rate:

Project Site	Absorption Rate (minutes/inch)[1]	Preadjusted Percolation Rate (in/hr)	Reduction Factor[2]	Factor of Safety[3]	Infiltration Rate[4] (in/hr)
North Lancaster Ranch (RCUP201100079)	7	8.57	1.52	3	**1.88**
Western Antelope Blue Sky Ranch (RCUP201100070)	3	20.0	1.52	3	**4.39**
American Solar Greenworks (RCUP201100071)	3	20.0	1.52	3	**4.39**
Antelope Solar Greenworks (RCUP201100076)	4	15.0	1.52	3	**3.29**
Silver Sun Greenworks (RCUP201100072)	5	12.0	1.52	3	**2.63**
Lancaster WAD (RCUP201100074)	3	20.0	1.52	3	**4.39**

[1] Absorption rate was measured between the drop from 6" to 5" above bottom of the percolation pit

[2] Reduction factor is based on Rf=(2di-�d)/13.5 + 1 per GS200.1

[3] Factor of Safety accounts for variations across the site and for silt accumulation over time.

[4] Infiltration rate = Preadjusted Percolation Rate/(Reduction Factor x Factor of Safety)

Tetra Tech, Inc.
17885 Von Karman Avenue, Suite 500, Irvine, CA 92614
Tel 949.809.5000 Fax 949.809.5004 www.tetratech.com

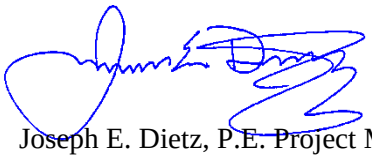
The Low Impact Development, LID, features on each project site will consist of a road that will create a berm to allow for the retention area. The road, which provides a berm of approximately 4 to 8 inches, enables run-off water to be captured and treated on-site at original grade level. Any flow in excess of retention capability of these berms will continue and normalize before it leaves the project boundaries thereby maintaining existing project conditions.

The excavations that Bruin GSI performed support our request to utilize these infiltration rates with the findings that the soil to a depth of 10 feet had no impermeable layers and the materials that were found were uniform. The density of the alluvial material, silty sand (SM) and sandy silt (ML) was generally loose to medium density with dry to moist conditions. The conditions of these materials further leads us to our conclusion that the above reference infiltration rates would be suitable to design the retention features on the respective project sites.

Groundwater conditions in the area, based on Bruin GSI review and Tetra Tech research, are at least 100 feet below ground surface elevation in the subject project areas.

As shown in the table above, the site specific infiltration rates based on preliminary testing are much higher than the .25 in/hr currently allowed. We request the use of the infiltration rates above for the design of the, LID, features at each site.

Sincerely,



Joseph E. Dietz, P.E. Project Manager

jd
P:\04546\135-04546-12001\Docs\Letters\LTR_InfiltrationRates_20130626.docx

Attachments:
Bruin GSI Preliminary Percolation Feasibility Study dated August 1, 2013

BRUIN GSI PRELIMINARY PERCOLATION FEASIBILITY STUDY DATED AUGUST 1, 2013

REVISED PRELIMINARY PERCOLATION FEASIBILITY STUDY FOR SURFACE INFILTRATION DATA FOR SILVERADO POWER ON PROPOSED SOLAR SITES

NORTH LANCASTER RANCH
WESTERN ANTELOPE BLUE SKY RANCH
AMERICAN SOLAR GREENWORKS
ANTELOPE SOLAR GREENWORKS
SILVER SUN GREENWORKS
LANCASTER WAD

LANCASTER, LOS ANGELES COUNTY
CALIFORNIA

Prepared by:
Bruin Geotechnical Services, Inc.
1817 East Avenue Q, Unit A1
Palmdale, California 93550

August 1, 2013
J.N. 12-59

BRUIN GSI

SOIL AND MATERIAL
TESTING AND INSPECTIONS

August 1, 2013 J.N. 12-59

Mr. Ryan Galeria
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

Project: Proposed Solar Sites, Lancaster, California

Sites:

1- North Lancaster Ranch

2- Western Antelope Blue Sky Ranch

3- American Solar Greenworks

4- Antelope Solar Greenworks

5- Silver Sun Greenworks

6- Lancaster WAD

Subject: Revised Preliminary Percolation Feasibility Study for Surface Infiltration Data via Los Angeles County Ryon Method

Presented herewith, per your request, are the results of the percolation testing program for the referenced project. The purpose of this report is to provide preliminary surficial percolation rates for the referenced sites for use by the client to determine the infiltration rates of the existing native soils at existing grade for the proposed water run-off of impermeable areas, such as drive access roadways and small equipment pad areas. This report concludes the scope of our services per our contract.

Site Description

The subject sites are located in the southwest portion of the Antelope Valley, in the Lancaster area of Los Angeles County. The subject sites vary in size and topography. However the sites are relatively flat and level with general slopes of approximately 1-3 percent, with drainage occurring by sheetflow, except site 2, Western Antelope Blue Sky Ranch, which sloped up to the southwest with minor rolling hills.

At the time of our investigation, the sites were vacant of structures. Vegetation consisted of native desert flora, with varying amounts of shrubs, annual grass and weeds. Oak trees were not observed at the sites. The site locations and site plan are presented in Appendix A. The approximate percolation test locations for each site are also indicated on the site plan.

Proposed Development and Drainage

Based on our review of the preliminary site plan, it is our understanding that a solar farm is proposed. The impermeable areas that create water run-off consist of raised access roadways on the perimeter of the site with access roadways, which locations vary by site, dissecting the sites. In addition, concrete equipment pads at various locations on each site will create small impermeable areas. The impermeable surface areas on each site range from 7.5% to 15% of the entire site areas. It is intended that the raised access roads serve as a berm and capture the run-off water and allow it to infiltrate at existing ground elevation. The height of the roadway will range from four to eight inches in height and will create the retention basins on each site and to allow infiltration into native soil at exiting grade elevation. Any additional flow will continue over the roads, therefore maintaining existing sheet flow patterns.

Percolation Testing Protocol

Testing for percolation rates was performed in accordance with the Los Angeles County Ryon Method. This method was performed by excavating a cubic foot test hole at existing ground surface which is the anticipated elevation of the infiltration basins. The test hole is pre-soaked by filling with clean water to existing grade (12 inches). Once all the water has been absorbed, the test hole is cleaned of loose material and filled again with clean water. The percolation rate is determined by monitoring the time of drop for each inch from 0 to 6 inches. The time of absorption between the 5th to 6th inch is the percolation rate in minutes per inch.

On December 1, 2012, the field-testing program was instigated. A minimum of one (1) cubic foot percolation test hole was excavated at each site. The test holes were excavated at the existing ground elevation to a depth of one (1) foot below existing ground elevation with hand equipment. The soil types were logged by our representative. Soil profile information and classifications are presented in Appendix B.

The same day, the cubic foot hole prepared was filled to the initial fill level of existing ground elevation with clean water for pre-soaking. Pre-soaking time varied with each test hole, however all the water percolated within ten to fifteen minutes of the addition of the water. The test hole was then cleaned and re-filled with water to the initial fill level (existing ground). The drop was monitored and documented to determine the absorption rate (drop from the 5th to 5th inch). The percolation rates are provided in Appendix B. Our representative David Michel performed the tests.

Subsurface Investigation

On July 31, 2013, seven (7) additional excavations were performed utilizing a tractor-mounted backhoe to a depth of ten (10) feet below existing ground surface at the locations of each test hole. The purpose of the excavations was to log the soil types, determine the soil classifications and if any impermeable material was present below the test holes. Our representative observed the excavations and prepared field logs of the material encountered. The final logs of the excavations are presented in Appendix C.

Groundwater Conditions

A review of various website databases regarding water well data and groundwater for the Antelope Valley area was performed. The sites included the United States Geological Survey, Los Angeles County Department of Public Works, State of California Department of Conservation, and published State of California Seismic Zone Hazard Maps (Del Sur Quadrangle and West Lancaster Quadrangle), with associated reports regarding liquefaction which is relative to groundwater levels. Based on our review, groundwater in the areas of the subject sites is a minimum of 100 feet below ground surface elevation.

Conclusions

Based on the excavations performed at the subject sites, the material encountered was uniform and no impermeable layers were observed within the total depth of the excavations (10 feet bgs). The areas observed consist of alluvial material, silty sand (SM) and sandy silt (ML). This material was observed to be generally loose to medium dense and dry to moist. Some cementation was observed. The soils appeared porous and permeable.

Groundwater is over 100 feet below ground surface elevation in the subject site areas.

The percolation rates, indicated as minutes per inch, may be utilized to determine the infiltration rate of the soil at existing grade to design the specific area required for the amount of water run-off based on the size of the impermeable areas. The design should include a minimum safety factor of 2.0.

The proposed use of the project site as a solar farm is not expected to significantly change the imperviousness of the sites, with the exception of road construction, which is anticipated to cover 7-15%, depending on the site. It is our professional opinion, provided the drainage and infiltration basins are properly designed, the use of these raised roadway areas as berms to capture run-off water to allow infiltration at existing ground elevation is feasible.

Limitations

The percolation test data provided is based on Los Angeles County Health Department Guidelines (Ryon Method) typically required for septic system design to determine

in minutes per inch at the location on the site as indicated in this report only. Other areas of the each site may vary. The purpose of the testing is to provide the client with preliminary soil absorption rates for their use in preparing information in regards to water run-off and minor surficial detention of water for infiltration in order to comply with the Limited Impact Development standards. Los Angeles County may require additional testing or methodology for final approval.

If there are any changes in the proposed construction or additional testing is necessary, this office should be notified immediately. If soils encountered are different than indicated in this report, contact this office. No warranty is expressed or implied. Test results indicate the rates at the locations indicated. This report does not guarantee issuance of a permit. This report is subject to approval from the governing agency.

Closure

Information and procedures described in the report were performed in accordance with general standards of practice. We trust this reports meets your needs. If you have any questions or require additional information, Please contact our office.

Sincerely,

Bruin Geotechnical Services Inc.

Dennis J. Sloan, P.E.

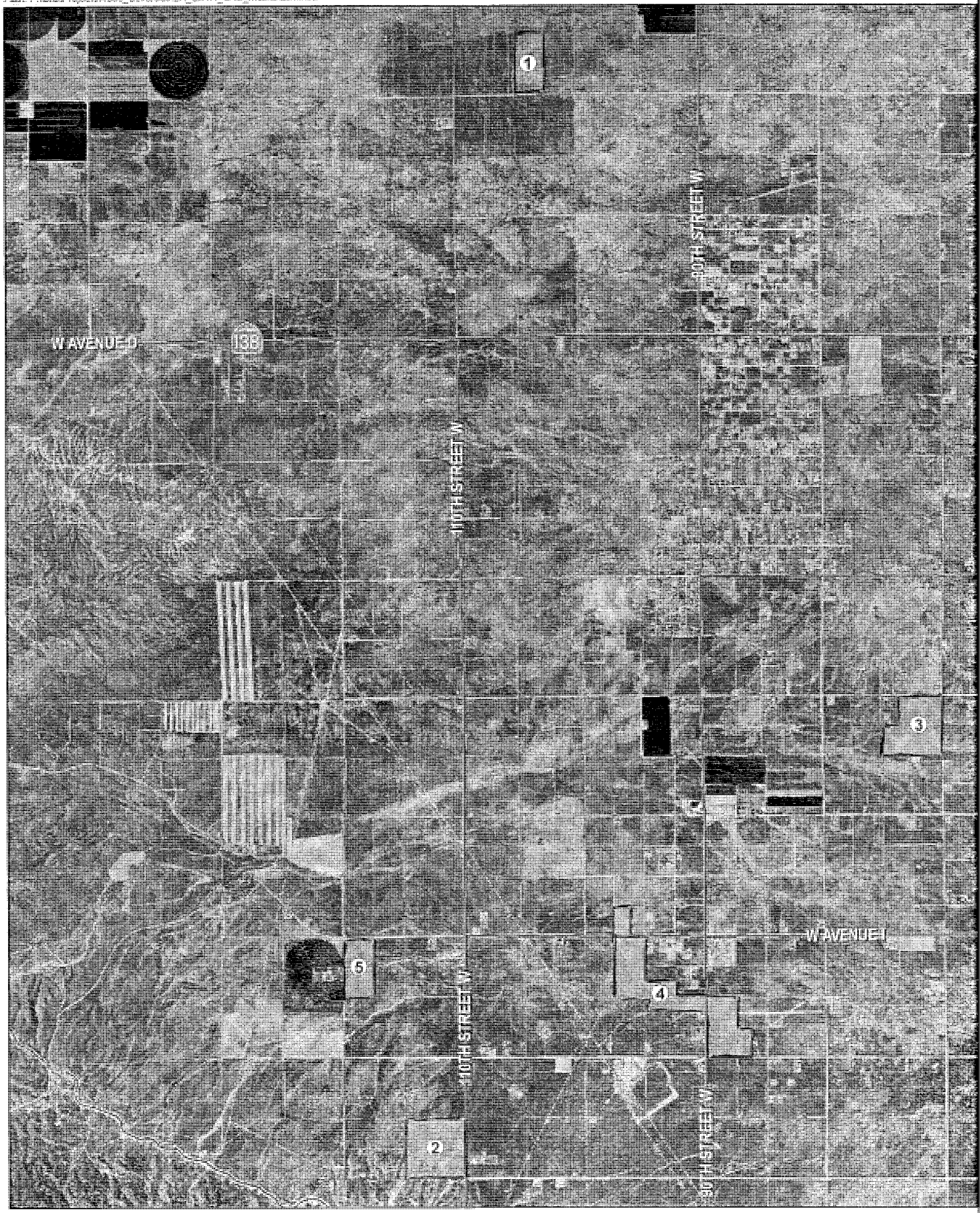
REGISTERED PROFESSIONAL ENGINEER
DENNIS J. SLOAN
No. 29704
Expires 03/31/15
CIVIL
STATE OF CALIFORNIA

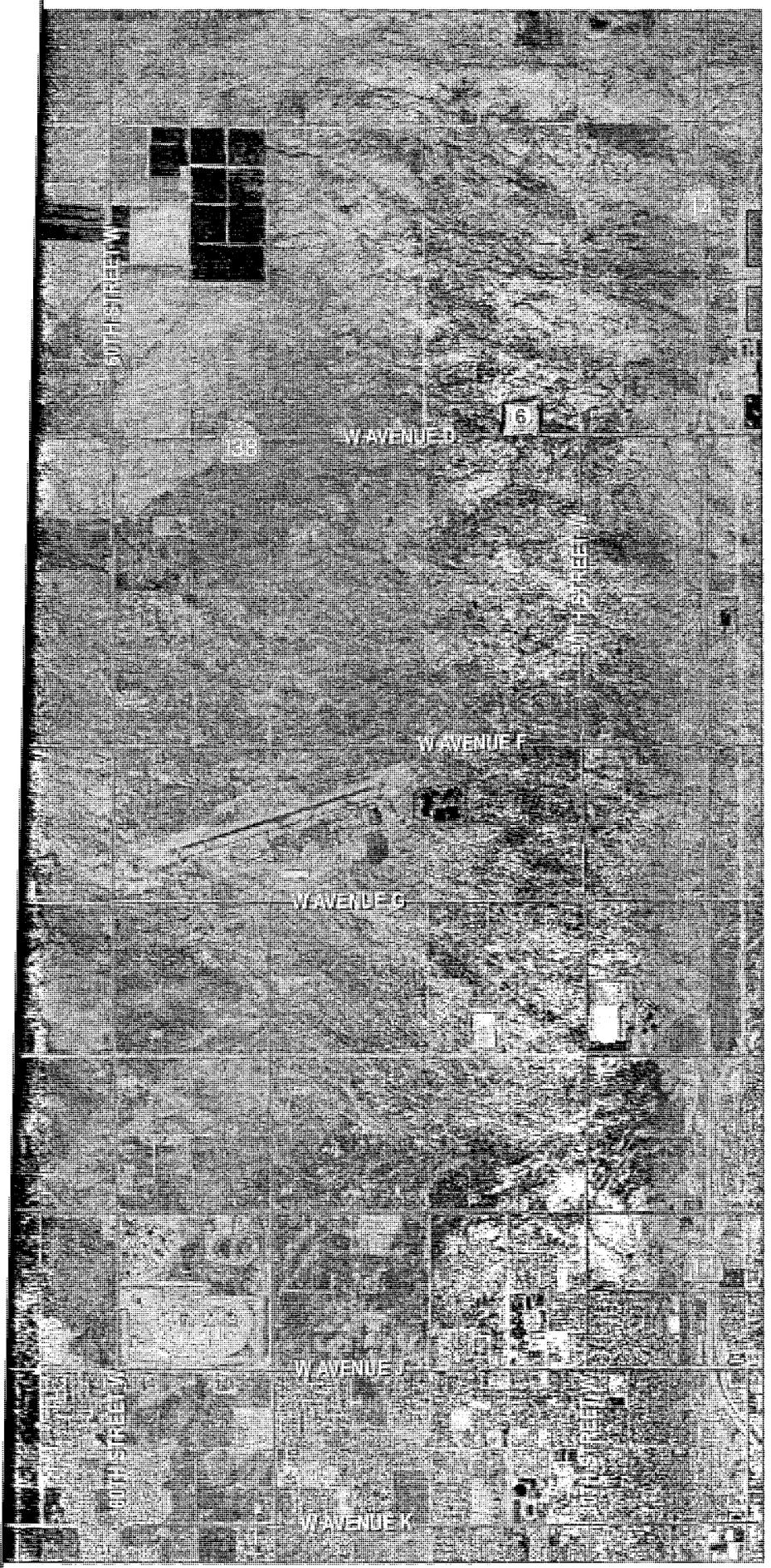
DJS/mes

APPENDIX A

Site Location Map
Site Plans with Approximate Test Locations

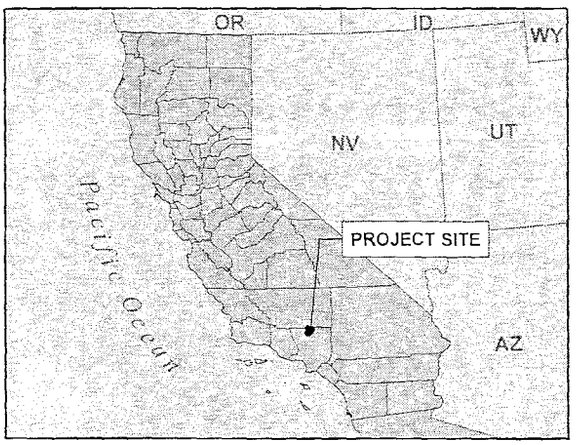
Plotting Date: 6/27/2012 4:18:17 PM
Path: P:\GIS\Projects\4335_Shirrado\LA_EIR\1_LAC_MasterEIR.mxd





SILVERADO power

SILVERADO POWER WEST
LOS ANGELES COUNTY



LEGEND

PROJECT 1 - NORTH LANCASTER RANCH

PROJECT 2 - WESTERN ANTELOPE BLUE SKY RANCH

PROJECT 3 - AMERICAN SOLAR GREENWORKS

PROJECT 4 - ANTELOPE SOLAR GREENWORKS

PROJECT 5 - SILVER SUN GREENWORKS

PROJECT 6 - LANCASTER WAD

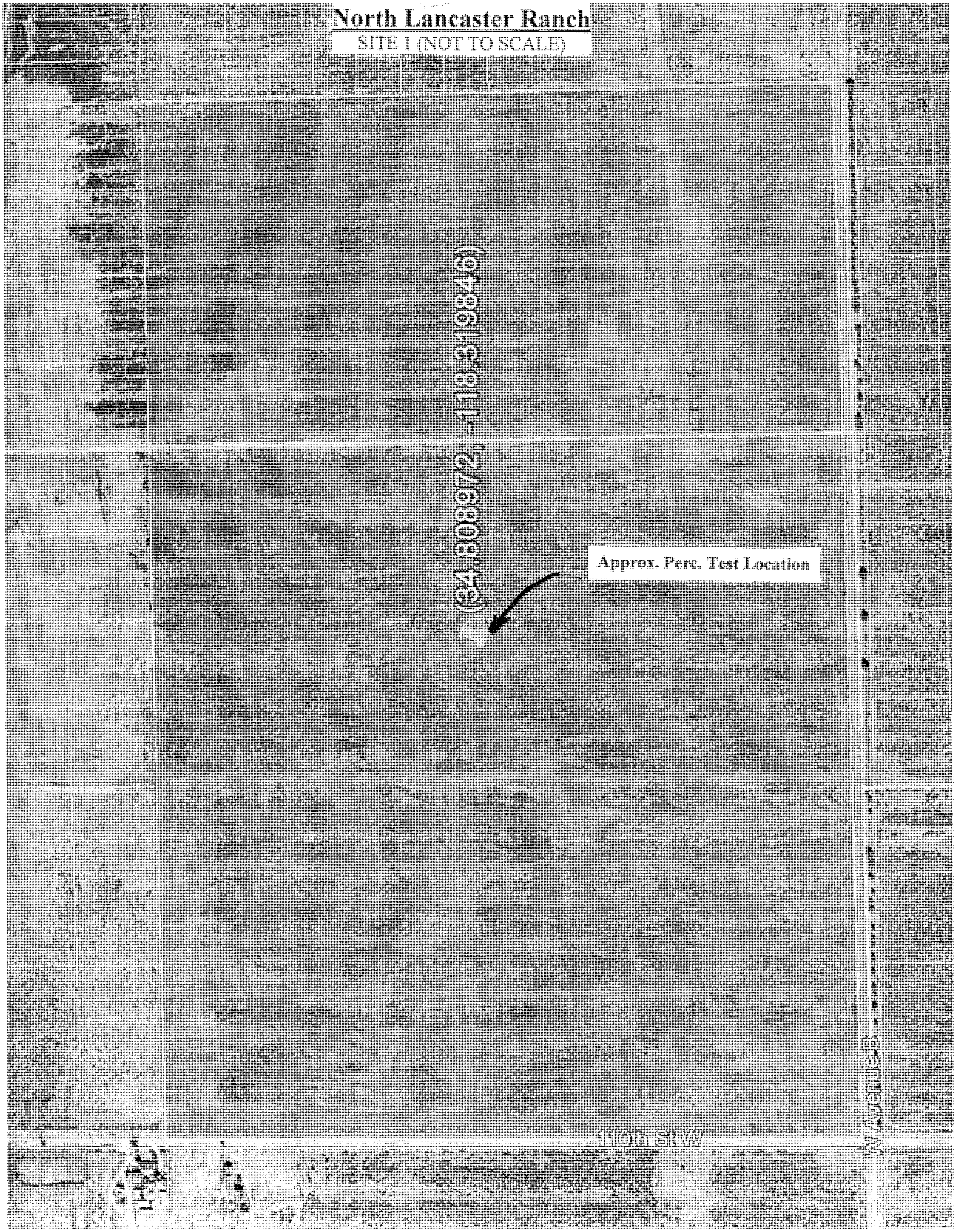
NOTE:
(a) State Plane, Zone V (NAD83), US Survey Feet.
(b) Source Data: ESRI, TTEC.

FIGURE 1
SILVERADO POWER WEST
LOS ANGELES COUNTY
PROJECTS

0 0.5 1 2

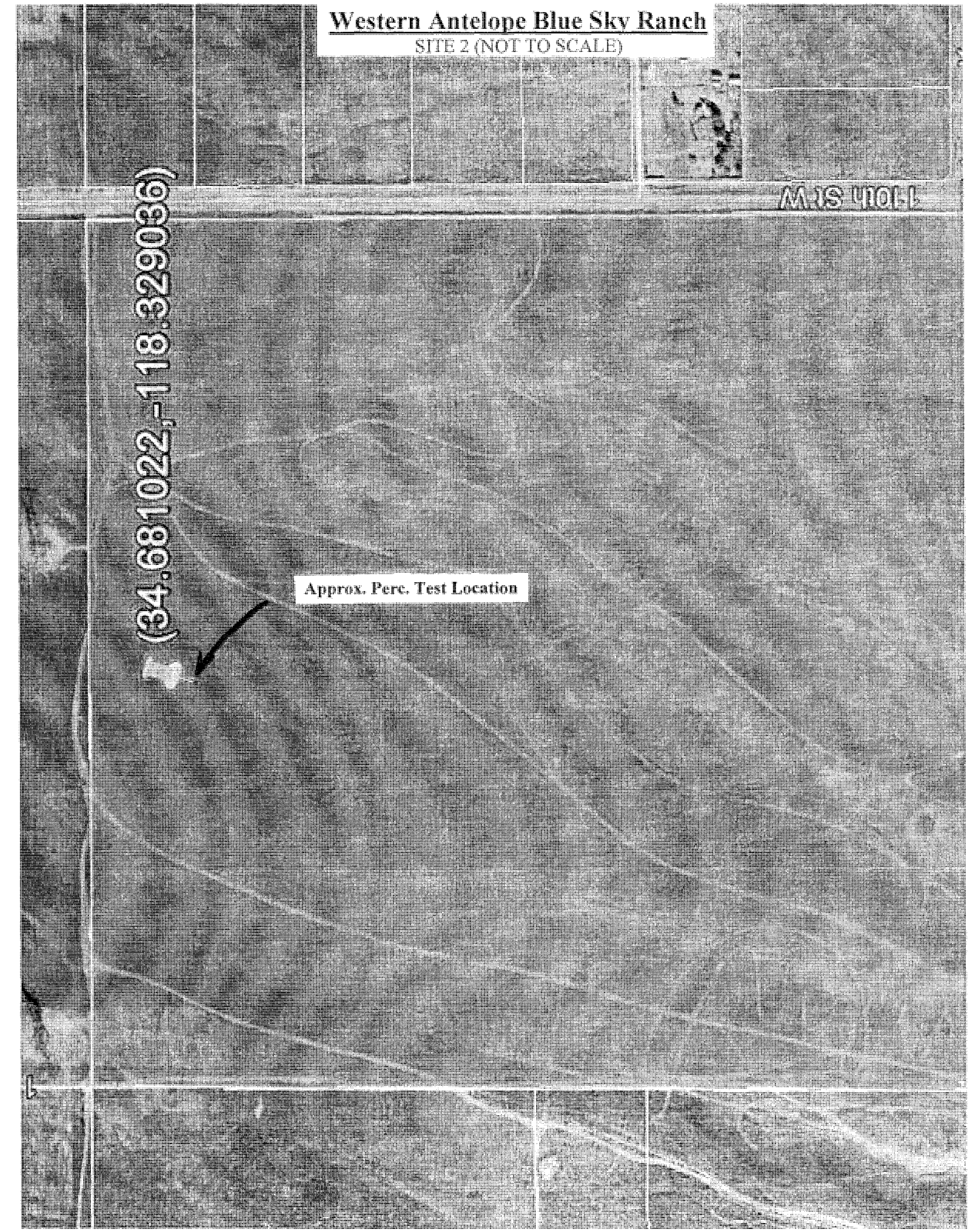
Miles

TETRA TECH EC, INC.


North Lancaster Ranch
SITE 1 (NOT TO SCALE)
(34.808972, -118.319846)
Approx. Perc. Test Location
110th St W
W Avenue B

Western Antelope Blue Sky Ranch

SITE 2 (NOT TO SCALE)

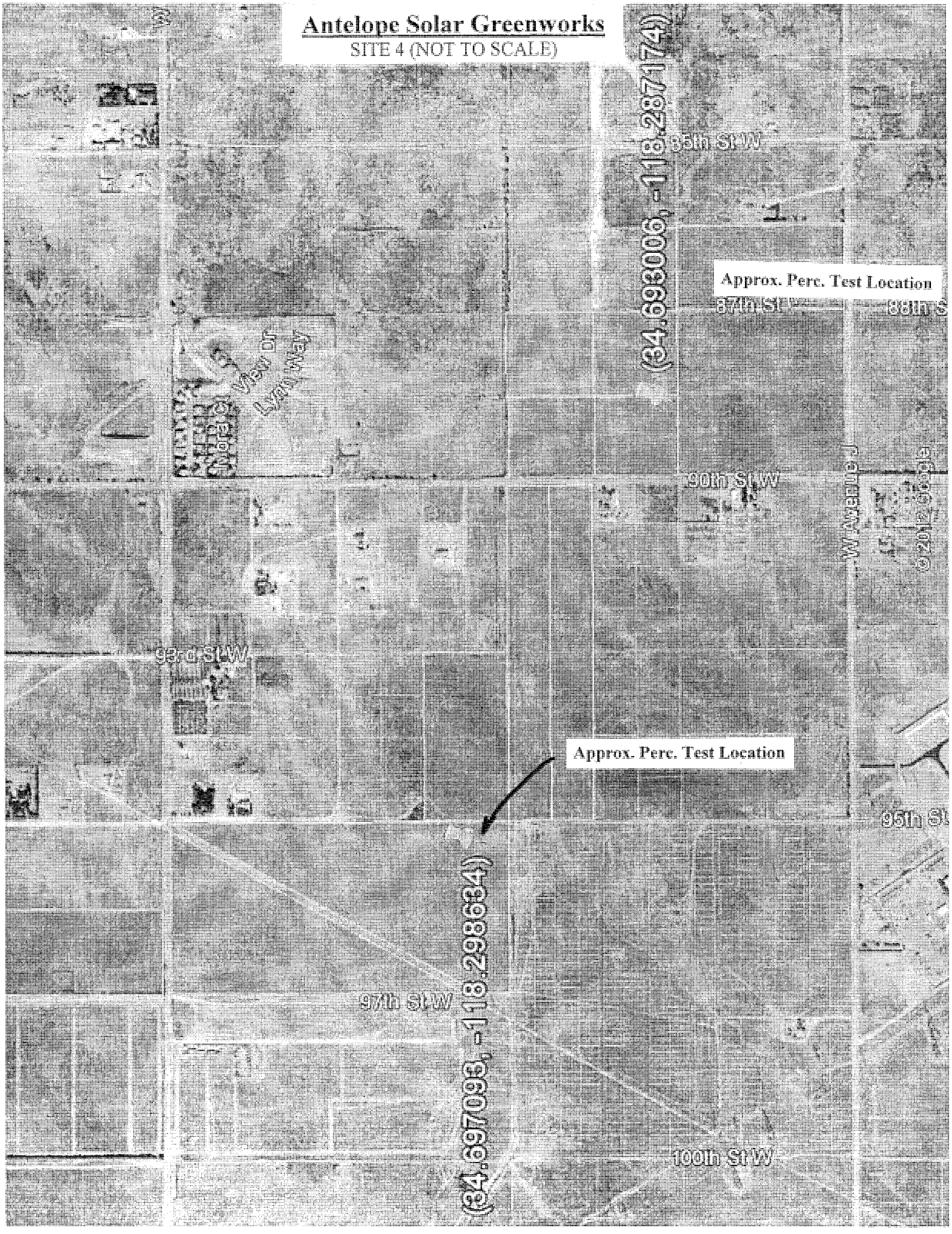


American Solar Greenworks

SITE 3 (NOT TO SCALE)

Antelope Solar Greenworks

SITE 4 (NOT TO SCALE)



Silver Sun Greenworks

SITE 5 (NOT TO SCALE)

Lancaster WAD

SITE 6 (NOT TO SCALE)

APPENDIX B

Soil Profile, Classifications and Absorption Rate

Site	Soil Description	USCS Classification	Absorption Rate (MPI)
Site 1 North Lancaster Ranch Ave. B & 110th St. West	Light brown fine sandy silt w/ medium to coarse sand (cemented)	ML	7
Site 2 Western Antelope Blue Sky Ranch Ave. K & 110th St. West	Dark Yellow brown silty fine to coarse sand	SM	3
Site 3 American Solar Greenworks Ave. G-8 & 70th St. West	Light brown silty fine to medium sand with coarse sand (slightly cemented)	SM	3
Site 4 Antelope Solar Greenworks Ave. J & 90th St. West (2 tests- A=NW portion, B=SE portion)	A-Moderate brown very silty fine to medium sand	SM	4
	B-Light brown silty fine to medium sand with coarse sand	SM	3
Site 5 Silver Sun Greenworks Ave. I & 120th St. West	Strong brown silty fine to coarse sand (slightly cemented)	SM	5
Site 6 Lancaster WAD Ave. D & 30th St. West	Light brown very silty fine to medium sand (cemented)	SM	3

APPENDIX C

Excavation Logs

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 1 North Lancaster Ranch	**Drill Type:** Case backhoe
Location: Ave. B &110th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
5'		ML	Light brown fine sandy silt w/ medium to coarse sand medium dense, dry (cemented)					
			(slightly cemented)					
10'		SM	Grey brown very silty fine sand w/ medium sand medium dense, moist (slightly cemented)					
		SM	Medium brown silty fine to medium medium dense, moist (slightly cemented)					
15'			Excavation terminated @ 10' bgs No free groundwater encountered No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 2 Western Antelope Blue Sky Ranch	**Drill Type:** Case backhoe
Location: K-8 & 110th St West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Dark yellow silty fine to medium sand w/ occasional coarse sand, medium dense, dry (slightly cemented)					
5'		SM	Reddish brown silty fine to coarse sand & clay binder medium dense, slightly moist					
		SM	Yellow brown silty fine to coarse sand w/ occasional #4 gravel medium dense moist (cemented)					
10'		SM	Yellow brown silty fine to coarse w/ occasional #4 gravel medium dense moist					
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 3 American Solar Greenworks	**Drill Type:** Case backhoe
Location: 70th st west & Ave G-8	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Light brown silty fine to medium sand medium dense, dry (slightly cemented)					
		SM	Moderate brown silty fine to coarse sand loose, moist					
5'								
		SM	Moderate brown silty fine to medium sand w/ coarse sand moist medium dense, moist (slightly cemented)					
		ML	Yellow brown silty fine to medium sand medium dense, moist					
10'								
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1 (A)

Client: Silverado Power	**Project No:** 12-59
Project: Site 4 Antelope Solar Greenworks	**Drill Type:** Case backhoe
Location: 90th West & Ave J	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
5'		SM	Moderate brown very silty fine to medium sand w/ coarse sand medium dense, dry (cemented dry)					
10'		SM	Yellow brown silty fine to medium sand w/ coarse sand loose, dry (slightly cemented)					
		SM/ML	Light brown very silty fine to medium sand w/ occasional coarse sand medium dense, moist (cemented)					
15'		SM/ML	Light brown very silty fine to medium sand w/ occasional coarse sand medium dense, moist (cemented) Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E2 (B)

Client: Silverado Power	**Project No:** 12-59
Project: Site 4 Antelope Solar Greenworks	**Drill Type:** Case backhoe
Location: 90th West & Ave J	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		ML	Light brown silty fine to medium sand medium dense, dry (slightly cemneted)					
5'		SM	Moderate brown silty fine to medium sand medium dense, moist (slightly cemented)					
		SM	Orange brown silty fine to medium sand w/ occasional #4-1/2 gravel loose, moist					
10'		SP	Yellowish brown slightly silty fine to medium sand w/ coarse sand medium dense, slightly moist					
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 5 Silver Sun Greenworks	**Drill Type:** Case backhoe
Location: Ave I & 120th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Medium brown silty fine to w/coarse sand					
			medium dense, dry (slightly cemneted)					
		SM	Dark brown silty fine to coarse sand w/ clay binder					
5'			medium dense (slightly cemented)					
		SM	Dark yellowish brown slightly silty fine to coarse sand w/ #4 gravel					
			loose, moist					
10'		SM	Dark brown slightly silty fine to coarse sand w/ #4 gravel & occasional 1"- 3" gravel					
			loose, moist					
15'			Excavation Terminated @ 10' bgs					
			No free groundwater encountered					
20'			No caving					
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 6 Lancaster WAD	**Drill Type:** Case backhoe
Location: Ave D & 30th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Light grey very silty brown fine to medium sand					
			medium dense (cemented)					
		ML	Light grey brown fine sandy silt					
			firm, slightly moist (cemented)					
5'		ML	Pale brown fine sandy silt					
			dense, dry					
		SM	Light brown silty fine sand w/ occasional medium sand					
			loose, dry					
10'		SM	Light brown silty sand w/ occasional medium sand					
			loose, dry					
			Excavation Terminated @ 10' bgs					
			No free groundwater encountered					
15'			No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

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APPENDIX B-7.2

PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH HYDROLOGY STUDY/DRAINAGE CONCEPT/SUSMP/LID

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HYDROLOGY STUDY/DRAINAGE CONCEPT/LID

PROJECT 2
WESTERN ANTELOPE BLUE SKY RANCH
R2011-00798 (RCUP201100070)

110TH ST. W. & W. AVE. K
LANCASTER
LOS ANGELES COUNTY, CA

December 2013

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID APPROVED FOR AREA AND Q ONLY

APPROVED BY: _____ RCE NO. _____DATE_____

CHECKED BY:_____ DATE_____

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS LAND DEVELOPMENT DIVISION

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This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.

Joseph E. Dietz P.E. 67032 | 12/6/13 | Date | Seal

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I. INTRODUCTION

Project 2 Western Antelope Blue Sky Ranch is a solar power project located west of 110th St., between W. Avenue K to the south and W. Avenue J to the north (see **Location Map, Appendix A**). The property is owned by Silverado Power (referred to as "applicant" for the remainder of this report). The scope of this hydrology report is to analyze the pre-development and post-development hydrological conditions (once the installation of the solar panels is complete) in order determine runoff effects on and off the site. The peak runoff calculations were developed for the 2-, 5-, 10-, 25-, and 50-year storm events. Currently, runoff from approximately 512.4 acres of offsite area enters the 162.5 acre project site from the south-west, creating a study watershed area of approximately 674.9 acres. The off-site runoff was added into the on-site runoff areas as shown on the attached Drainage Maps (see **Appendix G**). The majority of the watershed consists of un-developed land.

II. PROJECT BACKGROUND

The site experiences existing slopes of under 5% on average in the areas of proposed development. The project will involve minimal grading for construction of dirt access roads between the proposed arrays of solar panels. The project site currently drains from south to north. The post-development condition will maintain this flow path. The post-development runoff will continue to flow in the pre-development condition (ranging from sheet flow to concentrated flow in natural channels) in order to avoid disturbance to downstream drainage structures and wildlife. Impacts to the 50-year storm event flow rates, volumes, depths, and velocities leaving the site will be negligible (see **Impact Analysis, Appendix E**). The construction of the solar panel arrays and other miscellaneous site development will be accounted for by increasing the site's impervious percentage from 1% to the Los Angeles County approved value of 10% in the areas of development. Using this approach, weighted averages of impervious surface for each on-site subarea were calculated (see **On-Site Post Development Hydrologic Calculation, Appendix D)**. Per the LACDPW Flood Control Division, the additional amount of runoff generated by this increase in impervious surface will be collected onsite with the help of 7 infiltration basins created by reinforced elevated road sections located at various locations within the site (see **On-Site Drainage Map, Appendix G)**. The ponding water will infiltrate in about 11 hours (see **Water Quality Calculations, Appendix F**).

III. EXISTING DRAINAGE CONDITION

In order to delineate the existing drainage conditions for the Western Antelope Blue Sky Ranch project site and its watershed, USGS and site specific topographic data were reviewed. A watershed boundary was developed for the project site (see **Off-Site Drainage Map, Appendix G)**. A site visit was conducted on June 1, 2012 by Joe Dietz, PE to verify the delineated watersheds and to take site photos of the existing drainage features. A map showing locations where the photos were taken as well as photos identifying typical site drainage conditions are attached under the **Existing Drainage Condition Appendix B** of this report.

Review of the topographic information and results of the site survey found that storm runoff generally sheet flows in a northern direction. Flow seems to concentrate in a few locations on the site in naturally formed channels.

A Geotechnical Report (see **Appendix H**) was prepared for the site. The report shows site soils consist of silty fine to coarse sand. The percolation test performed shows soil infiltration rates of 3 min/in, which is equivalent to 20.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 4.39 in/hr.

IV. METHODOLOGY

HYDROLOGIC CALCULATIONS

To determine the watershed boundaries tributary to the project site, existing USGS and site specific topographic data was reviewed. Hydrologic Calculations for the proposed project site were performed in conformance with the Los Angeles County Hydrology Manual, dated January 2006, utilizing the Modified Rational Method TC Calculator. The Modified Rational Method was used to estimate the runoff flows for each sub-area of the watershed, which were limited to 40 acres (see **Appendix D**). The Modified Rational Method equation relates rainfall intensity, time of concentration, runoff coefficient, and drainage area size to the direct runoff from each drainage sub-area. The TC Calculator along with rainfall intensity maps from the Los Angeles County Hydrology Manual were used to model the various watersheds and determine the peak flows.

Hydrologic Soil number 120 and 134 were used as the soils group for the project site per the Los Angeles County Hydrology Manual, Map 1-H1.66 (see **Appendix C**). Times of concentration for the various sub-areas were calculated by the TC Calculator based on the approximate length and the elevation difference over that length. Lastly, peak flows from each sub-area were summed in order to achieve a total peak runoff for the entire watershed. This approach is conservative due to the fact that it yields a slightly higher peak runoff if compared to an alternative approach which analyzes all sub-areas and utilizes surface routing to generate lag times.

BASIN ROUTING CALCULATIONS

For select flow locations, the Modified Puls Routing Method per Chapter 8 of the Los Angeles County Hydrology Manual was used to determine the development's impact on the 50-year storm event flow rates leaving the project site. The method routes the 50-year post-development hydrograph (obtained from the TC Calculator results) through the proposed infiltration basins using storage-elevation and outflow-elevation relationships, along with Continuity Equation 8.1 and Equation 8.2 in a series of time steps. The results are included within **Appendix E** of this report.

FLOOD DEPTH AND VELOCITY CALCULATIONS

To determine the development's impact on the 50-year storm event flood depth and velocity leaving the site, Bently FlowMaster V8i was used to calculate the pre-development and post-development 50-year flood depths and velocities. FlowMaster uses the Manning's Formula to calculate the normal depth and velocity for a given cross-section given information for the slope, peak flow rate, and roughness coefficient for the section. The peak flow rates from the TC Calculator for used for the pre- and post-development conditions. For select flow locations, the peak flow after basin routing was used for the post-development condition. The results are included within **Appendix E** of this report.

DEBRIS POTENTIAL CALCULATIONS

A debris production rate was calculated for the site using the Debris Production Rate figure for the Antelope Valley from Appendix B of the LACDPW Sedimentation Manual (see **Appendix C**). This rate multiplied by the square mileage of the site provides the debris potential for the site (see **Appendix G**). The site produces moderate levels of debris due to the existing topography. Although no debris protection measures will be provided, the infiltration basins must be maintained and cleared after each debris flow event.

V. SUMMARY OF RESULTS

Hydrologic calculations were performed for the pre-/post development conditions. Summary tables and detailed calculations for the 2-, 5-, 10-, 25-, and 50-year storm events showing drainage area size, soil type, storm frequency, flow length, slope, flow rate, burned flow rate, storm volumes, etc., are located in **Appendices D and G** of this report. The pre-development 25-year storm event (including the off-site area) yielded a clean runoff of 713.34 cfs and a storm volume of 46.37 ac-ft. The proposed use of the project site as a solar farm is not expected to significantly change the imperviousness of the site. The addition of the solar panel arrays and other miscellaneous development is accounted for by the Los Angeles County approved value of 10% impervious surface. With this percentage, weighted average values for the impervious surface for each on-site subarea were calculated (see **On-site Post Development Hydrologic Calculations, Appendix D**). With this increase in impervious surface, the post-development 25-year storm event (including the off-site area) yielded a clean runoff of 730.53 cfs and a storm volume of 49.60 ac-ft. The additional runoff of 17.19 cfs and the additional storm volume of 3.23 ac-ft represent the delta quantities which require mitigation in order for the pre- and post-development flow rate and storm volume to be the same for the 25-year storm event. The on-site clean runoffs and storm volumes from the Modified Rational Method TC Calculator are shown in Table 1 and 2 below. See **Appendix D** for the off-site clean runoffs and storm volumes.

Table 1 – Pre-Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A	2-YEAR	0.19	0.06
B		1.19	0.38
C		1.52	0.48
D		0.90	0.29
E		1.46	0.46
F		0.86	0.27
G		1.24	0.39
H		0.49	0.16
I		0.30	0.10
J		1.50	0.48
K		0.52	0.16
L		0.62	0.20
A	5-YEAR	0.29	0.09
B		6.10	0.67
C		2.29	0.73
D		1.36	0.43
E		5.77	0.80
F		1.30	0.41
G		4.75	0.67
H		0.74	0.24
I		0.46	0.15
J		6.03	0.82
K		0.78	0.25
L		0.94	0.30
A	10-YEAR	0.36	0.11
B		11.95	0.91
C		2.78	0.89
D		1.65	0.53
E		11.06	1.09
F		1.57	0.50
G		8.77	0.91
H		0.90	0.29
I		0.56	0.18
J		13.35	1.13
K		0.95	0.30
L		1.15	0.37

Table 1 – Pre Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A	25-YEAR	1.77	0.16
B		19.84	1.22
C		4.99	1.13
D		2.76	0.66
E		19.43	1.47
F		2.64	0.63
G		16.14	1.25
H		1.51	0.36
I		2.41	0.24
J		22.61	1.50
K		2.03	0.39
L		1.79	0.45
A	50-YEAR	2.65	0.19
B		25.62	1.46
C		12.12	1.40
D		4.42	0.78
E		26.96	1.75
F		7.47	0.80
G		21.79	1.47
H		3.52	0.45
I		3.92	0.29
J		31.77	1.83
K		5.68	0.49
L		5.69	0.58

Table 2 – Post-Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)	ΔQ (CFS)	ΔV (AC-FT)
A	2-YEAR	0.32	0.10	0.13	0.04
B		1.30	0.41	0.11	0.03
C		2.34	0.75	0.82	0.27
D		1.47	0.47	0.57	0.18
E		1.59	0.51	0.13	0.05
F		1.17	0.37	0.31	0.10
G		2.02	0.64	0.78	0.25
H		0.76	0.24	0.27	0.08
I		0.50	0.16	0.20	0.06
J		1.91	0.61	0.41	0.13
K		0.80	0.25	0.28	0.09
L		1.02	0.32	0.40	0.12
A	5-YEAR	0.49	0.15	0.20	0.06
B		6.59	0.73	0.49	0.06
C		3.53	1.13	1.24	0.40
D		2.22	0.71	0.86	0.28
E		5.77	0.85	0.00	0.05
F		1.77	0.56	0.47	0.15
G		5.60	1.04	0.85	0.37
H		1.15	0.37	0.41	0.13
I		0.78	0.24	0.32	0.09
J		7.44	1.02	1.41	0.20
K		1.20	0.38	0.42	0.13
L		1.54	0.49	0.60	0.19
A	10-YEAR	0.74	0.19	0.38	0.08
B		12.21	0.97	0.26	0.06
C		4.30	1.38	1.52	0.49
D		2.69	0.86	1.04	0.33
E		11.06	1.16	0.00	0.07
F		2.14	0.69	0.57	0.19
G		10.54	1.37	1.77	0.46
H		1.39	0.45	0.49	0.16
I		1.01	0.29	0.45	0.11
J		13.97	1.36	0.62	0.23
K		1.46	0.47	0.51	0.17
L		1.88	0.60	0.73	0.23

Table 2 – Post-Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)	ΔQ (CFS)	ΔV (AC-FT)
A	25-YEAR	2.32	2.80	0.55	0.09
B		20.20	22.20	0.36	0.08
C		7.86	10.78	2.87	0.61
D		4.05	5.70	1.29	0.42
E		19.81	22.05	0.38	0.09
F		3.65	5.36	1.01	0.24
G		18.26	20.06	2.12	0.54
H		2.30	3.25	0.79	0.20
I		3.24	3.97	0.83	0.14
J		24.65	27.04	2.04	0.29
K		4.43	5.57	2.40	0.22
L		4.34	5.66	2.55	0.31
A	50-YEAR	3.41	3.95	0.76	0.10
B		27.56	29.75	1.94	0.06
C		15.34	18.85	3.22	0.69
D		7.62	9.57	3.20	0.51
E		27.43	29.96	0.47	0.11
F		8.69	10.77	1.22	0.26
G		24.01	26.00	2.22	0.62
H		4.85	6.00	1.33	0.23
I		4.78	5.61	0.86	0.15
J		32.84	35.53	1.07	0.32
K		6.74	8.06	1.06	0.23
L		7.46	9.03	1.77	0.32

As discussed further in the Water Quality Calculations, the peak mitigation flow rate (Q_{PM}) of 4.80 cfs and the mitigation volume (V_M) of 1.54 ac-ft from the post-development condition represent required mitigation quantities (see **Water Quality Calculations, Appendix F**). The mitigation runoffs and storm volumes for each area are shown in Table 3 below. The mitigation measures will be sized to account for the 25-year storm event pre-/post-development delta quantities since they exceed the mitigation quantities.

Table 3 – Post-Development Mitigation Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A	MITIGATION	0.10	0.03
B	MITIGATION	0.40	0.13
C	MITIGATION	0.73	0.24
D	MITIGATION	0.47	0.15
E	MITIGATION	0.49	0.16
F	MITIGATION	0.38	0.12
G	MITIGATION	0.63	0.20
H	MITIGATION	0.24	0.08
I	MITIGATION	0.17	0.05
J	MITIGATION	0.59	0.19
K	MITIGATION	0.26	0.08
L	MITIGATION	0.34	0.11

The proposed infiltration basins were sized to meet the ΔV_{25} of 3.23 ac-ft by providing a total capacity of 3.54 ac-ft. The proposed infiltration basins will be created by reinforced elevated road sections with variable heights (2.5 feet to 4 feet). The geometry of each basin varies and flood widths range from 37 feet to 121 feet (see **On-Site Drainage Map, Appendix G**) The basins will be located at various locations throughout the site (see **Water Quality Calculations, Appendix F**). The role of the infiltration basins is to capture only ΔV_{25} and allow it to infiltrate. In doing so, the whole V_M will be infiltrated and treated by the existing soils. At capacity, additional flow will continue over the road section and return to pre-development sheet flow and channel flow patterns.

Calculations were performed to determine the development's impact on the 50-year storm event flow rates and volumes. Calculations were performed for the 5 major flow lines leaving the site (see **On-Site Drainage Map, Appendix G**). The calculations are included within **Appendix E** of this report. The infiltration basins were initially ignored for these calculations. This approach is conservative as the basins act to reduce the flow rates and volumes of the post-development condition. The results are shown in Table 4 below.

Table 4 – Impact Analysis Results Neglecting Infiltration Basins

FLOW		Q50 (CFS)	V50 (CFS)
1	PRE	23.99	1.54
	POST	24.75	1.64
	CHANGE	3.2%	6.5%
2	PRE	59.08	4.21
	POST	64.24	4.96
	CHANGE	8.7%	17.8%
3	PRE	4.42	0.78
	POST	7.62	1.29
	CHANGE	72.4%	65.4%
4	PRE	504.18	27.25
	POST	510.28	28.62
	CHANGE	1.2%	5.0%
5	PRE	387.17	22.15
	POST	391.07	23.02
	CHANGE	1.0%	3.9%

Increases less than 10% represent negligible impacts to the 50-year storm event flow rates and volumes and require no further analysis. For flow lines 2 and 3, the infiltration basins were accounted for to determine the development's actual impact. By accounting for the ΔV_{25} storage of the infiltration basins, the post-development flow volumes for flow lines 2 and 3 were reduced to 4.63 ac*ft and 0.3 ac*ft respectively. These represent increases under 10% and therefore are negligible (see **Appendix E**).

Basin routing calculations were performed to determine the effect of the infiltration basins on the post-development 50-year peak flow rate for flow line 3. Calculations are included within **Appendix E** of this report. After basin routing, the 50-year storm event yielded clean runoff of 4.65 cfs, which represents a 5.2% increase from the pre-development value of 4.42 cfs. This represents an insignificant increase from the pre-development value and therefore is negligible.

Flood depth and velocity calculations were performed for the 50-year storm event to determine the impact of the development. Results are included within **Appendix E** of this report. The pre-development calculations used the peak flow results from the TC Calculator results, while the post-development calculations considered the peak flow rate from the post-development TC Calculator results. Flow line 3 used the peak flow rate after basin routing for the post-development condition. The results are shown below in Table 5 and represent negligible increases from the pre-development condition.

Table 4 – Bentley FlowMaster Flood Depths and Velocities

FLOW		MAX NORMAL DEPTH (IN)	VELOCITY (FT/S)
1	PRE	2	2.67
	POST	2	2.70
	CHANGE	7.1%	1.1%
2	PRE	2	3.83
	POST	2	3.95
	CHANGE	0.0%	3.1%
3	PRE	1	2.07
	POST	1	2.11
	CHANGE	0.0%	1.9%
4&5	PRE	8	5.87
	POST	8	5.88
	CHANGE	0.0%	0.2%

Due to the existing topography of the site, points of concentration exist such as natural channels. Therefore, a portion of the 7,491 cubic yards of debris produced (see **Appendix G**) will end up in the existing channels found within the site. Although debris protection measures will not be implemented for the site, all infiltration basins will be maintained and cleared after each debris flow event.

APPENDIX A:
LOCATION MAP

N

TETRA TECH
17885 VON KARMAN AVE., STE. 500
IRVINE, CA 92614-6213
949-809-5000

Scale:

Date: 9-5-2013

LOS ANGELES COUNTY

PROJECT 2
WESTERN ANTELOPE BLUE SKY RANCH
LOCATION MAP

FIGURE A

File Location:
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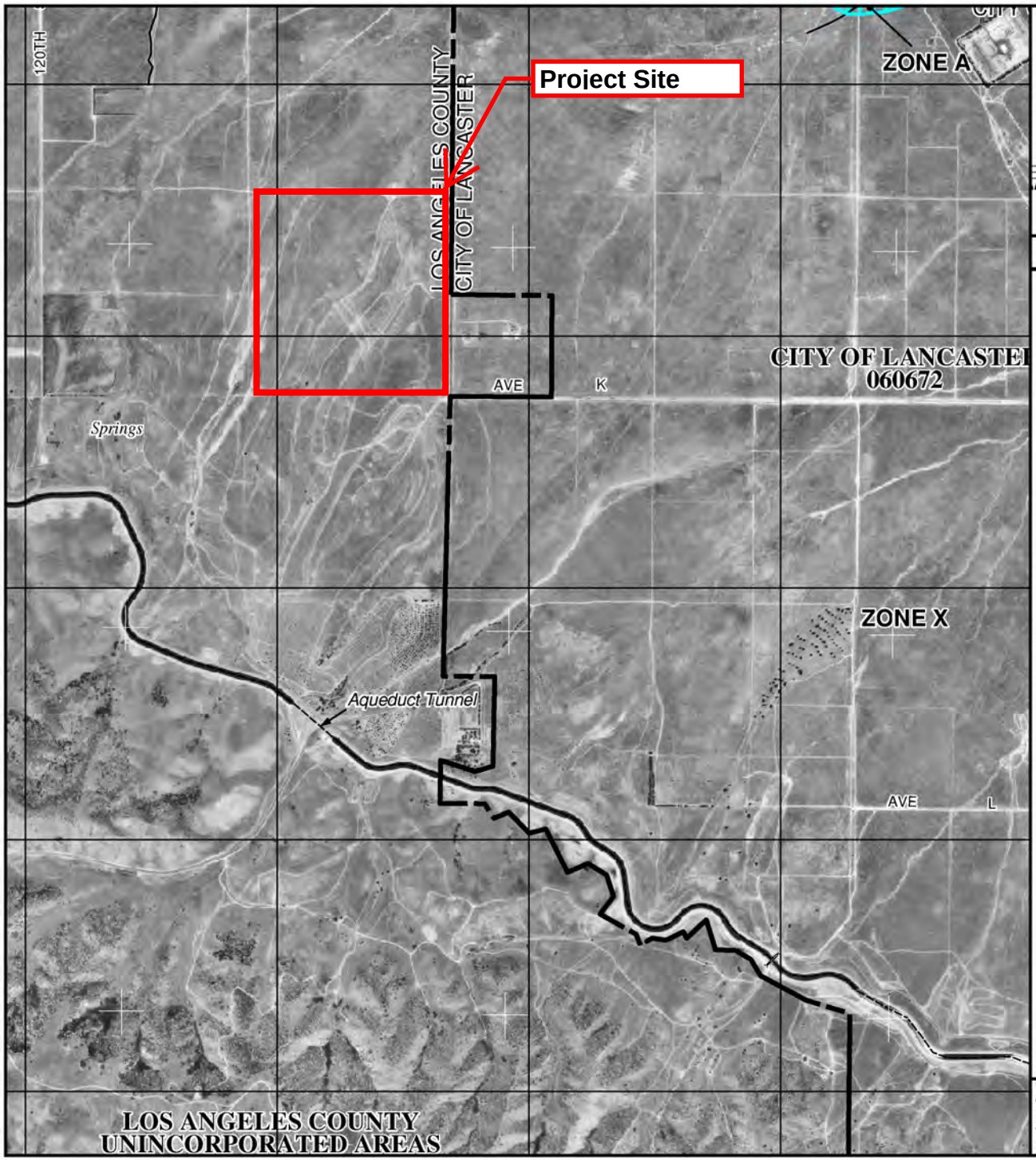
APPENDIX B:
EXISTING DRAINAGE CONDITION



MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0400F

FIRM

FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 400 OF 2350

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES COUNTY	065043	0400	F
LANCASTER, CITY OF	060672	0400	F
PALMDALE,CITY OF	060144	0400	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06037C0400F

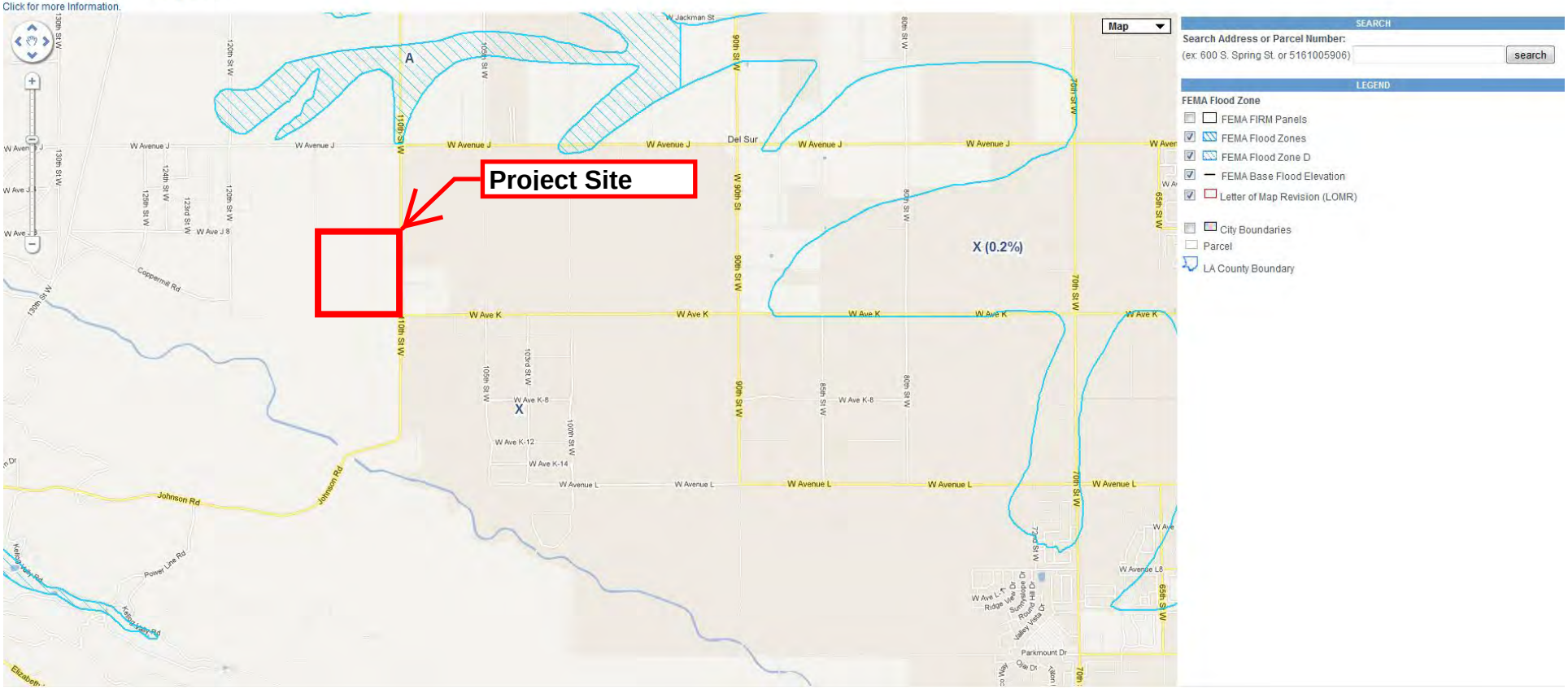
EFFECTIVE DATE
SEPTEMBER 26, 2008

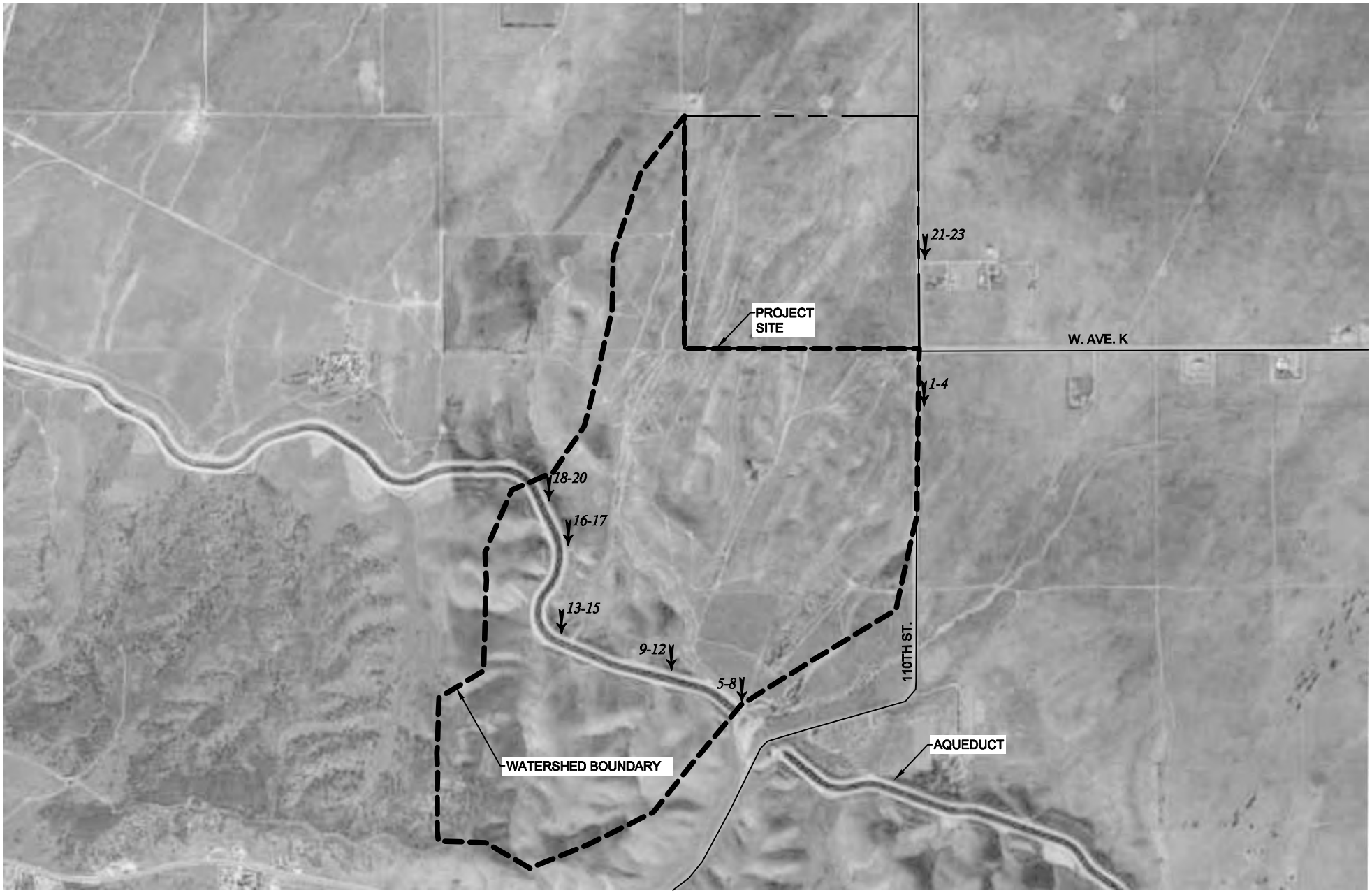
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Flood Zone Determination Website

Click for more Information.





LEGEND

PROJECT BOUNDARY

WATERSHED BOUNDARY

3,4 PHOTO ID AND LOCATION

N

TETRA TECH
17885 VON KARMAN AVE., STE. 500
IRVINE, CA 92614-6213
949-809-5000

Scale: N.T.S.

Date: 9-5-2013

LOS ANGELES COUNTY

PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH EXISTING DRAINAGE STRUCTURES PHOTO LOCATIONS

FIGURE 1

File Location: P:\04546\135-04546-12001\SupportDocs\Calcs\Hydrology\7\FINAL DESIGN\Photo Locations.dwg 09/09/2013 09:37

Photo 1 (Northward Facing):
View of 110th St. Cross-Section

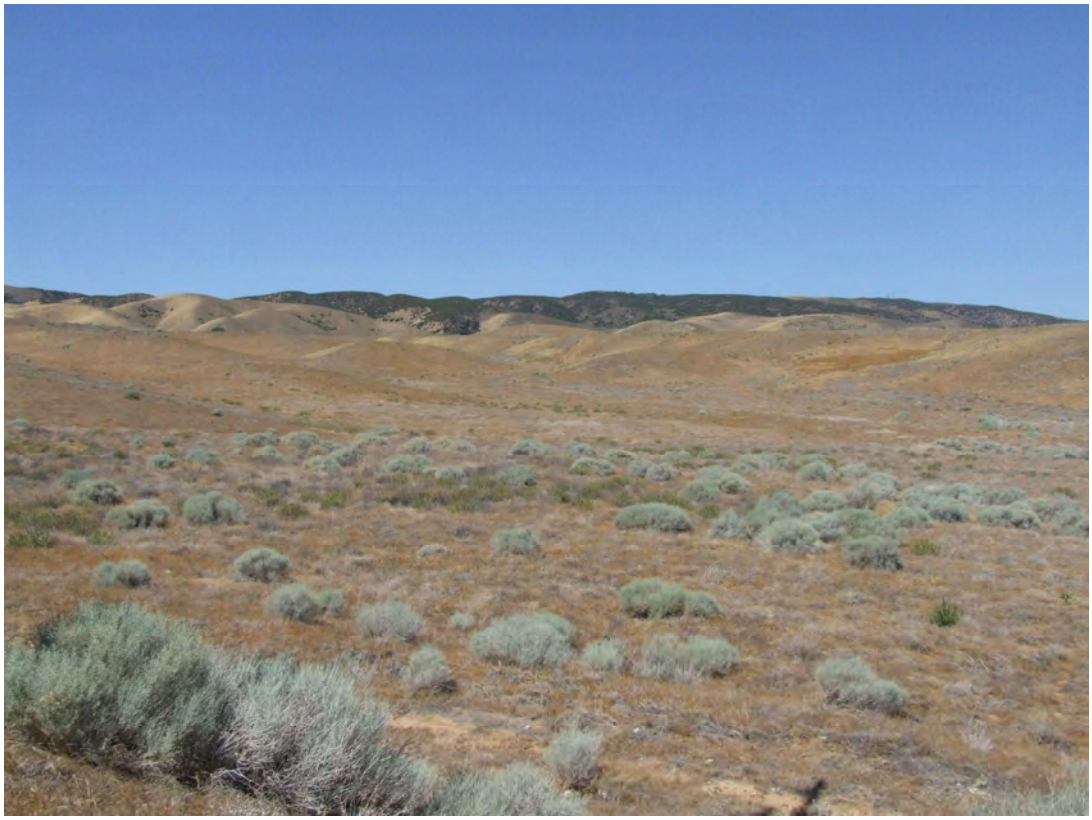


Photo 2 (South-Westward Facing):
View of north-west portion of the watershed.
Some watershed areas experience concentrated flow conditions through natural dirt channels due to hilly terrain.

Photo 3 (North-Westward Facing):
View of north-west portion of the watershed.
Majority of the watershed experiences a typical sheet flow condition.

Photo 4 (Southward Facing):
View of 110th St. Cross-Section

Photo 5 (Westward Facing):
View of existing aqueduct cross-section.

Photo 6 (North-Westward Facing):
View of north-west portion of the watershed.
Majority of the watershed located south of the aqueduct experiences a typical sheet flow condition.

Photo 7 (Northward Facing):

View of north portion of the watershed.

Majority of the watershed located south of the aqueduct experiences a typical sheet flow condition.

Photo 8 (North-Eastward Facing):

View of north-east portion of the watershed.

Majority of the watershed located south of the aqueduct experiences a typical sheet flow condition.

Photo 9 (Southward Facing):
View of existing culvert underneath aqueduct.

Photo 10 (Northward Facing):
View of north portion of the watershed.
The watershed experiences concentrated flow conditions through the natural dirt channels due to hilly terrain.

Photo 11 (Southward Facing):

View of existing aqueduct.

View of south portion of the watershed.

The watershed experiences concentrated flow conditions through the natural dirt channels due to hilly terrain.

Photo 12 (Northward Facing):

View of north portion of the watershed.

The watershed experiences concentrated flow conditions through the natural dirt channels due to hilly terrain.

Photo 13 (Westward Facing):
View of existing culvert underneath aqueduct.

Photo 14 (North-Eastward Facing):
View of north-west portion of the watershed.
The watershed initially experiences concentrated flow conditions through natural dirt channels due to hilly terrain.
The watershed then experiences typical sheet flow conditions.

Photo 15 (Southward Facing):

View of existing aqueduct.

View of south portion of the watershed.

The watershed experiences concentrated flow conditions through natural dirt channels due to hilly terrain.

Photo 16 (North-Eastward Facing):

View of north-east portion of the watershed.

The watershed initially experiences concentrated flow conditions through natural dirt channels due to hilly terrain.

The watershed then experiences typical sheet flow conditions.

Photo 17 (North-Westward Facing):

View of north-west portion of the watershed.

The watershed initially experiences concentrated flow conditions through natural dirt channels due to hilly terrain.

The watershed then experiences typical sheet flow conditions.

Photo 18 (North-Westward Facing):

View of north-west portion of the watershed.

The majority of the watershed experiences a typical sheet flow condition, yet there appears to be some concentrated flows through natural dirt channels due to hilly terrain.

Photo 19 (North Facing):

View of north portion of the watershed.

The watershed initially experiences concentrated flow conditions through natural dirt channels due to hilly terrain.

The watershed then experiences typical sheet flow conditions.

Photo 20 (North-Eastward Facing):

View of north-east portion of the watershed.

The watershed experiences concentrated flow conditions through natural dirt channels due to hilly terrain.

Photo 21 (South-Westward Facing):
View of south-west portion of the project site.
Majority of the watershed experiences a typical sheet flow condition.

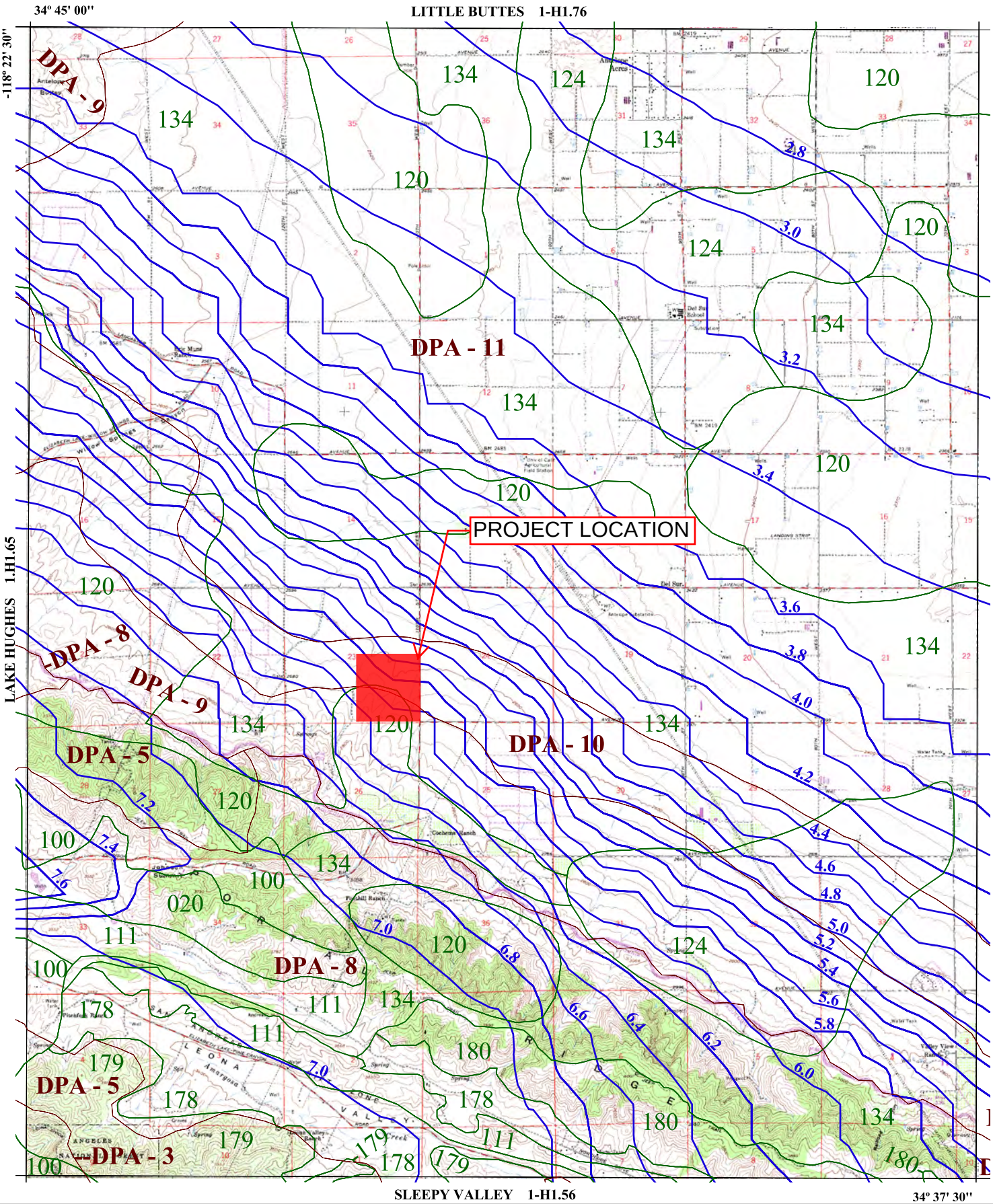
Photo 22 (Southward Facing):
View of 110th St. Cross-Section

Photo 23 (Westward Facing):

View of western portion of the project site.

Majority of the watershed experiences a typical sheet flow condition.

APPENDIX C:
HYDROLOGY MANUAL REFERENCES



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

D E L S U R
50-YEAR 24-HOUR ISOHYET

1-H1.66

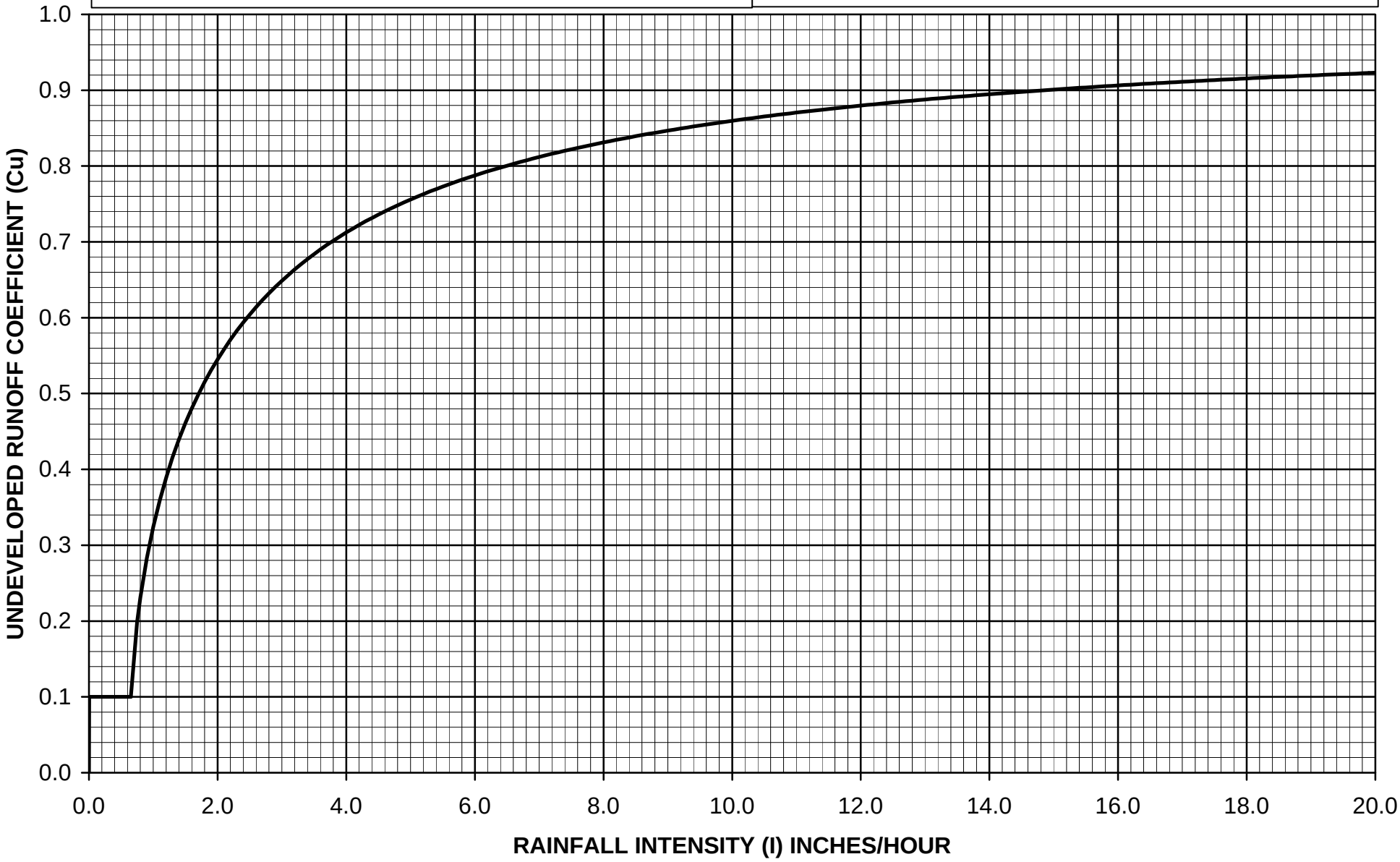
LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 120

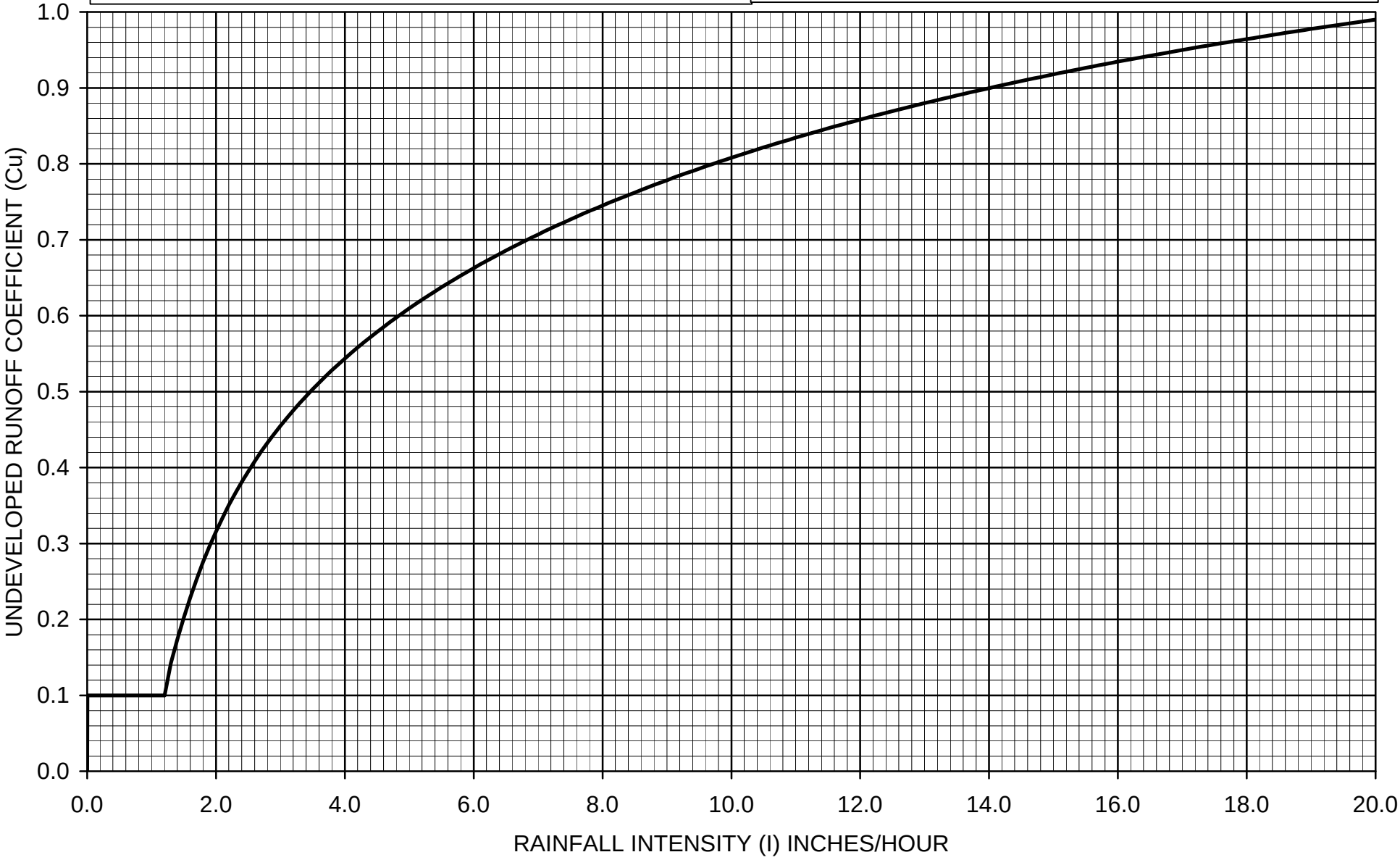


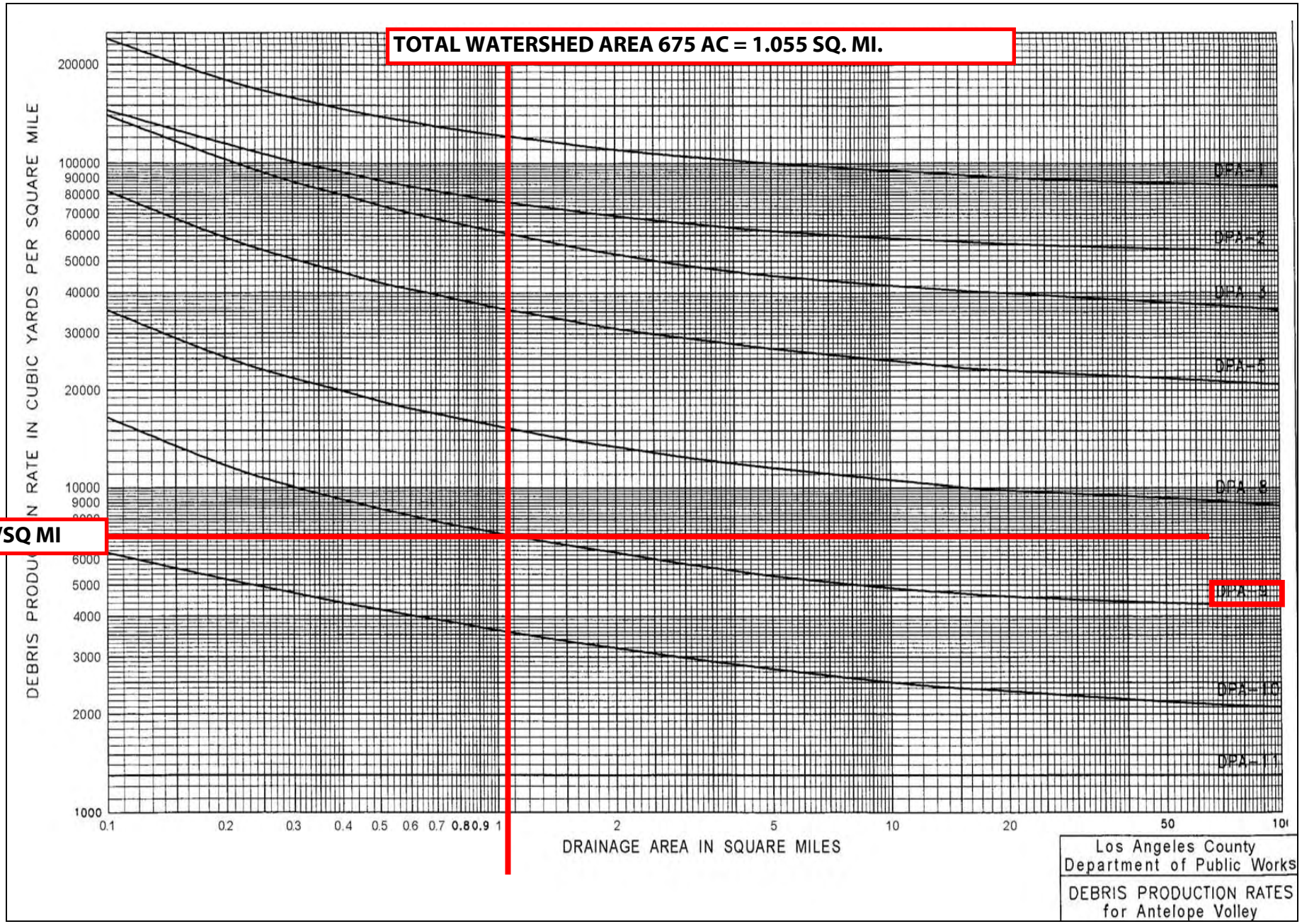
$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 134




TOTAL WATERSHED AREA 675 AC = 1.055 SQ. MI.
7,100 CY/SQ MI
DEBRIS PRODUCTION RATE IN CUBIC YARDS PER SQUARE MILE
200000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
9000
6000
5000
4000
3000
2000
1000
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
2
5
10
20
50
DRAINAGE AREA IN SQUARE MILES
DPA-1
DPA-2
DPA-3
DPA-5
DPA-8
DPA-9
DPA-10
DPA-11
Los Angeles County
Department of Public Works
DEBRIS PRODUCTION RATES
for Antelope Volley

APPENDIX D:
PRE-/POST DEVELOPMENT ON-/OFF-SITE HYDROLOGIC CALCULATIONS – 2, 5, 10, 25, 50 YEAR EVENTS

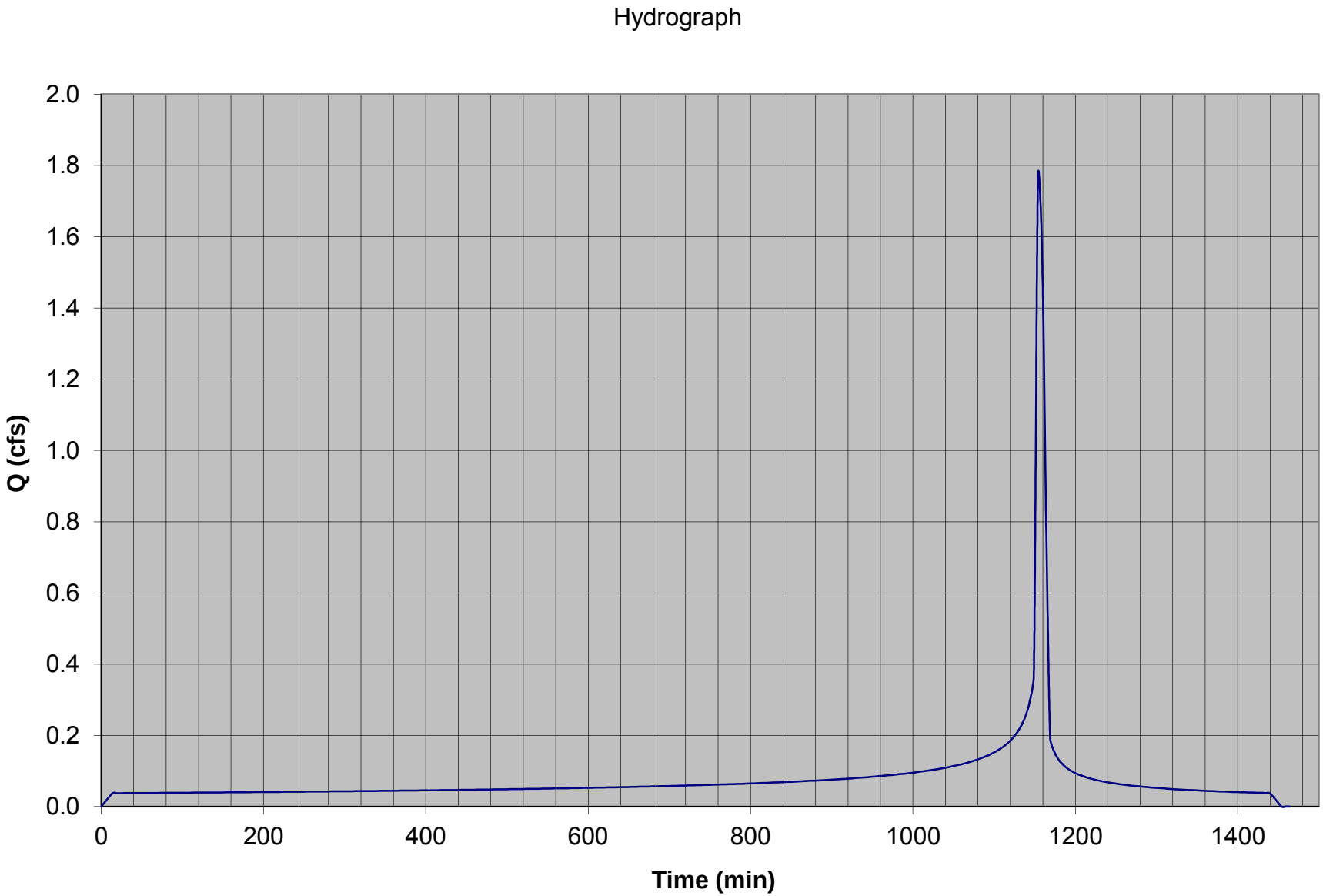
OFF-SITE PRE-/POST DEVELOPMENT HYDROLOGIC CALCULATIONS

OFF-SITE HYDROLOGY																	
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 2	A1	19.14	0.01	2	120	1520	0.0620	2.5	30	0.64	0.10	0.11	1.35	0.34	2.43	0.43
Project 2	A2	15.56	0.01	2	134	917	0.0402	2.4	30	0.62	0.10	0.11	1.06	0.34	1.90	0.34
Project 2	B1	37.73	0.01	2	120	1703	0.1982	2.7	30	0.70	0.13	0.14	3.70	0.34	6.00	0.94
Project 2	B2	26.31	0.01	2	120	702	0.1950	2.7	30	0.69	0.13	0.14	2.54	0.34	4.12	0.64
Project 2	B3	23.47	0.01	2	120	859	0.0641	2.6	30	0.68	0.12	0.13	2.07	0.34	3.47	0.56
Project 2	B4	36.62	0.01	2	134	742	0.0674	2.6	30	0.68	0.10	0.11	2.74	0.34	4.97	0.87
Project 2	B5	20.17	0.01	2	120	834	0.0428	2.6	30	0.66	0.11	0.12	1.60	0.34	2.77	0.47
Project 2	C1	25.68	0.01	2	134	1954	0.1246	2.6	30	0.67	0.10	0.11	1.89	0.34	3.43	0.60
Project 2	D1	34.34	0.01	2	120	1327	0.0613	2.5	30	0.64	0.10	0.11	2.42	0.34	4.35	0.77
Project 2	D2	23.02	0.01	2	120	734	0.0661	2.4	30	0.63	0.10	0.11	1.60	0.34	2.87	0.51
Project 2	E1	29.10	0.01	2	120	1733	0.0402	2.5	30	0.65	0.10	0.11	2.08	0.34	3.75	0.66
Project 2	F1	18.41	0.01	2	134	1838	0.1417	2.7	30	0.70	0.10	0.11	1.42	0.34	2.58	0.45
Project 2	F2	29.81	0.01	2	120	1577	0.1091	2.6	30	0.68	0.12	0.13	2.64	0.34	4.41	0.71
Project 2	F3	24.85	0.01	2	120	1533	0.0606	2.6	30	0.66	0.11	0.12	1.97	0.34	3.41	0.57
Project 2	F4	35.91	0.01	2	120	1282	0.0576	2.5	30	0.64	0.10	0.11	2.53	0.34	4.55	0.80
Project 2	F5	21.53	0.01	2	120	1010	0.0787	2.4	30	0.62	0.10	0.11	1.47	0.34	2.64	0.47
Project 2	G1	17.52	0.01	2	120	1338	0.0477	2.6	30	0.68	0.12	0.13	1.55	0.34	2.59	0.42
Project 2	G2	18.00	0.01	2	120	1466	0.0588	2.5	30	0.65	0.10	0.11	1.29	0.34	2.32	0.41
Project 2	G3	32.71	0.01	2	120	1727	0.0626	2.4	30	0.63	0.10	0.11	2.27	0.34	4.08	0.72
Project 2	H1	22.54	0.01	2	120	816	0.0412	2.4	30	0.61	0.10	0.11	1.51	0.34	2.71	0.48
Project 2	A1	19.14	0.01	5	120	1520	0.0620	3.7	27	1.01	0.33	0.34	6.57	0.34	7.97	0.77
Project 2	A2	15.56	0.01	5	134	917	0.0402	3.6	30	0.93	0.10	0.11	1.59	0.34	2.98	0.51
Project 2	B1	37.73	0.01	5	120	1703	0.1982	4.1	20	1.27	0.40	0.41	19.65	0.34	22.90	1.74
Project 2	B2	26.31	0.01	5	120	702	0.1950	4.0	10	1.74	0.50	0.50	22.89	0.34	25.69	1.22
Project 2	B3	23.47	0.01	5	120	859	0.0641	4.0	15	1.41	0.44	0.44	14.56	0.34	16.74	1.06
Project 2	B4	36.62	0.01	5	134	742	0.0674	4.0	30	1.02	0.10	0.11	4.11	0.34	7.77	1.32
Project 2	B5	20.17	0.01	5	120	834	0.0428	3.9	17	1.29	0.40	0.41	10.67	0.34	12.44	0.88
Project 2	C1	25.68	0.01	5	134	1954	0.1246	3.9	30	1.01	0.10	0.11	2.85	0.34	5.39	0.91
Project 2	D1	34.34	0.01	5	120	1327	0.0613	3.7	24	1.07	0.34	0.35	12.86	0.34	15.52	1.39
Project 2	D2	23.02	0.01	5	120	734	0.0661	3.7	15	1.31	0.41	0.41	12.36	0.34	14.43	0.94
Project 2	E1	29.10	0.01	5	120	1733	0.0402	3.8	30	0.98	0.31	0.32	9.13	0.34	11.24	1.16
Project 2	F1	18.41	0.01	5	134	1838	0.1417	4.1	30	1.05	0.10	0.11	2.13	0.34	4.03	0.68
Project 2	F2	29.81	0.01	5	120	1577	0.1091	4.0	22	1.18	0.37	0.38	13.37	0.34	15.84	1.32
Project 2	F3	24.85	0.01	5	120	1533	0.0606	3.9	26	1.06	0.34	0.35	9.22	0.34	11.12	1.04
Project 2	F4	35.91	0.01	5	120	1282	0.0576	3.7	24	1.07	0.34	0.35	13.45	0.34	16.23	1.45
Project 2	F5	21.53	0.01	5	120	1010	0.0787	3.6	19	1.15	0.37	0.38	9.41	0.34	11.14	0.85
Project 2	G1	17.52	0.01	5	120	1338	0.0477	4.0	23	1.16	0.37	0.38	7.72	0.34	9.15	0.78
Project 2	G2	18.00	0.01	5	120	1466	0.0588	3.8	26	1.04	0.34	0.35	6.55	0.34	7.90	0.73
Project 2	G3	32.71	0.01	5	120	1727	0.0626	3.7	30	0.95	0.29	0.30	9.32	0.34	11.68	1.25
Project 2	H1	22.54	0.01	5	120	816	0.0412	3.6	19	1.13	0.36	0.37	9.42	0.34	11.23	0.87
Project 2	A1	19.14	0.01	10	120	1520	0.0620	4.6	19	1.46	0.45	0.45	12.57	0.34	14.39	1.03
Project 2	A2	15.56	0.01	10	134	917	0.0402	4.4	30	1.14	0.10	0.11	1.95	0.34	3.73	0.62
Project 2	B1	37.73	0.01	10	120	1703	0.1982	5.0	15	1.78	0.51	0.51	34.25	0.34	38.29	2.30
Project 2	B2	26.31	0.01	10	120	702	0.1950	4.9	8	2.36	0.59	0.59	36.63	0.34	39.91	1.64
Project 2	B3	23.47	0.01	10	120	859	0.0641	4.9	12	1.92	0.53	0.53	23.88	0.34	26.52	1.41
Project 2	B4	36.62	0.01	10	134	742	0.0674	4.9	18	1.59	0.22	0.23	13.39	0.34	18.79	1.72
Project 2	B5	20.17	0.01	10	120	834	0.0428	4.7	12	1.86	0.52	0.52	19.51	0.34	21.74	1.16
Project 2	C1	25.68	0.01	10	134	1954	0.1246	4.8	30	1.23	0.11	0.12	3.79	0.34	6.97	1.12
Project 2	D1	34.34	0.01	10	120	1327	0.0613	4.6	17	1.53	0.47	0.47	24.69	0.34	28.02	1.88
Project 2	D2	23.02	0.01	10	120	734	0.0661	4.5	11	1.85	0.52	0.52	22.15	0.34	24.67	1.23
Project 2	E1	29.10	0.01	10	120	1733	0.0402	4.6	24	1.32	0.41	0.41	15.75	0.34	18.38	1.58
Project 2	F1	18.41	0.01	10	134	1838	0.1417	5.0	30	1.28	0.12	0.13	3.06	0.34	5.43	0.84
Project 2	F2	29.81	0.01	10	120	1577	0.1091	4.9	16	1.68	0.49	0.49	24.54	0.34	27.64	1.74
Project 2	F3	24.85	0.01	10	120	1533	0.0606	4.7	19	1.50	0.46	0.46	17.15	0.34	19.54	1.40
Project 2	F4	35.91	0.01	10	120	1282	0.0576	4.6	17	1.53	0.47	0.47	25.82	0.34	29.30	1.96
Project 2	F5	21.53	0.01	10	120	1010	0.0787	4.4	14	1.63	0.48	0.48	16.85	0.34	19.05	1.13
Project 2	G1	17.52	0.01	10	120	1338	0.0477	4.9	17	1.63	0.48	0.48	13.71	0.34	15.50	1.04
Project 2	G2	18.00	0.01	10	120	1466	0.0588	4.6	19	1.48	0.46	0.46	12.25	0.34	13.96	0.99
Project 2	G3	32.71	0.01	10	120	1727	0.0626	4.5	22	1.34	0.42	0.42	18.41	0.34	21.37	1.72
Project 2	H1	22.54	0.01	10	120	816	0.0412	4.4	14	1.60	0.48	0.48	17.31	0.34	19.57	1.16
Project 2	A1	19.14	0.01	25	120	1520	0.0620	5.6	15	2.00	0.55	0.55	21.05	0.34	23.21	1.37
Project 2	A2	15.56	0.01	25	134	917	0.0402	5.4	19	1.73	0.26	0.27	7.27	0.34	9.67	0.85
Project 2	B1	37.73	0.01	25	120	1703	0.1982	6.1	12	2.43	0.60	0.60	55.01	0.34	59.76	3.12
Project 2	B2	26.31	0.01	25	120	702	0.1950	6.1	6	3.32	0.67	0.67	58.52	0.34	62.44	2.10
Project 2	B3	23.47	0.01	25	120	859	0.0641	6.0	9	2.70	0.62	0.62	39.29	0.34	42.46	1.86
Project 2	B4	36.62	0.01	25	134	742	0.0674	6.0	12	2.36	0.37	0.38	32.84	0.34	39.75	2.35
Project 2	B5	20.17	0.01	25	120	834	0.0428	5.8	10	2.50	0.60	0.60	30.26	0.34	32.88	1.51
Project 2	C1	25.68	0.01	25	134	1954	0.1246	5.9	27	1.59	0.22	0.23	9.39	0.34	13.17	1.48
Project 2	D1	34.34	0.01	25	120	1327	0.0613	5.6	13	2.14	0.56	0.56	41.15	0.34	45.25	2.50
Project 2	D2	23.02	0.01	25	120	734	0.0661	5.5	9	2.50	0.60	0.60	34.53	0.34	37.52	1.64
Project 2	E1	29.10	0.01	25	120	1733	0.0402	5.7	18	1.86	0.52	0.52	28.15	0.34	31.36	2.13
Project 2	F1	18.41	0.01	25	134	1838	0.1417	6.1	20	1.91	0.29	0.30	10.55	0.34	13.61	1.16
Project 2	F2	29.81	0.01	25	120	1577	0.1091	6.0	12	2.36	0.59	0.59	41.51	0.34	45.22	2.36
Project 2	F3	24.85	0.01	25	120	1533	0.0606	5.8	14	2.13	0.56	0.56	29.64	0.34	32.59	1.87
Project 2	F4	35.91	0.01	25	120	1282	0.0576	5.6	13	2.14	0.56	0.56	43.03	0.34	47.32	2.62
Project 2	F5	21.53	0.01	25	120	1010	0.0787	5.4	11	2.24	0.57	0.57	27.49	0.34	30.14	1.48
Project 2	G1	17.52	0.01	25	120	1338	0.0477	6.0	13	2.27	0.58	0.58	23.07	0.34	25.20	1.39
Project 2	G2	18.00	0.01	25	120	1466	0.0588	5.7	14	2.10	0.56	0.56	21.17	0.34	23.27	1.33
Project 2	G3	32.71	0.01	25	120	1727	0.0626	5.5	16	1.91	0.53	0.53	33.11	0.34	36.76	2.28
Project 2	H1	22.54	0.01	25	120	816	0.0412	5.4	11	2.21	0.57	0.57	28.39	0.34	31.12	1.51
Project 2	A1	19.14	0.01	50	120	1520	0.0620	6.4	12	2.53	0.61	0.61	29.54	0.34	32.00	1.67
Project 2	A2	15.56	0.01	50	134	917	0.0402	6.2	14	2.28	0.36	0.37	13.13	0.34	15.99	1.03
Project 2	B1	37.73	0.01	50	120	1703	0.1982	7.0	10	3.02	0.65	0.65	74.06	0.34	79.41	3.68
Project 2	B2	26.31	0.01	50	120	702	0.1950	6.9	6	3.78	0.70	0.70	69.62	0.34	73.75	2.52
Project 2	B3	23.47	0.01	50	120	859	0.0641	6.8	8	3.25	0.66	0.66	50.34	0.34	53.86	2.26
Project 2	B4	36.62	0.01	50	134	742	0.0674	6.8	9	3.08	0.46	0.46	51.88	0.34	60.08	2.79
Project 2	B5	20.17	0.01	50	120	834	0.0428	6.6	9	2.99	0.64	0.64	38.60	0.34	41.50	1.84
Project 2	C1	25.68	0.01	50	134	1954	0.1246	6.7	18	2.19	0.34	0.35	19.68	0.34	24.34	1.85
Project 2	D1	34.34	0.01	50	120	1327	0.0613	6.4	12	2.53	0.61	0.61	53.00	0.34	57.41	3.00
Project 2	D2	23.02	0.01	50	120	734	0.0661	6.3	8	3.01	0.64	0.64	44.35	0.34	47.69	2.00
Project 2	E1	29.10	0.01	50	120	1733	0.0402	6.5	15	2.31	0.58	0.58	38.99	0.34	42.61	2.55
Project 2	F1	18.41	0.01	50	134	1838	0.1417	7.0	15	2.49	0.39	0.40	18.34	0.34	21.91	1.41
Project 2	F2	29.81	0.01	50	120	1577	0.1091	6.8	11	2.80	0.63	0.63	52.58	0.34	56.67	2.78
Project 2	F3	24.85	0.01	50	120	1533	0.0606	6.6	12	2.61	0.61	0.61	39.56	0.34	42.88	2.27
Project 2	F4	35.91	0.01	50	120	1282	0.0576	6.4	12	2.53	0.61	0.61	55.42	0.34	60.04	3.13
Project 2	F5	21.53	0.01	50	120	1010	0.0787	6.2	9	2.81	0.63	0.63	38.11	0.34	41.08	1.80
Project 2	G1	17.52	0.01	50	120	1338	0.0477	6.8	12	2.69	0.62	0.62	29.22	0.34	31.58	1.66
Project 2	G2	18.00	0.01	50	120	1466	0.0588	6.5	12	2.57	0.61	0.61	28.22	0.34	30.58	1.60
Project 2	G3	32.71	0.01	50	120	1727	0.0626	6.3	14	2.32	0.58	0.58	44.01	0.34	48.11	2.76
Project 2	H1	22.54	0.01	50	120	816	0.0412	6.1	9	2.76	0.62	0.62	38.57	0.34	41.69	1.84

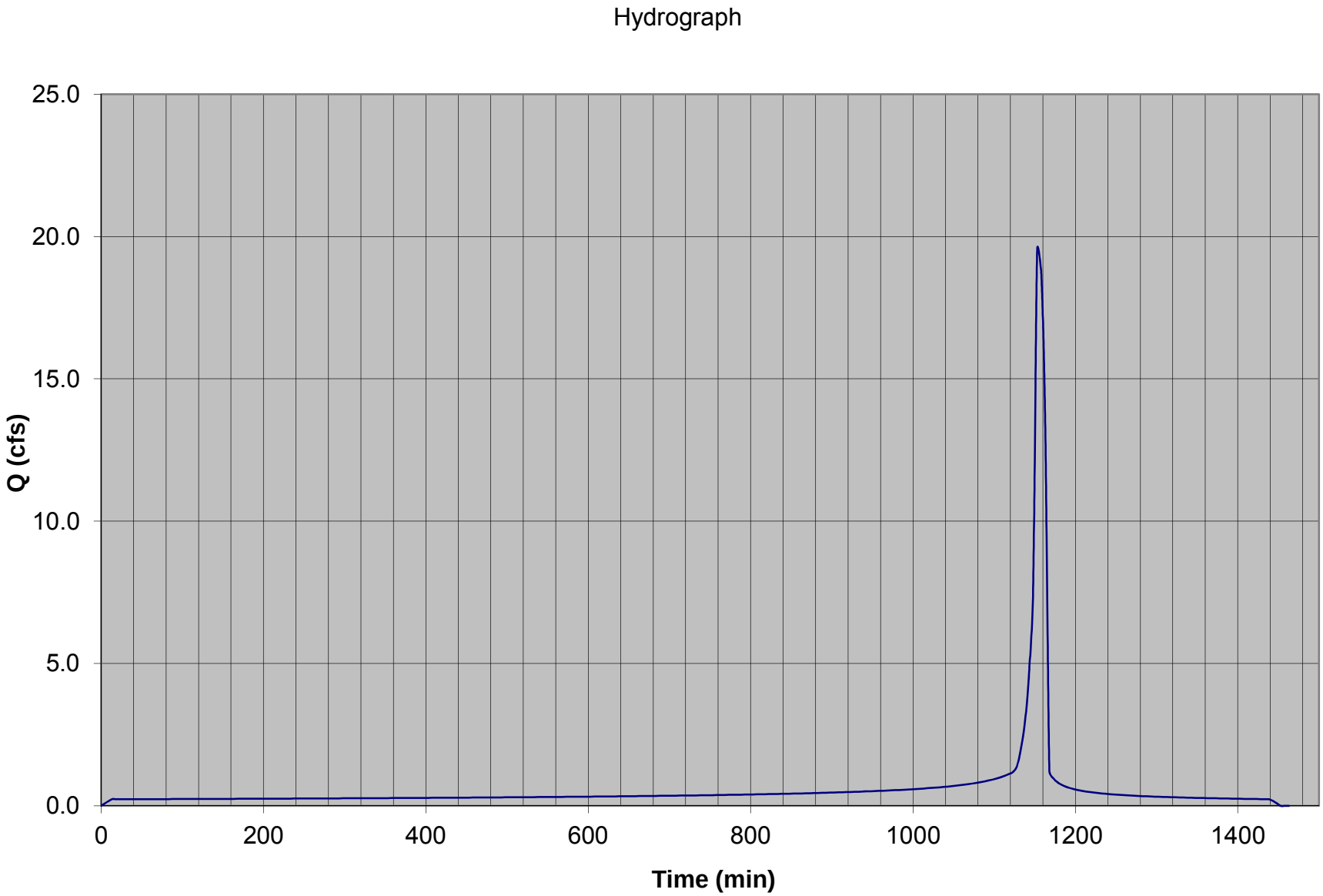
ON-SITE PRE-DEVELOPMENT HYDROLOGIC CALCULATIONS

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)																	
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 2	A	2.94	0.01	2	134	632	0.0363	2.3	30	0.60	0.10	0.11	0.19	0.34	0.35	0.06
Project 2	B	17.43	0.01	2	120	1196	0.0529	2.4	30	0.62	0.10	0.11	1.19	0.34	2.13	0.38
Project 2	C	22.59	0.01	2	134	1262	0.0346	2.4	30	0.61	0.10	0.11	1.52	0.34	2.72	0.48
Project 2	D	13.85	0.01	2	134	1667	0.0473	2.3	30	0.59	0.10	0.11	0.90	0.34	1.60	0.29
Project 2	E	21.40	0.01	2	120	1710	0.0470	2.4	30	0.62	0.10	0.11	1.46	0.34	2.62	0.46
Project 2	F	13.24	0.01	2	134	995	0.0257	2.3	30	0.59	0.10	0.11	0.86	0.34	1.53	0.27
Project 2	G	18.44	0.01	2	120	1702	0.0449	2.4	30	0.61	0.10	0.11	1.24	0.34	2.22	0.39
Project 2	H	7.58	0.01	2	134	1040	0.0188	2.3	30	0.59	0.10	0.11	0.49	0.34	0.88	0.16
Project 2	I	4.84	0.01	2	134	470	0.0169	2.2	30	0.57	0.10	0.11	0.30	0.34	0.54	0.10
Project 2	J	22.34	0.01	2	120	1155	0.0328	2.4	30	0.61	0.10	0.11	1.50	0.34	2.69	0.48
Project 2	K	7.96	0.01	2	134	832	0.0313	2.3	30	0.59	0.10	0.11	0.52	0.34	0.92	0.16
Project 2	L	9.93	0.01	2	134	827	0.0269	2.2	30	0.57	0.10	0.11	0.62	0.34	1.11	0.20
Project 2	A	2.94	0.01	5	134	632	0.0363	3.5	30	0.90	0.10	0.11	0.29	0.34	0.54	0.09
Project 2	B	17.43	0.01	5	120	1196	0.0529	3.6	24	1.03	0.33	0.34	6.10	0.34	7.41	0.67
Project 2	C	22.59	0.01	5	134	1262	0.0346	3.6	30	0.92	0.10	0.11	2.29	0.34	4.28	0.73
Project 2	D	13.85	0.01	5	134	1667	0.0473	3.4	30	0.89	0.10	0.11	1.36	0.34	2.53	0.43
Project 2	E	21.40	0.01	5	120	1710	0.0470	3.6	30	0.93	0.28	0.29	5.77	0.34	7.30	0.80
Project 2	F	13.24	0.01	5	134	995	0.0257	3.4	30	0.89	0.10	0.11	1.30	0.34	2.42	0.41
Project 2	G	18.44	0.01	5	120	1702	0.0449	3.6	30	0.92	0.27	0.28	4.75	0.34	6.07	0.67
Project 2	H	7.58	0.01	5	134	1040	0.0188	3.4	30	0.89	0.10	0.11	0.74	0.34	1.38	0.24
Project 2	I	4.84	0.01	5	134	470	0.0169	3.3	30	0.86	0.10	0.11	0.46	0.34	0.85	0.15
Project 2	J	22.34	0.01	5	120	1155	0.0328	3.6	29	0.93	0.28	0.29	6.03	0.34	7.62	0.82
Project 2	K	7.96	0.01	5	134	832	0.0313	3.4	30	0.89	0.10	0.11	0.78	0.34	1.45	0.25
Project 2	L	9.93	0.01	5	134	827	0.0269	3.3	30	0.86	0.10	0.11	0.94	0.34	1.75	0.30
Project 2	A	2.94	0.01	10	134	632	0.0363	4.3	30	1.10	0.10	0.11	0.36	0.34	0.68	0.11
Project 2	B	17.43	0.01	10	120	1196	0.0529	4.4	17	1.49	0.46	0.46	11.95	0.34	13.61	0.91
Project 2	C	22.59	0.01	10	134	1262	0.0346	4.4	30	1.12	0.10	0.11	2.78	0.34	5.31	0.89
Project 2	D	13.85	0.01	10	134	1667	0.0473	4.2	30	1.08	0.10	0.11	1.65	0.34	3.13	0.53
Project 2	E	21.40	0.01	10	120	1710	0.0470	4.4	24	1.26	0.40	0.41	11.06	0.34	12.88	1.09
Project 2	F	13.24	0.01	10	134	995	0.0257	4.2	30	1.08	0.10	0.11	1.57	0.34	2.99	0.50
Project 2	G	18.44	0.01	10	120	1702	0.0449	4.4	25	1.22	0.38	0.39	8.77	0.34	10.34	0.91
Project 2	H	7.58	0.01	10	134	1040	0.0188	4.2	30	1.08	0.10	0.11	0.90	0.34	1.71	0.29
Project 2	I	4.84	0.01	10	134	470	0.0169	4.1	30	1.05	0.10	0.11	0.56	0.34	1.06	0.18
Project 2	J	22.34	0.01	10	120	1155	0.0328	4.4	19	1.39	0.43	0.43	13.35	0.34	15.43	1.13
Project 2	K	7.96	0.01	10	134	832	0.0313	4.2	30	1.08	0.10	0.11	0.95	0.34	1.80	0.30
Project 2	L	9.93	0.01	10	134	827	0.0269	4.1	30	1.05	0.10	0.11	1.15	0.34	2.18	0.37
Project 2	A	2.94	0.01	25	134	632	0.0363	5.3	14	1.94	0.30	0.31	1.77	0.34	2.26	0.16
Project 2	B	17.43	0.01	25	120	1196	0.0529	5.4	13	2.07	0.55	0.55	19.84	0.34	21.89	1.22
Project 2	C	22.59	0.01	25	134	1262	0.0346	5.4	30	1.38	0.15	0.16	4.99	0.34	8.05	1.13
Project 2	D	13.85	0.01	25	134	1667	0.0473	5.2	30	1.33	0.14	0.15	2.76	0.34	4.58	0.66
Project 2	E	21.40	0.01	25	120	1710	0.0470	5.4	18	1.78	0.51	0.51	19.43	0.34	21.72	1.47
Project 2	F	13.24	0.01	25	134	995	0.0257	5.2	30	1.33	0.14	0.15	2.64	0.34	4.38	0.63
Project 2	G	18.44	0.01	25	120	1702	0.0449	5.4	18	1.75	0.50	0.50	16.14	0.34	18.11	1.25
Project 2	H	7.58	0.01	25	134	1040	0.0188	5.2	30	1.33	0.14	0.15	1.51	0.34	2.51	0.36
Project 2	I	4.84	0.01	25	134	470	0.0169	5.0	15	1.78	0.27	0.28	2.41	0.34	3.17	0.24
Project 2	J	22.34	0.01	25	120	1155	0.0328	5.4	15	1.91	0.53	0.53	22.61	0.34	25.11	1.50
Project 2	K	7.96	0.01	25	134	832	0.0313	5.2	26	1.42	0.17	0.18	2.03	0.34	3.13	0.39
Project 2	L	9.93	0.01	25	134	827	0.0269	5.0	30	1.29	0.13	0.14	1.79	0.34	3.07	0.45
Project 2	A	2.94	0.01	50	134	632	0.0363	6.0	12	2.37	0.37	0.38	2.65	0.34	3.21	0.19
Project 2	B	17.43	0.01	50	120	1196	0.0529	6.2	12	2.45	0.60	0.60	25.62	0.34	27.84	1.46
Project 2	C	22.59	0.01	50	134	1262	0.0346	6.1	21	1.85	0.28	0.29	12.12	0.34	15.79	1.40
Project 2	D	13.85	0.01	50	134	1667	0.0473	5.9	30	1.52	0.20	0.21	4.42	0.34	6.40	0.78
Project 2	E	21.40	0.01	50	120	1710	0.0470	6.2	15	2.21	0.57	0.57	26.96	0.34	29.55	1.75
Project 2	F	13.24	0.01	50	134	995	0.0257	5.9	19	1.88	0.29	0.30	7.47	0.34	9.63	0.80
Project 2	G	18.44	0.01	50	120	1702	0.0449	6.1	16	2.11	0.56	0.56	21.79	0.34	23.95	1.47
Project 2	H	7.58	0.01	50	134	1040	0.0188	5.9	23	1.72	0.26	0.27	3.52	0.34	4.69	0.45
Project 2	I	4.84	0.01	50	134	470	0.0169	5.7	12	2.25	0.35	0.36	3.92	0.34	4.81	0.29
Project 2	J	22.34	0.01	50	120	1155	0.0328	6.1	12	2.41	0.59	0.59	31.77	0.34	34.62	1.83
Project 2	K	7.96	0.01	50	134	832	0.0313	5.9	15	2.10	0.33	0.34	5.68	0.34	7.08	0.49
Project 2	L	9.93	0.01	50	134	827	0.0269	5.7	17	1.91	0.29	0.30	5.69	0.34	7.34	0.58

DRAINAGE AREA A 25-YEAR STORM EVENT



DRAINAGE AREA B 25-YEAR STORM EVENT



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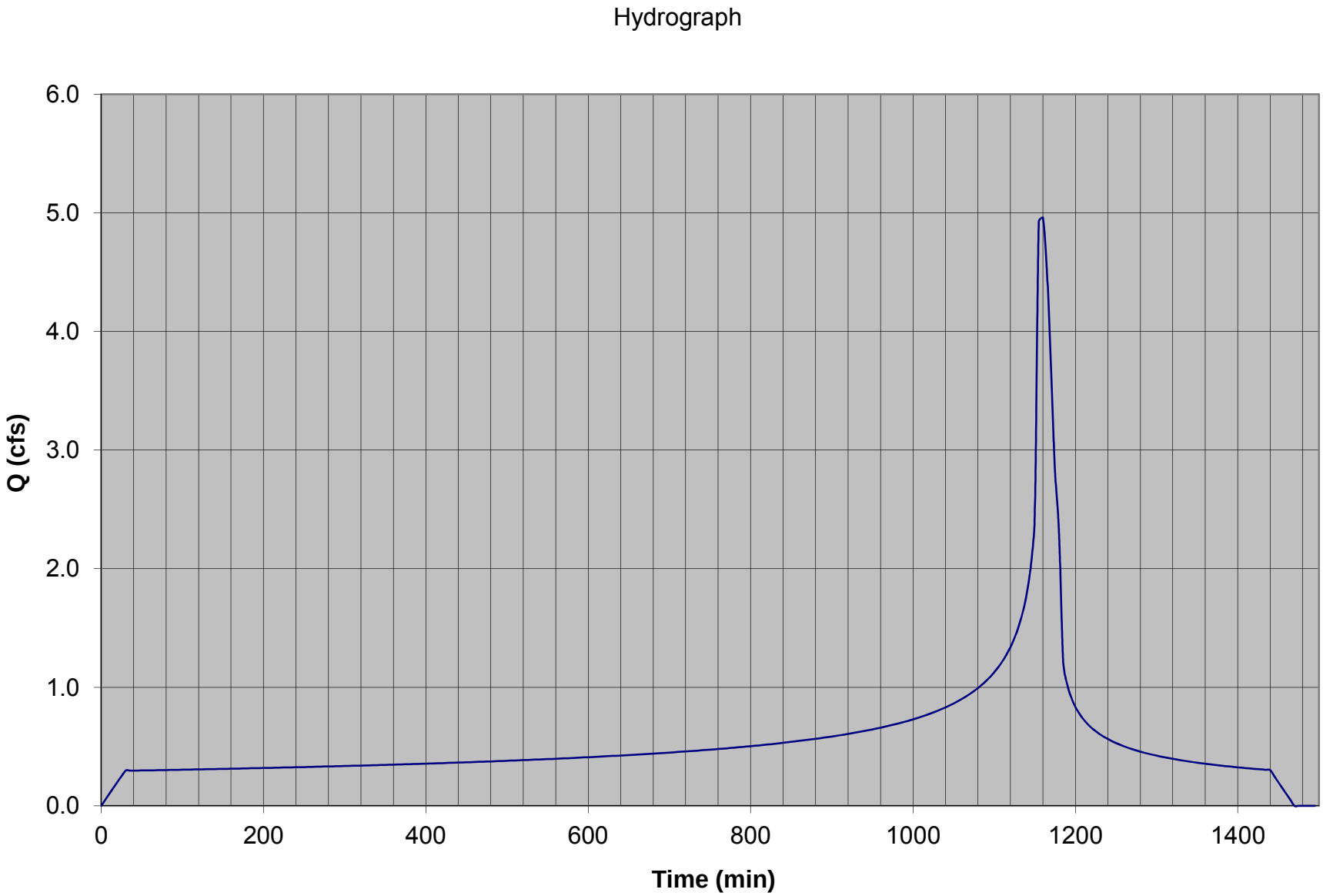

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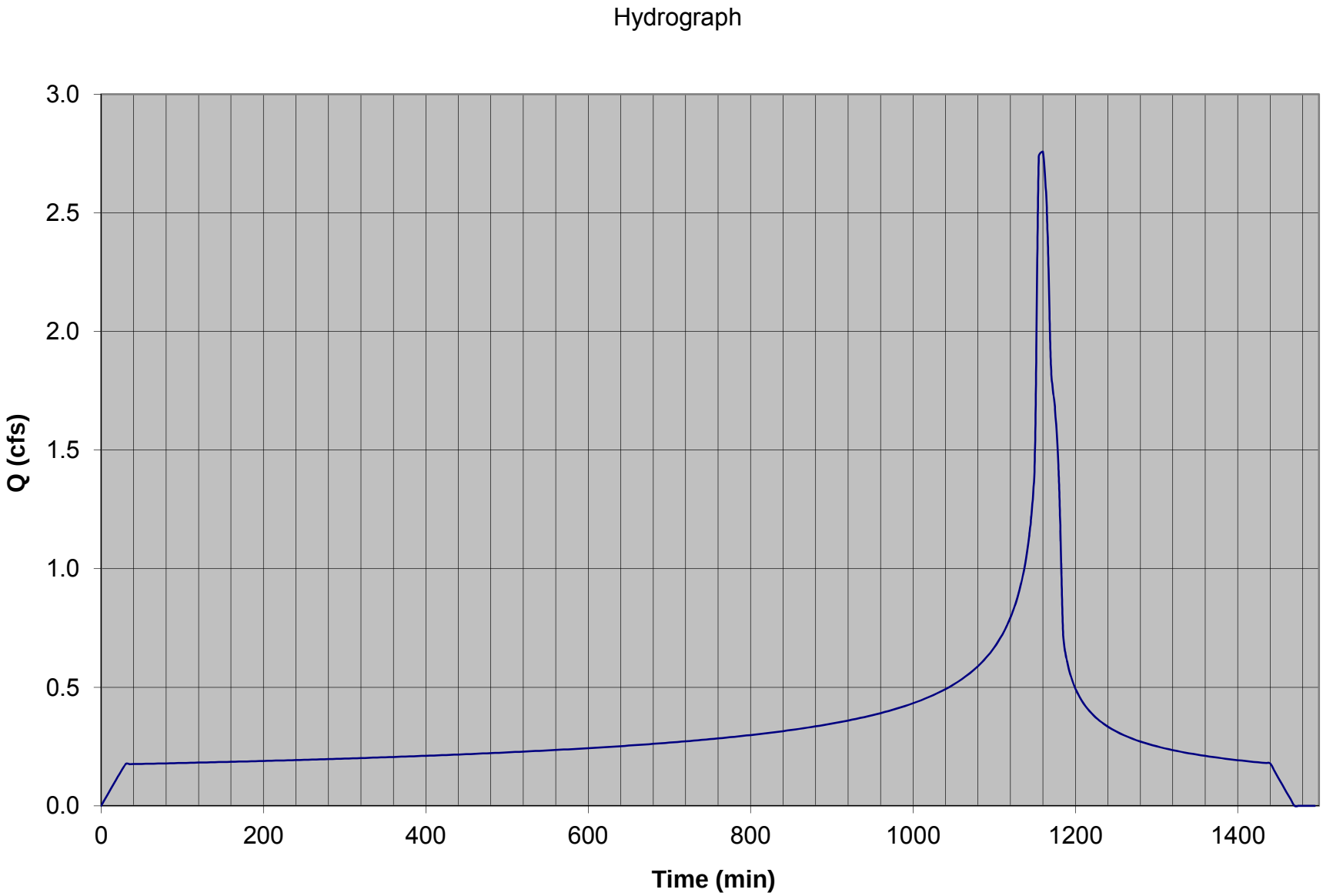

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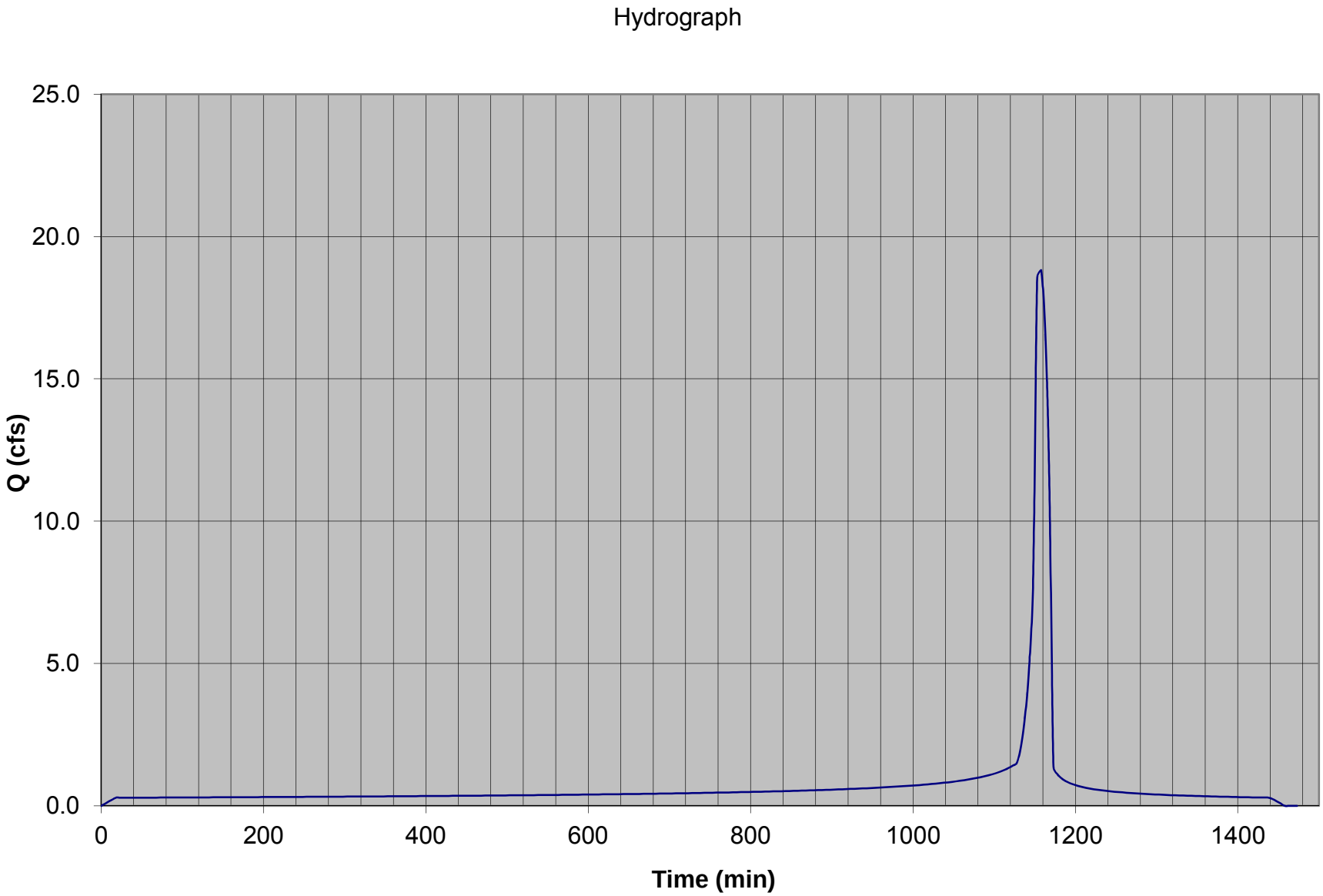

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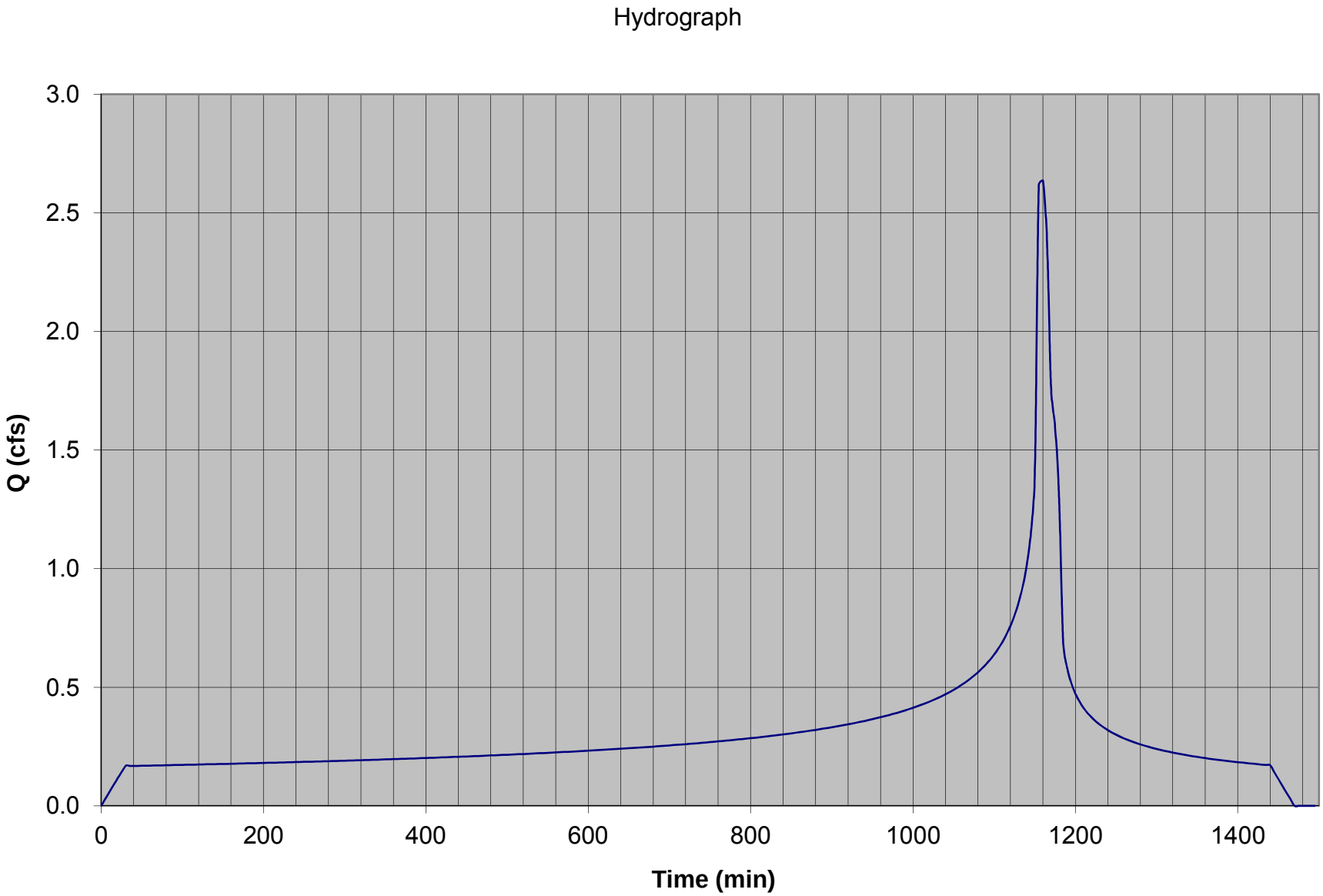

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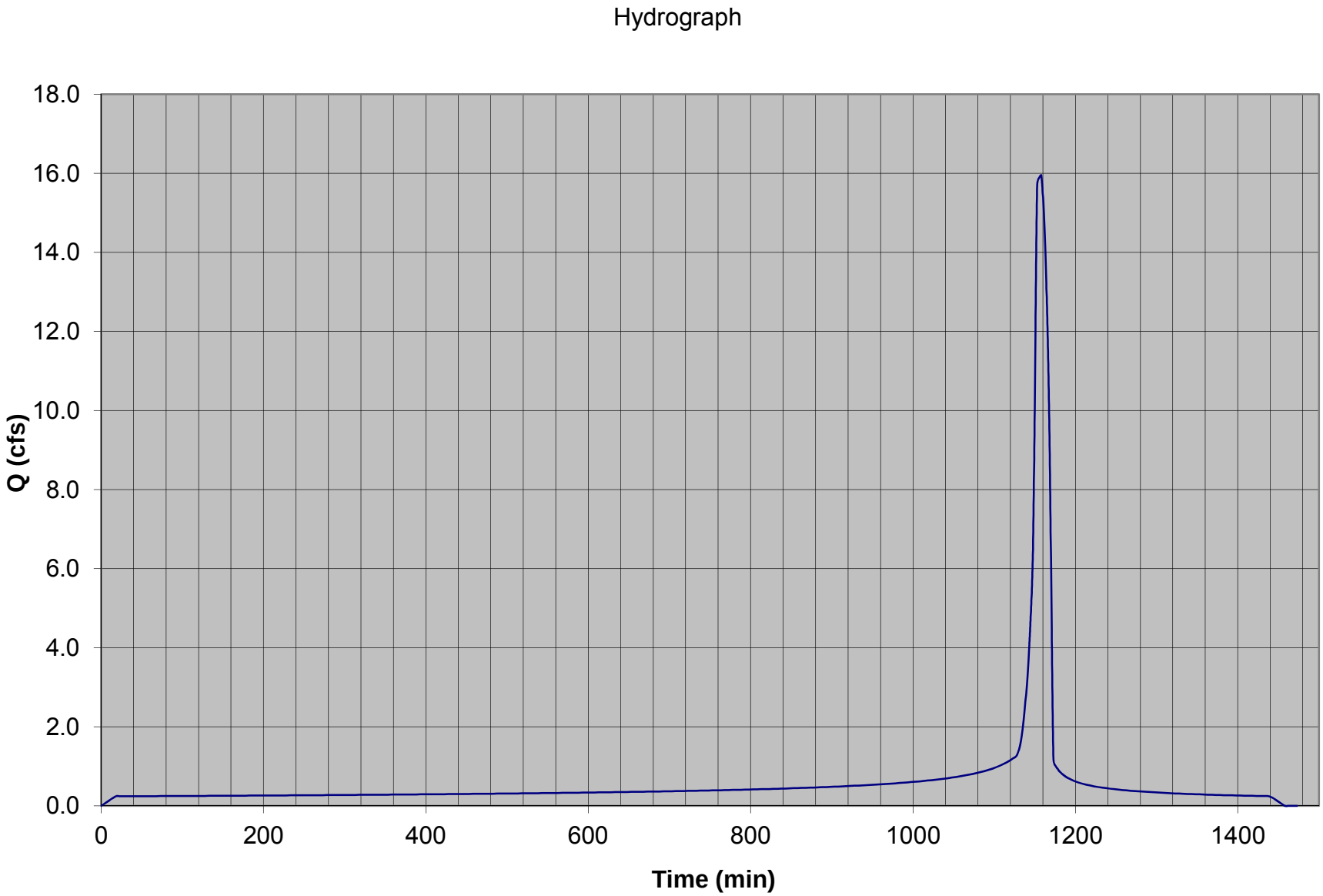

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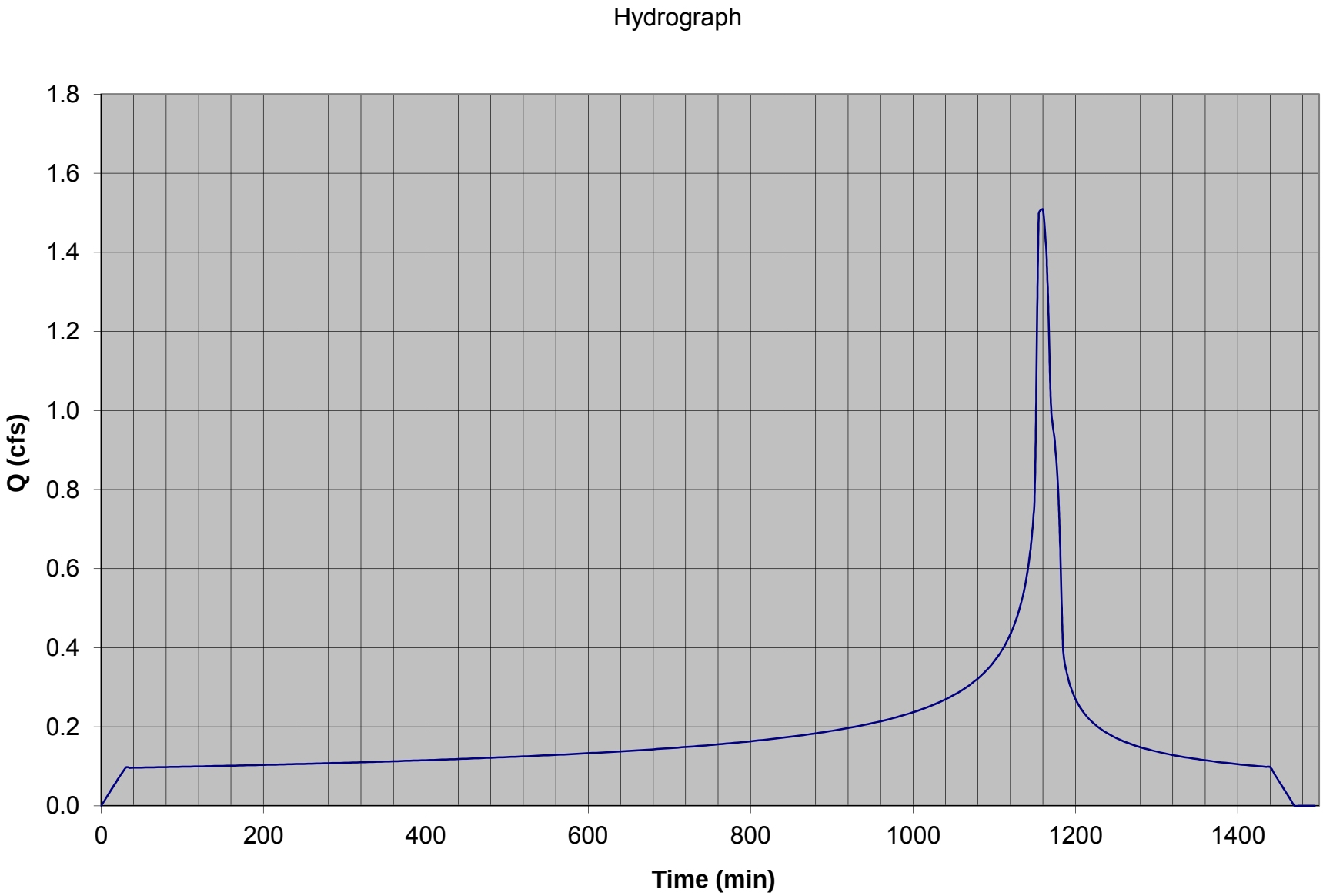

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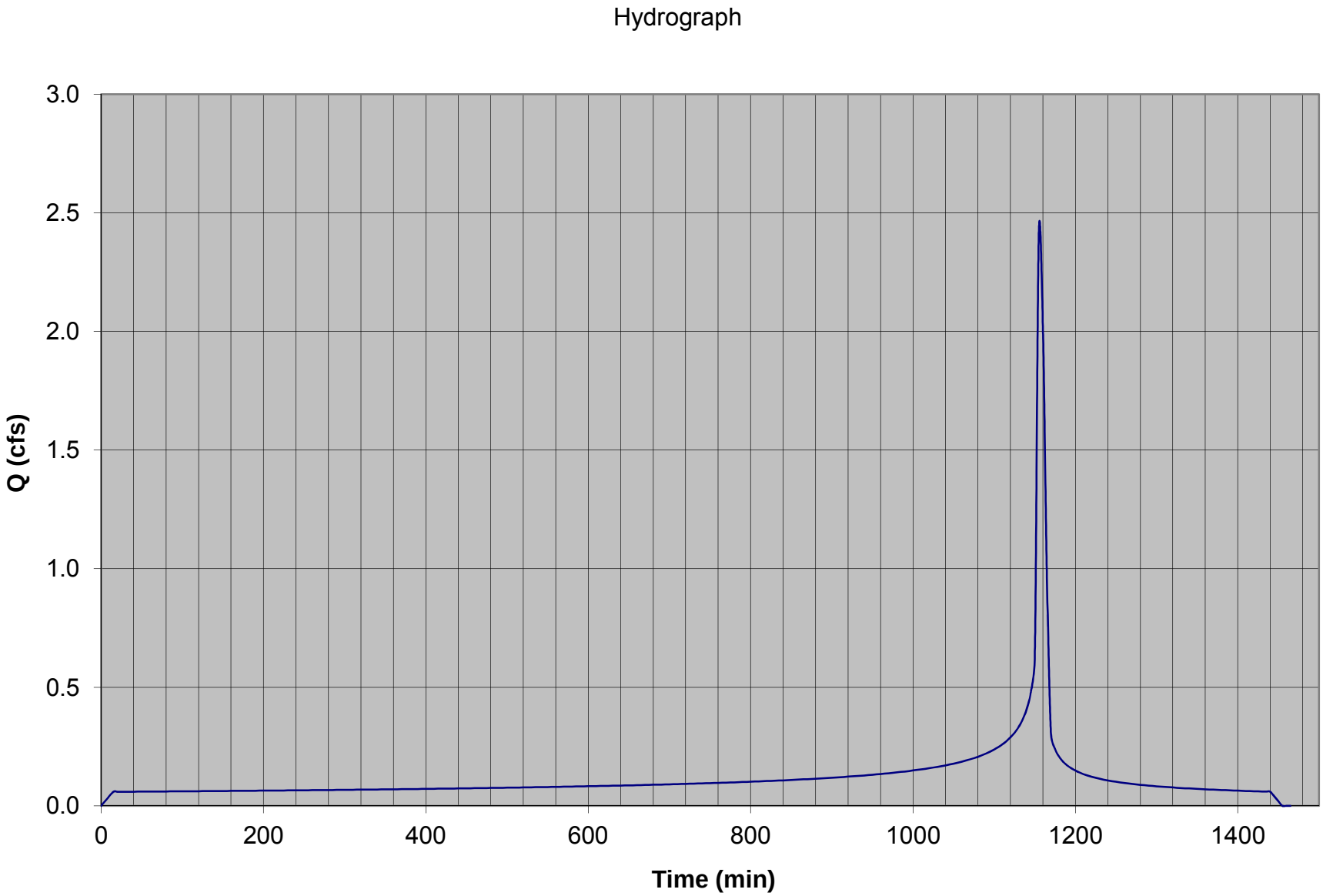

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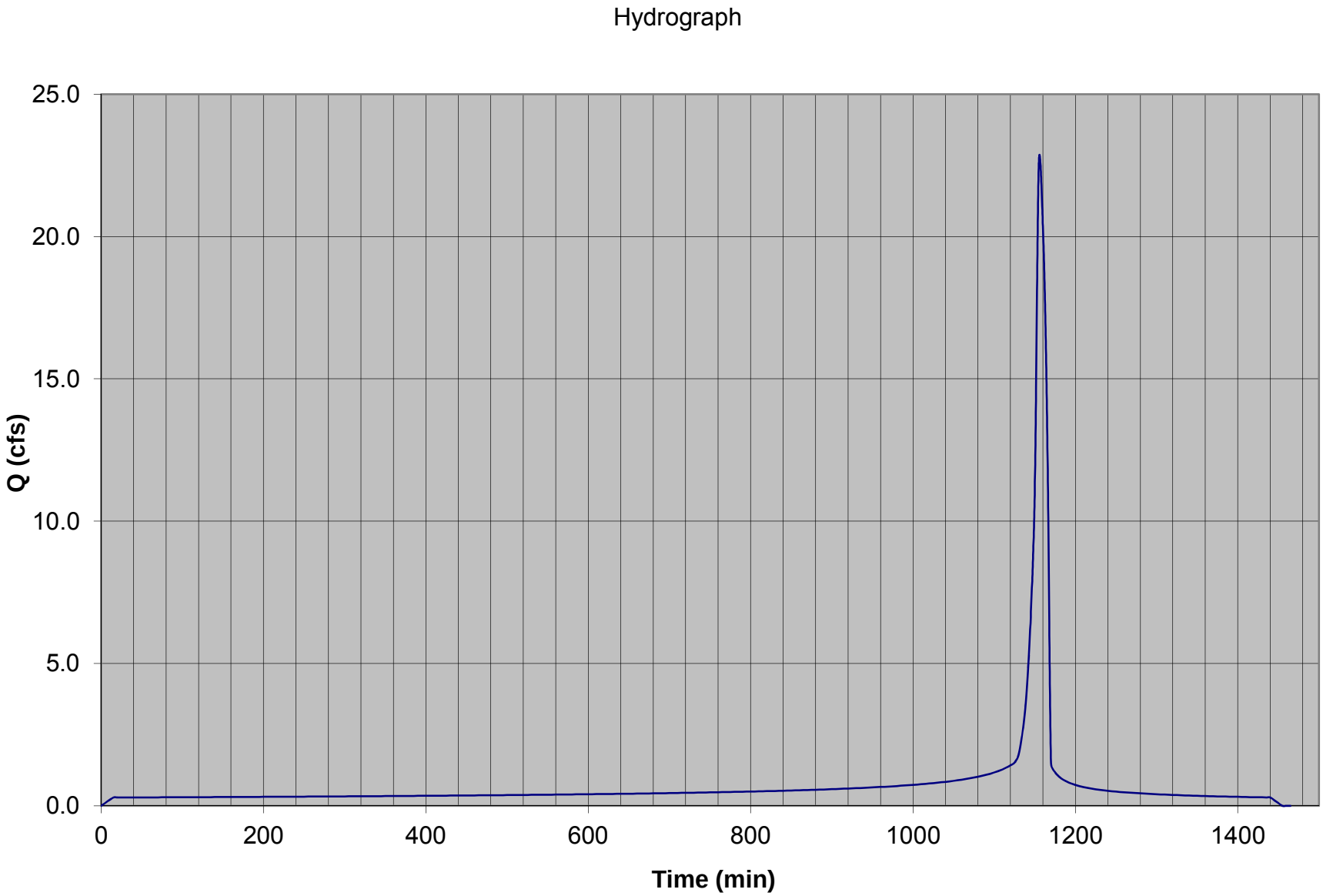

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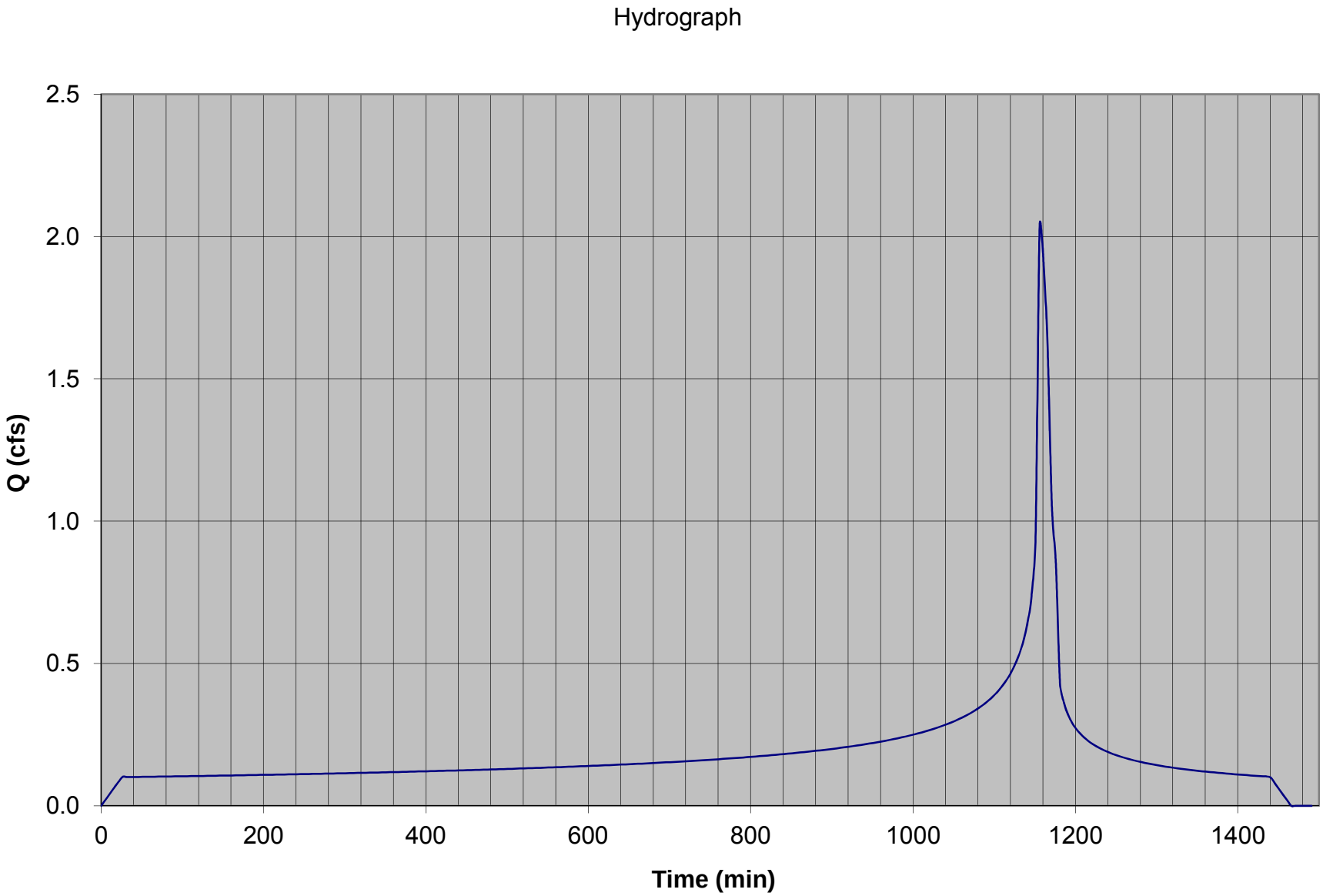

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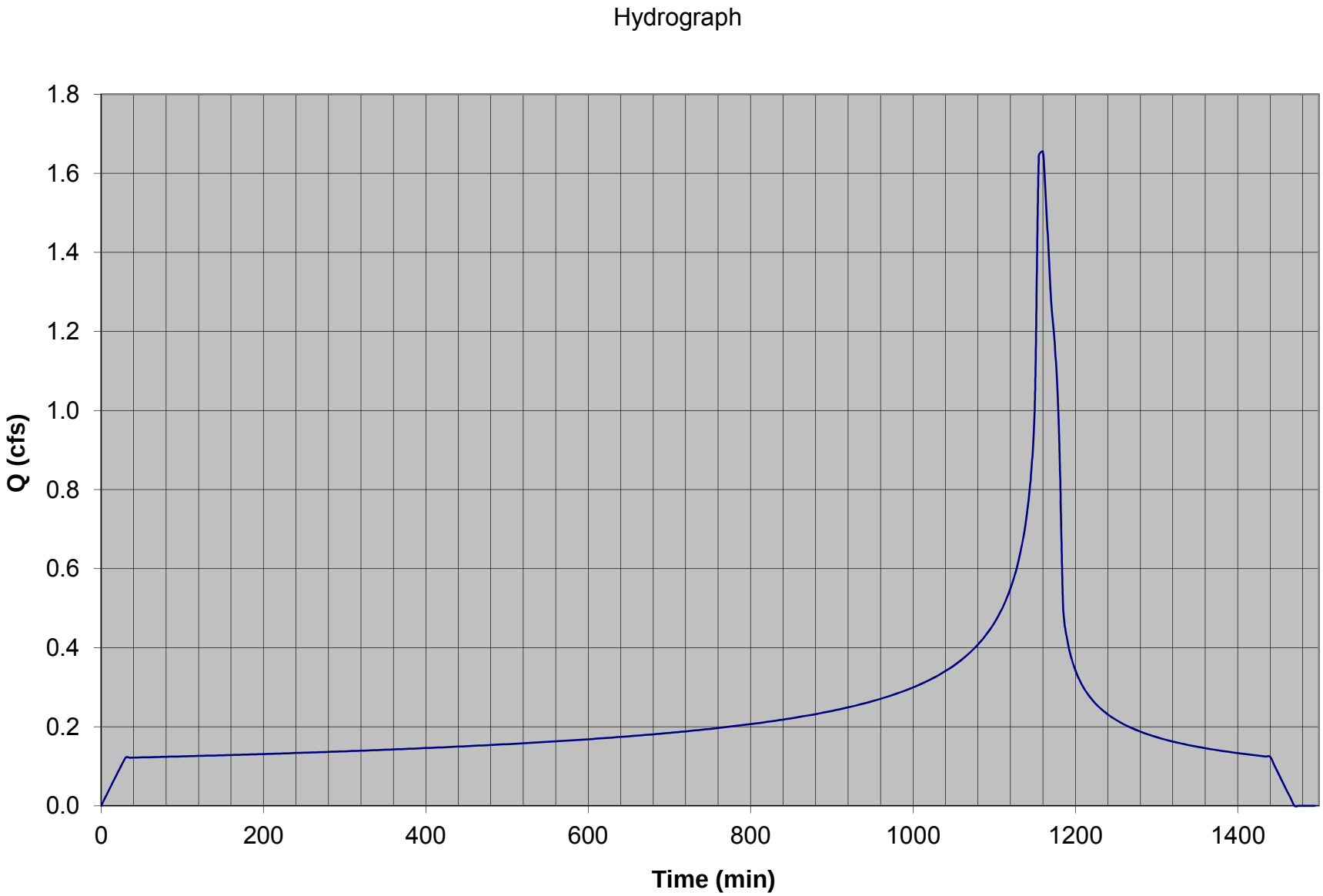


ON-SITE POST DEVELOPMENT HYDROLOGIC CALCULATIONS

TETRATECH

Sheet No. 1 of 2 Date:

Checked By: Office:

Telephone:

Engineer: Job No.:

Subject: WESTERN ANTELOPE BLUE SKY RANCH ON-SITE POST-DEVELOPMENT IMPERVIOUS PERCENTAGE CALCULATIONS

10% = LA COUNTY APPROVED IMPERVIOUS PERCENTAGE FOR SOLAR PANELS AND MISCELLANEOUS SITE DEVELOPMENT

* SINCE ONLY PORTIONS OF THE SITE WILL BE DEVELOPED, WEIGHTED AVERAGES WILL BE USED FOR THE IMPERVIOUS PERCENTAGES OF THE ON-SITE POST-DEVELOPMENT SUB-AREAS.

SUBAREA A

USE 10%

SUBAREA B

$= [(0.01 \times 13.68\,AC) + (0.1 \times 3.75\,AC)] / 17.43\,AC = 2.9\%$ USE 3%

SUBAREA C

$= [(0.01 \times 2.60\,AC) + (0.1 \times 19.98\,AC)] / 22.59\,AC = 9.0\%$ USE 9%

SUBAREA D

USE 10%

SUBAREA E

$= [(0.01 \times 20.65\,AC) + (0.1 \times 0.75\,AC)] / 21.40\,AC = 1.3\%$ USE 2%

SUBAREA F

$= [(0.01 \times 6.76\,AC) + (0.1 \times 6.48\,AC)] / 13.24\,AC = 5.4\%$ USE 6%

SUBAREA G

USE 10%

SUBAREA H

$= [(0.01 \times 1.29\,AC) + (0.1 \times 6.29\,AC)] / 7.58\,AC = 8.5\%$ USE 9%

SUBAREA I

USE 10%

SUBAREA J

$= [(0.01 \times 12.30AC) + (0.1 \times 10.03AC)] / 22.34AC = 5.0\%$ USE 5%

SUBAREA K

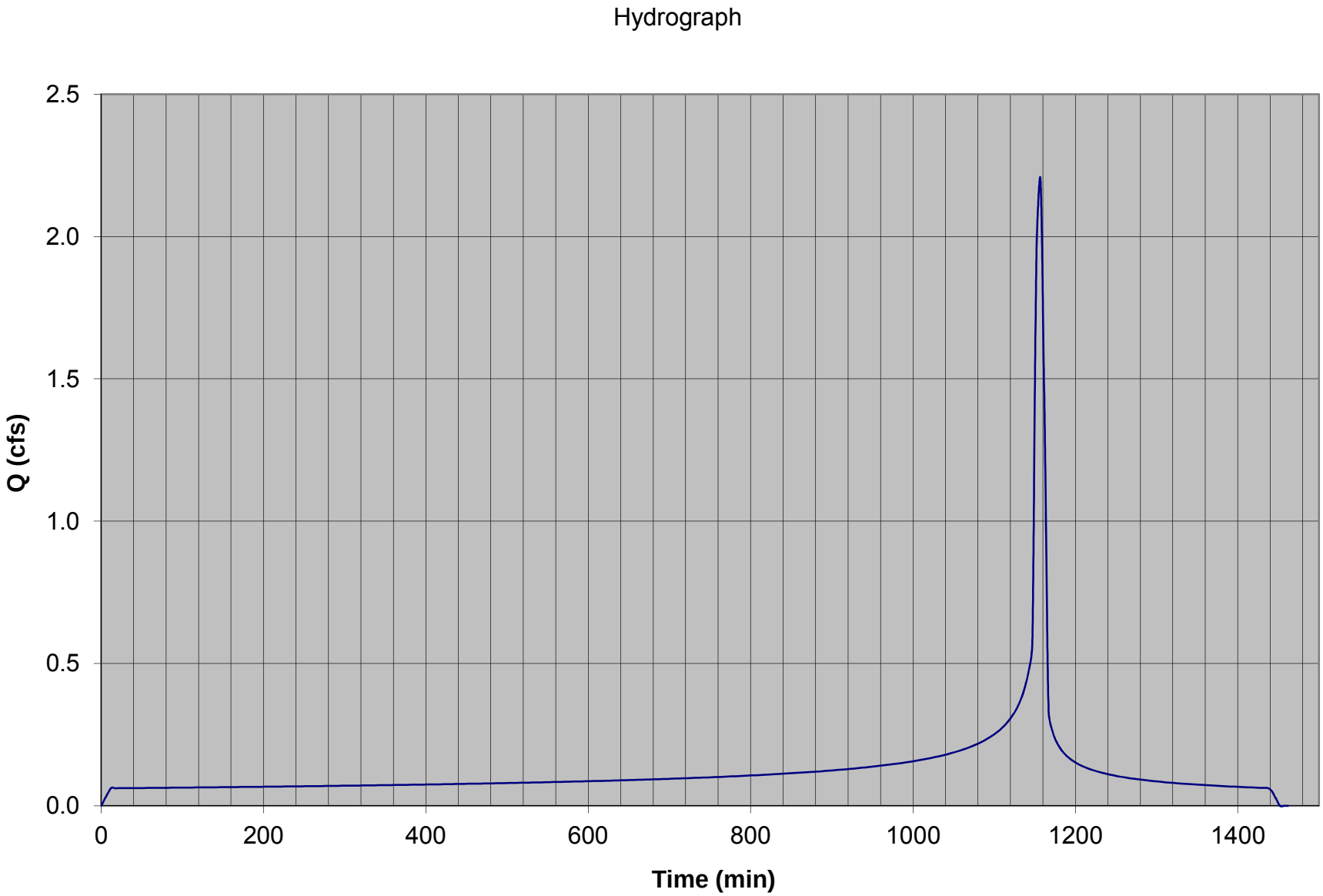
$= [(0.01 \times 0.98AC) + (0.1 \times 6.98AC)] / 7.96AC = 8.9\%$ USE 9%

SUBAREA L

USE 10%

ON-SITE HYDROLOGY (POST-DEVELOPMENT)																	
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 2	A	2.94	0.10	2	134	632	0.0363	2.3	30	0.60	0.10	0.18	0.32	0.34	0.46	0.10
Project 2	B	17.43	0.03	2	120	1196	0.0529	2.4	30	0.62	0.10	0.12	1.30	0.34	2.23	0.41
Project 2	C	22.59	0.09	2	134	1262	0.0346	2.4	30	0.61	0.10	0.17	2.34	0.34	3.45	0.75
Project 2	D	13.85	0.10	2	134	1667	0.0473	2.3	30	0.59	0.10	0.18	1.47	0.34	2.11	0.47
Project 2	E	21.40	0.02	2	120	1710	0.0470	2.4	30	0.62	0.10	0.12	1.59	0.34	2.74	0.51
Project 2	F	13.24	0.06	2	134	995	0.0257	2.3	30	0.59	0.10	0.15	1.17	0.34	1.81	0.37
Project 2	G	18.44	0.10	2	120	1702	0.0449	2.4	30	0.61	0.10	0.18	2.02	0.34	2.92	0.64
Project 2	H	7.58	0.09	2	134	1040	0.0188	2.3	30	0.59	0.10	0.17	0.76	0.34	1.12	0.24
Project 2	I	4.84	0.10	2	134	470	0.0169	2.2	30	0.57	0.10	0.18	0.50	0.34	0.71	0.16
Project 2	J	22.34	0.05	2	120	1155	0.0328	2.4	30	0.61	0.10	0.14	1.91	0.34	3.05	0.61
Project 2	K	7.96	0.09	2	134	832	0.0313	2.3	30	0.59	0.10	0.17	0.80	0.34	1.17	0.25
Project 2	L	9.93	0.10	2	134	827	0.0269	2.2	30	0.57	0.10	0.18	1.02	0.34	1.46	0.32
Project 2	A	2.94	0.10	5	134	632	0.0363	3.5	28	0.93	0.10	0.18	0.49	0.34	0.73	0.15
Project 2	B	17.43	0.03	5	120	1196	0.0529	3.6	23	1.05	0.34	0.36	6.59	0.34	7.88	0.73
Project 2	C	22.59	0.09	5	134	1262	0.0346	3.6	30	0.92	0.10	0.17	3.53	0.34	5.37	1.13
Project 2	D	13.85	0.10	5	134	1667	0.0473	3.4	30	0.89	0.10	0.18	2.22	0.34	3.29	0.71
Project 2	E	21.40	0.02	5	120	1710	0.0470	3.6	30	0.93	0.28	0.29	5.77	0.34	7.29	0.85
Project 2	F	13.24	0.06	5	134	995	0.0257	3.4	30	0.89	0.10	0.15	1.77	0.34	2.83	0.56
Project 2	G	18.44	0.10	5	120	1702	0.0449	3.6	30	0.92	0.27	0.33	5.60	0.34	6.81	1.04
Project 2	H	7.58	0.09	5	134	1040	0.0188	3.4	30	0.89	0.10	0.17	1.15	0.34	1.74	0.37
Project 2	I	4.84	0.10	5	134	470	0.0169	3.3	27	0.90	0.10	0.18	0.78	0.34	1.16	0.24
Project 2	J	22.34	0.05	5	120	1155	0.0328	3.6	26	0.98	0.31	0.34	7.44	0.34	9.01	1.02
Project 2	K	7.96	0.09	5	134	832	0.0313	3.4	30	0.89	0.10	0.17	1.20	0.34	1.83	0.38
Project 2	L	9.93	0.10	5	134	827	0.0269	3.3	30	0.86	0.10	0.18	1.54	0.34	2.27	0.49
Project 2	A	2.94	0.10	10	134	632	0.0363	4.3	23	1.25	0.12	0.20	0.74	0.34	1.07	0.19
Project 2	B	17.43	0.03	10	120	1196	0.0529	4.4	17	1.49	0.46	0.47	12.21	0.34	13.83	0.97
Project 2	C	22.59	0.09	10	134	1262	0.0346	4.4	30	1.12	0.10	0.17	4.30	0.34	6.64	1.38
Project 2	D	13.85	0.10	10	134	1667	0.0473	4.2	30	1.08	0.10	0.18	2.69	0.34	4.04	0.86
Project 2	E	21.40	0.02	10	120	1710	0.0470	4.4	24	1.26	0.40	0.41	11.06	0.34	12.88	1.16
Project 2	F	13.24	0.06	10	134	995	0.0257	4.2	30	1.08	0.10	0.15	2.14	0.34	3.49	0.69
Project 2	G	18.44	0.10	10	120	1702	0.0449	4.4	23	1.27	0.40	0.45	10.54	0.34	12.00	1.37
Project 2	H	7.58	0.09	10	134	1040	0.0188	4.2	30	1.08	0.10	0.17	1.39	0.34	2.14	0.45
Project 2	I	4.84	0.10	10	134	470	0.0169	4.1	24	1.16	0.10	0.18	1.01	0.34	1.53	0.29
Project 2	J	22.34	0.05	10	120	1155	0.0328	4.4	19	1.39	0.43	0.45	13.97	0.34	15.96	1.36
Project 2	K	7.96	0.09	10	134	832	0.0313	4.2	30	1.08	0.10	0.17	1.46	0.34	2.25	0.47
Project 2	L	9.93	0.10	10	134	827	0.0269	4.1	30	1.05	0.10	0.18	1.88	0.34	2.81	0.60
Project 2	A	2.94	0.10	25	134	632	0.0363	5.3	12	2.08	0.32	0.38	2.32	0.34	2.80	0.25
Project 2	B	17.43	0.03	25	120	1196	0.0529	5.4	13	2.07	0.55	0.56	20.20	0.34	22.20	1.30
Project 2	C	22.59	0.09	25	134	1262	0.0346	5.4	27	1.45	0.18	0.24	7.86	0.34	10.78	1.74
Project 2	D	13.85	0.10	25	134	1667	0.0473	5.2	30	1.33	0.14	0.22	4.05	0.34	5.70	1.08
Project 2	E	21.40	0.02	25	120	1710	0.0470	5.4	18	1.78	0.51	0.52	19.81	0.34	22.05	1.56
Project 2	F	13.24	0.06	25	134	995	0.0257	5.2	28	1.38	0.15	0.20	3.65	0.34	5.36	0.87
Project 2	G	18.44	0.10	25	120	1702	0.0449	5.4	17	1.80	0.51	0.55	18.26	0.34	20.06	1.79
Project 2	H	7.58	0.09	25	134	1040	0.0188	5.2	28	1.38	0.15	0.22	2.30	0.34	3.25	0.56
Project 2	I	4.84	0.10	25	134	470	0.0169	5.0	13	1.91	0.29	0.35	3.24	0.34	3.97	0.38
Project 2	J	22.34	0.05	25	120	1155	0.0328	5.4	14	1.97	0.54	0.56	24.65	0.34	27.04	1.79
Project 2	K	7.96	0.09	25	134	832	0.0313	5.2	17	1.74	0.26	0.32	4.43	0.34	5.57	0.61
Project 2	L	9.93	0.10	25	134	827	0.0269	5.0	20	1.56	0.21	0.28	4.34	0.34	5.66	0.76
Project 2	A	2.94	0.10	50	134	632	0.0363	6.0	10	2.58	0.40	0.45	3.41	0.34	3.95	0.29
Project 2	B	17.43	0.03	50	120	1196	0.0529	6.2	11	2.55	0.61	0.62	27.56	0.34	29.75	1.52
Project 2	C	22.59	0.09	50	134	1262	0.0346	6.1	19	1.94	0.30	0.35	15.34	0.34	18.85	2.09
Project 2	D	13.85	0.10	50	134	1667	0.0473	5.9	23	1.72	0.26	0.32	7.62	0.34	9.57	1.29
Project 2	E	21.40	0.02	50	120	1710	0.0470	6.2	15	2.21	0.57	0.58	27.43	0.34	29.96	1.86
Project 2	F	13.24	0.06	50	134	995	0.0257	5.9	18	1.93	0.30	0.34	8.69	0.34	10.77	1.06
Project 2	G	18.44	0.10	50	120	1702	0.0449	6.1	15	2.17	0.57	0.60	24.01	0.34	26.00	2.09
Project 2	H	7.58	0.09	50	134	1040	0.0188	5.9	19	1.88	0.29	0.34	4.85	0.34	6.00	0.68
Project 2	I	4.84	0.10	50	134	470	0.0169	5.7	11	2.35	0.37	0.42	4.78	0.34	5.61	0.44
Project 2	J	22.34	0.05	50	120	1155	0.0328	6.1	12	2.41	0.59	0.61	32.84	0.34	35.53	2.15
Project 2	K	7.96	0.09	50	134	832	0.0313	5.9	14	2.17	0.34	0.39	6.74	0.34	8.06	0.72
Project 2	L	9.93	0.10	50	134	827	0.0269	5.7	15	2.03	0.31	0.37	7.46	0.34	9.03	0.90
Project 2	A	2.94	0.10	MIT.	134	632	0.0363	0.75	30	0.19	0.10	0.18	0.10	0.34	0.13	0.03
Project 2	B	17.43	0.03	MIT.	120	1196	0.0529	0.75	30	0.19	0.10	0.12	0.40	0.34	0.59	0.13
Project 2	C	22.59	0.09	MIT.	134	1262	0.0346	0.75	30	0.19	0.10	0.17	0.73	0.34	0.97	0.24
Project 2	D	13.85	0.10	MIT.	134	1667	0.0473	0.75	30	0.19	0.10	0.18	0.47	0.34	0.62	0.15
Project 2	E	21.40	0.02	MIT.	120	1710	0.0470	0.75	30	0.19	0.10	0.12	0.49	0.34	0.73	0.16
Project 2	F	13.24	0.06	MIT.	134	995	0.0257	0.75	30	0.19	0.10	0.15	0.38	0.34	0.52	0.12
Project 2	G	18.44	0.10	MIT.	120	1702	0.0449	0.75	30	0.19	0.10	0.18	0.63	0.34	0.82	0.20
Project 2	H	7.58	0.09	MIT.	134	1040	0.0188	0.75	30	0.19	0.10	0.17	0.24	0.34	0.32	0.08
Project 2	I	4.84	0.10	MIT.	134	470	0.0169	0.75	30	0.19	0.10	0.18	0.17	0.34	0.22	0.05
Project 2	J	22.34	0.05	MIT.	120	1155	0.0328	0.75	30	0.19	0.10	0.14	0.59	0.34	0.84	0.19
Project 2	K	7.96	0.09	MIT.	134	832	0.0313	0.75	30	0.19	0.10	0.17	0.26	0.34	0.34	0.08
Project 2	L	9.93	0.10	MIT.	134	827	0.0269	0.75	30	0.19	0.10	0.18	0.34	0.34	0.44	0.11

DRAINAGE AREA A 25-YEAR STORM EVENT



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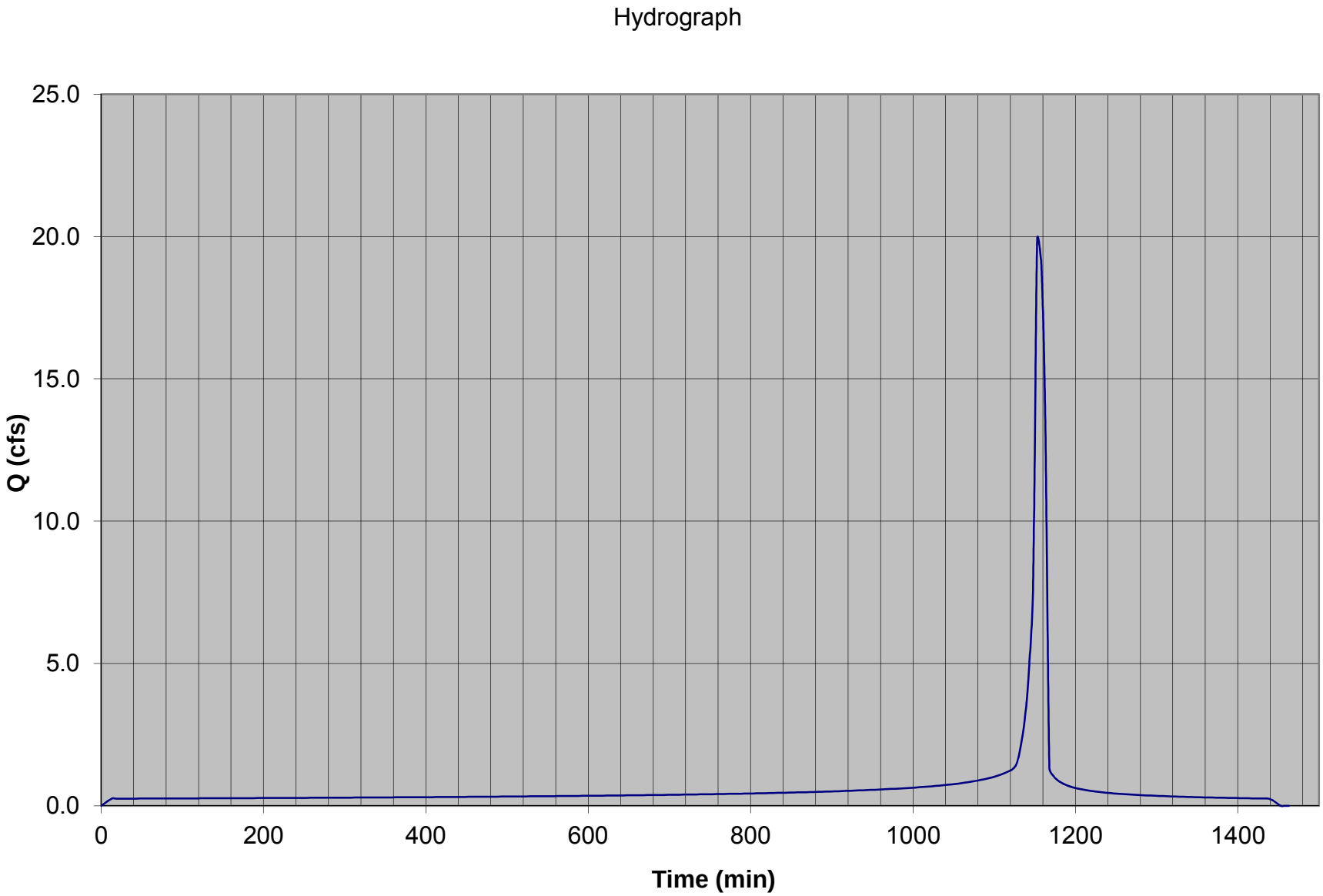

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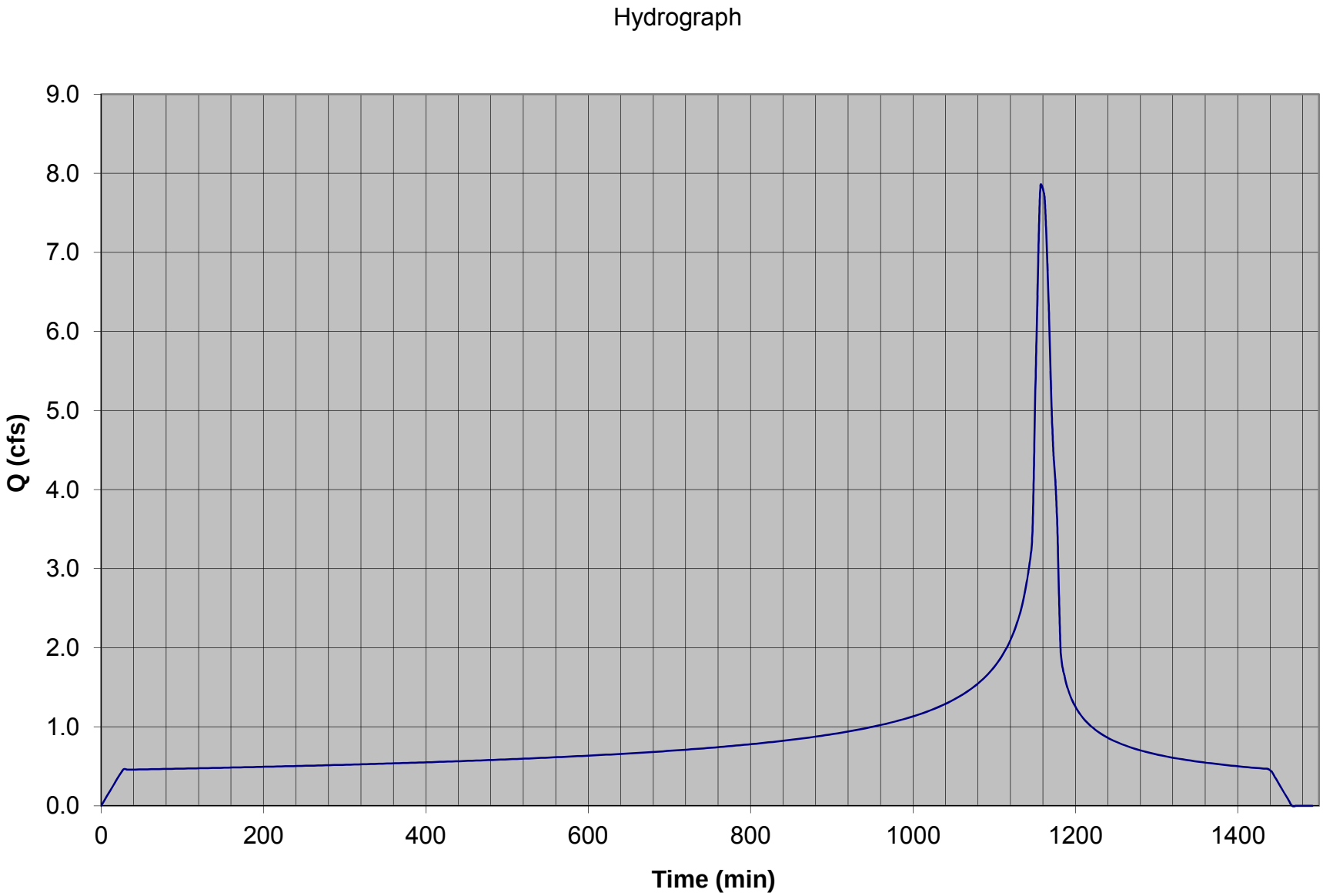

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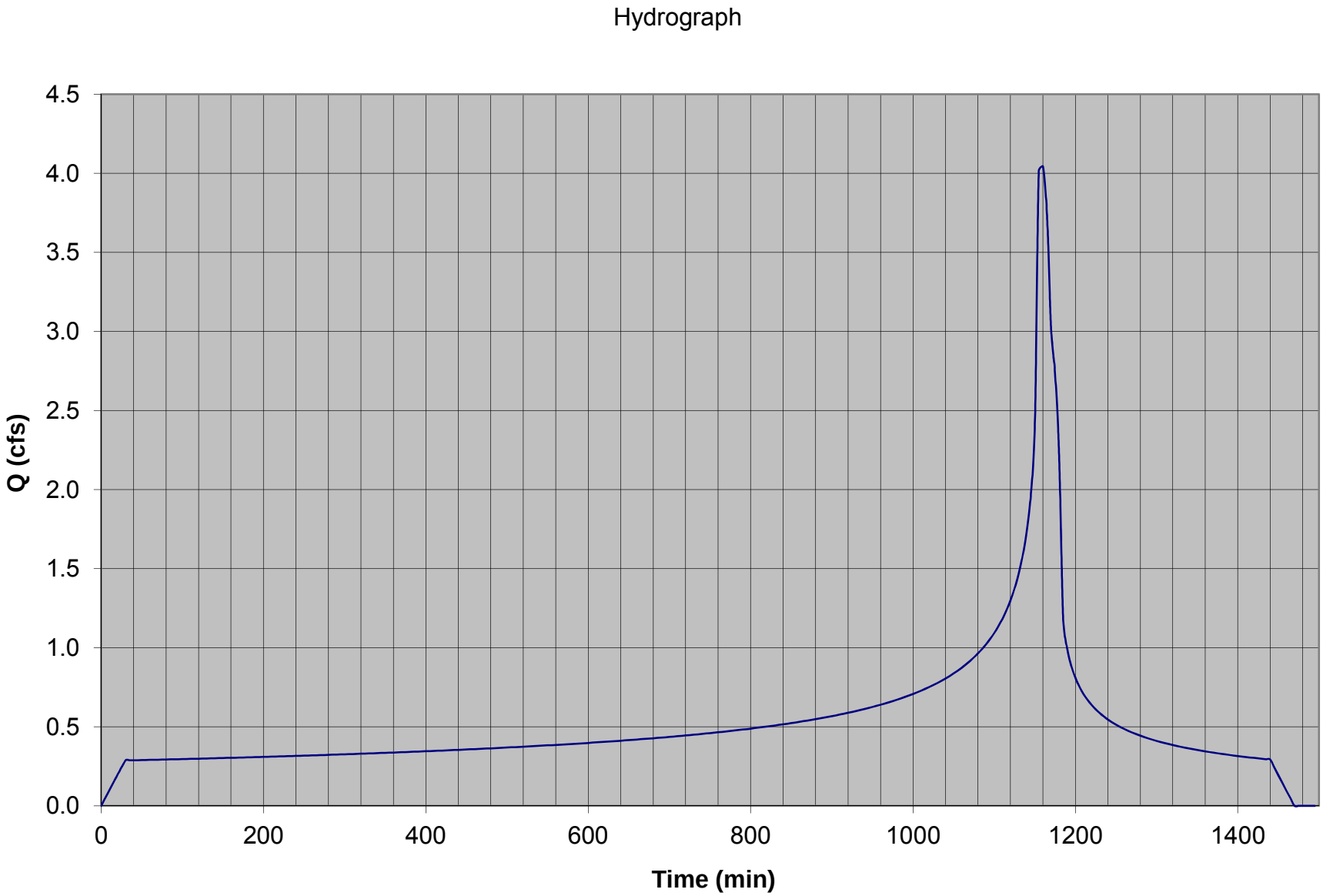

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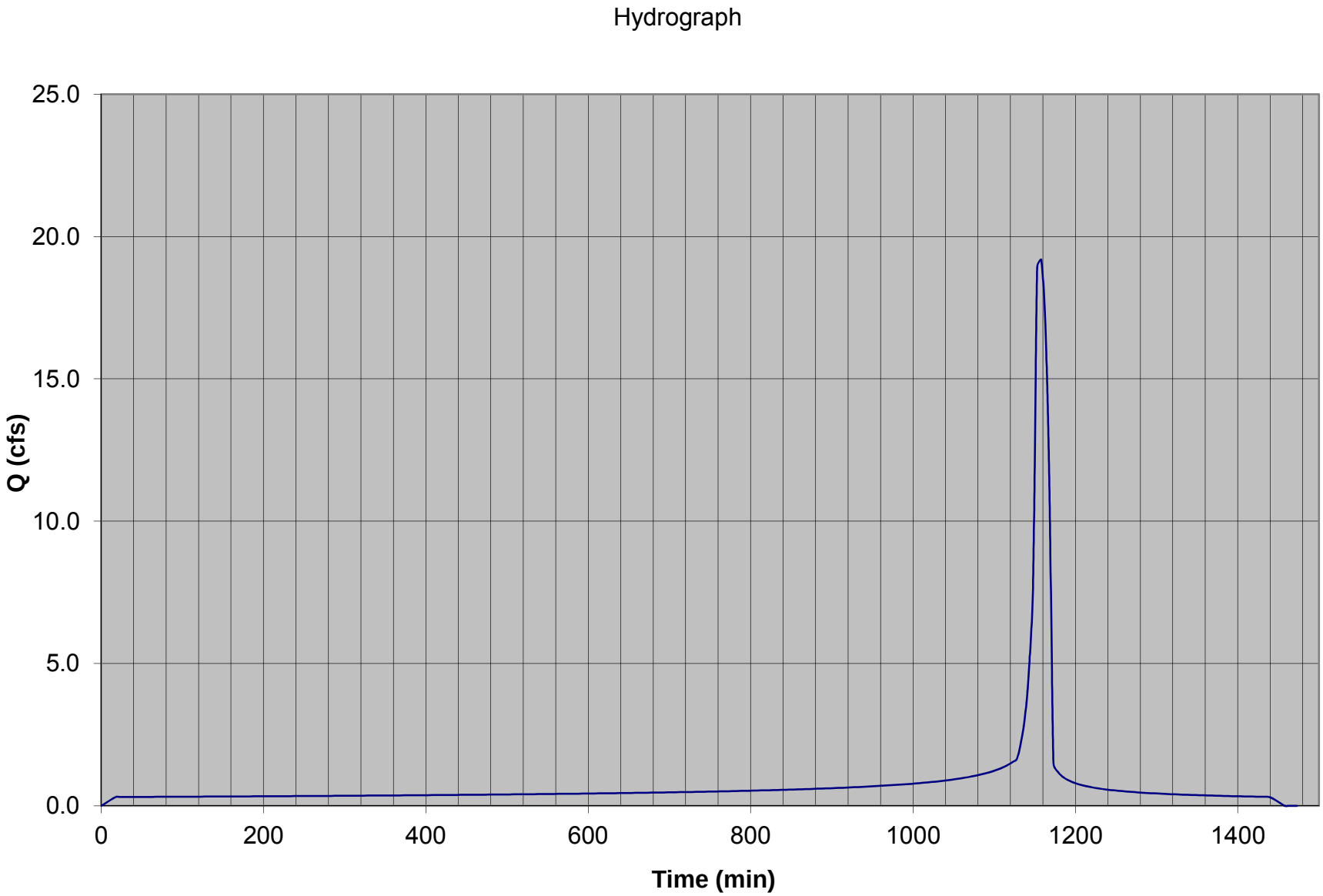

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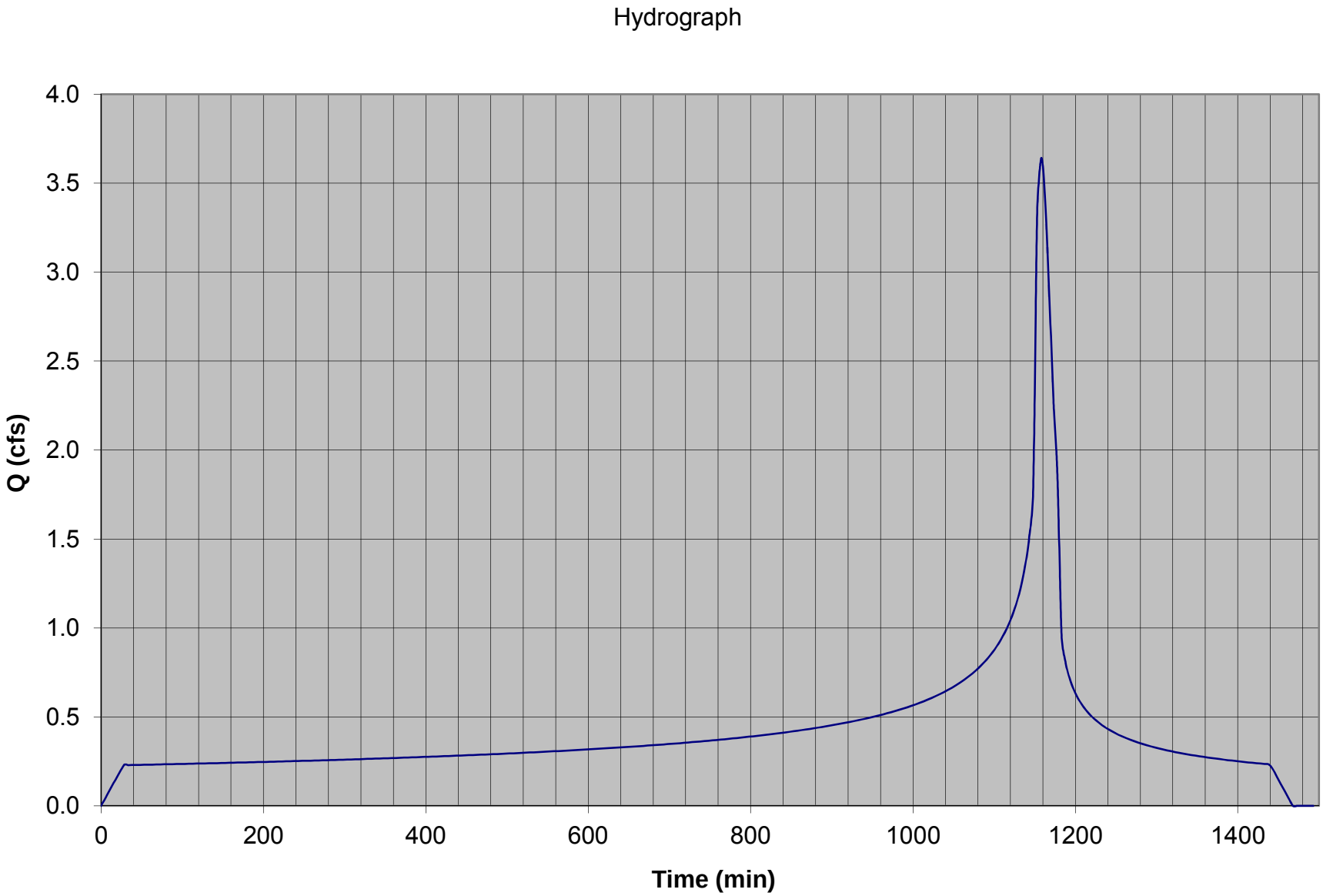

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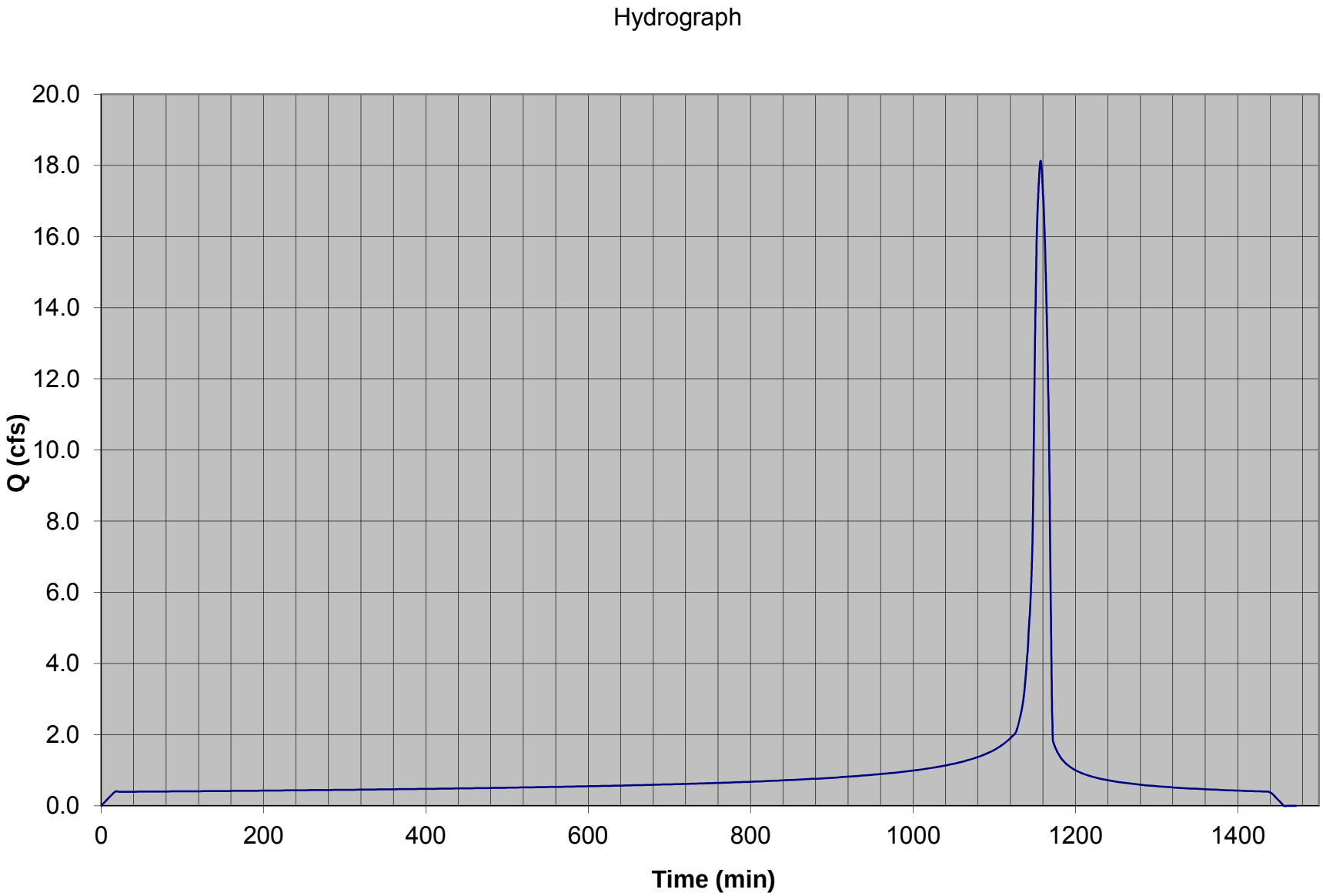

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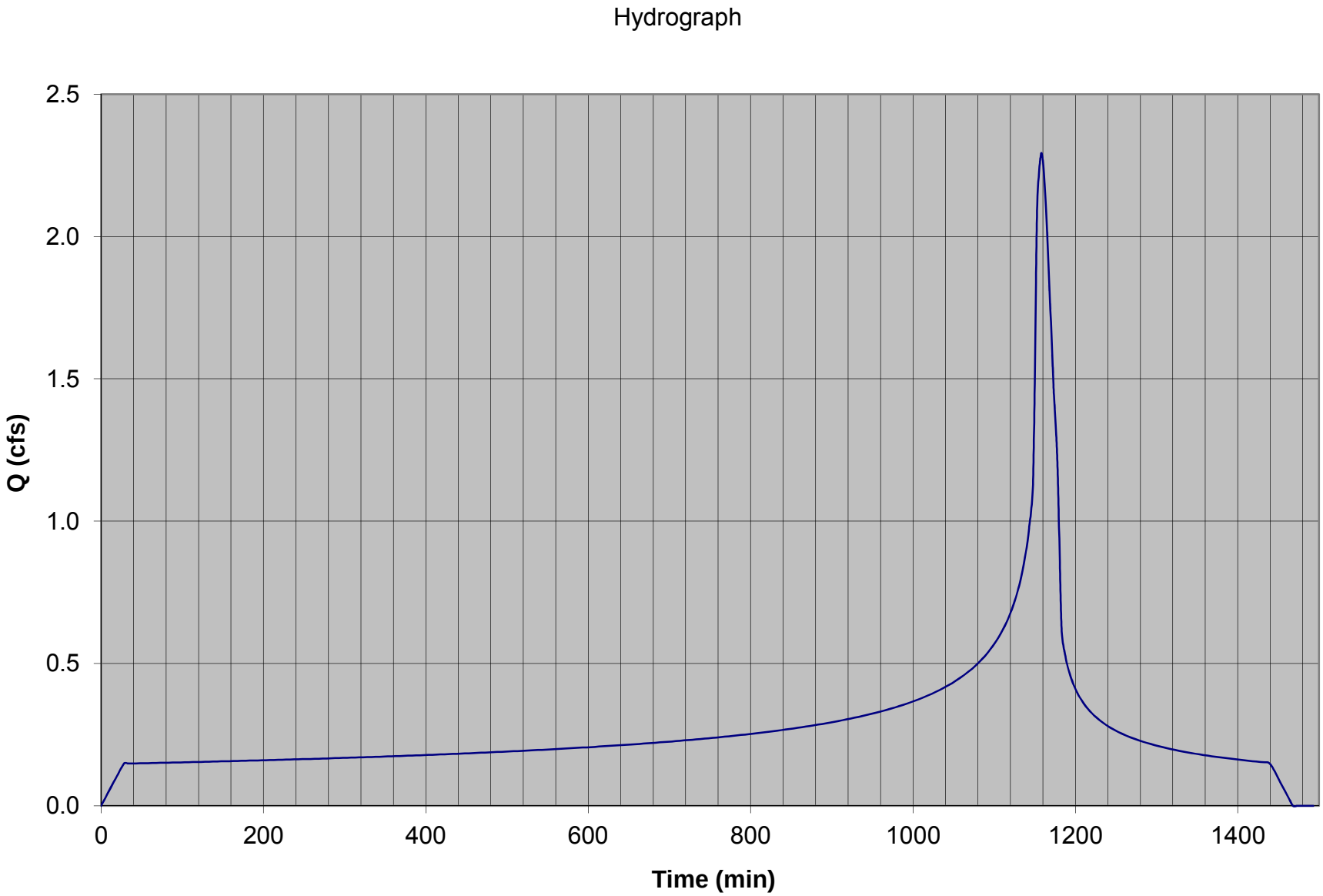

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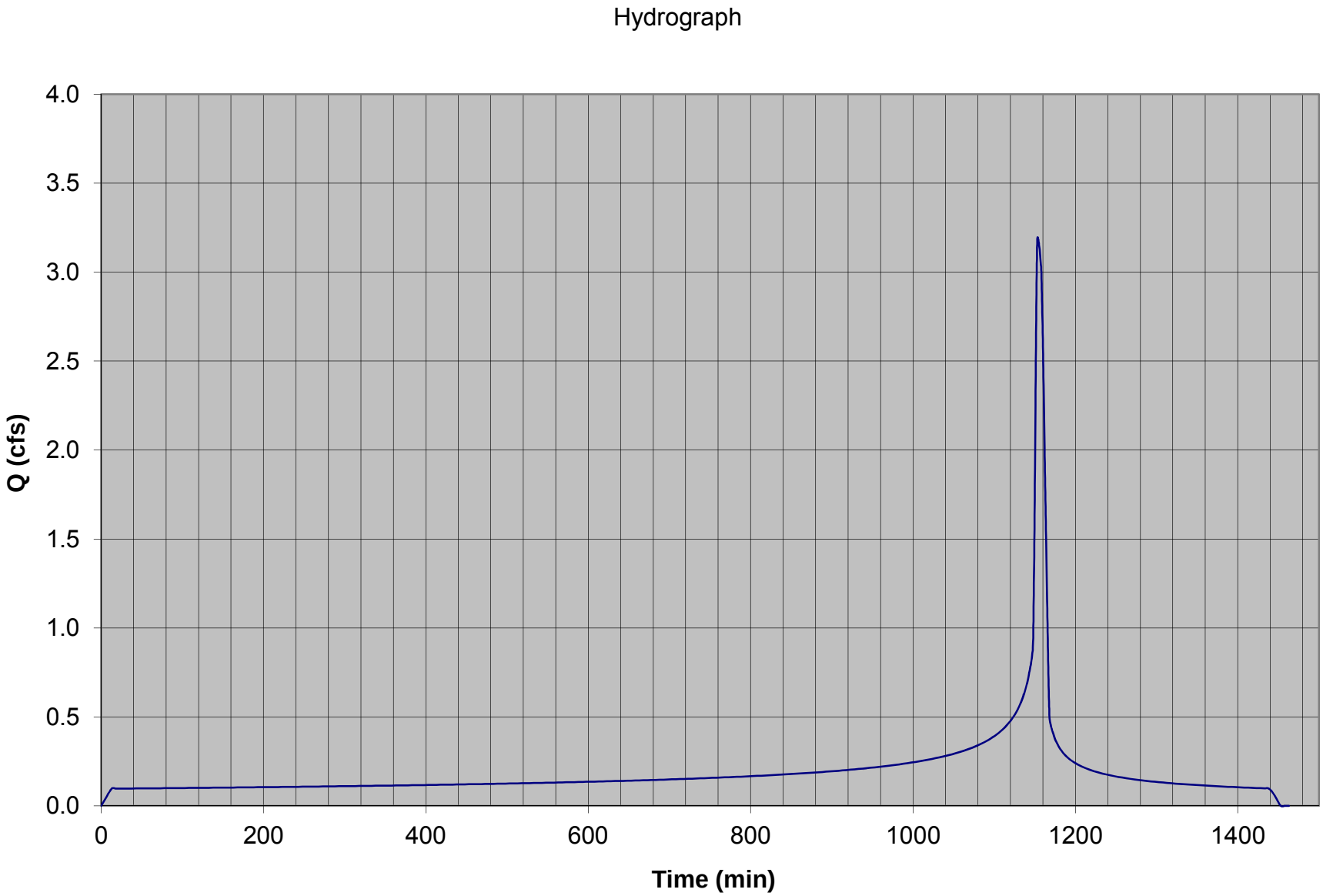

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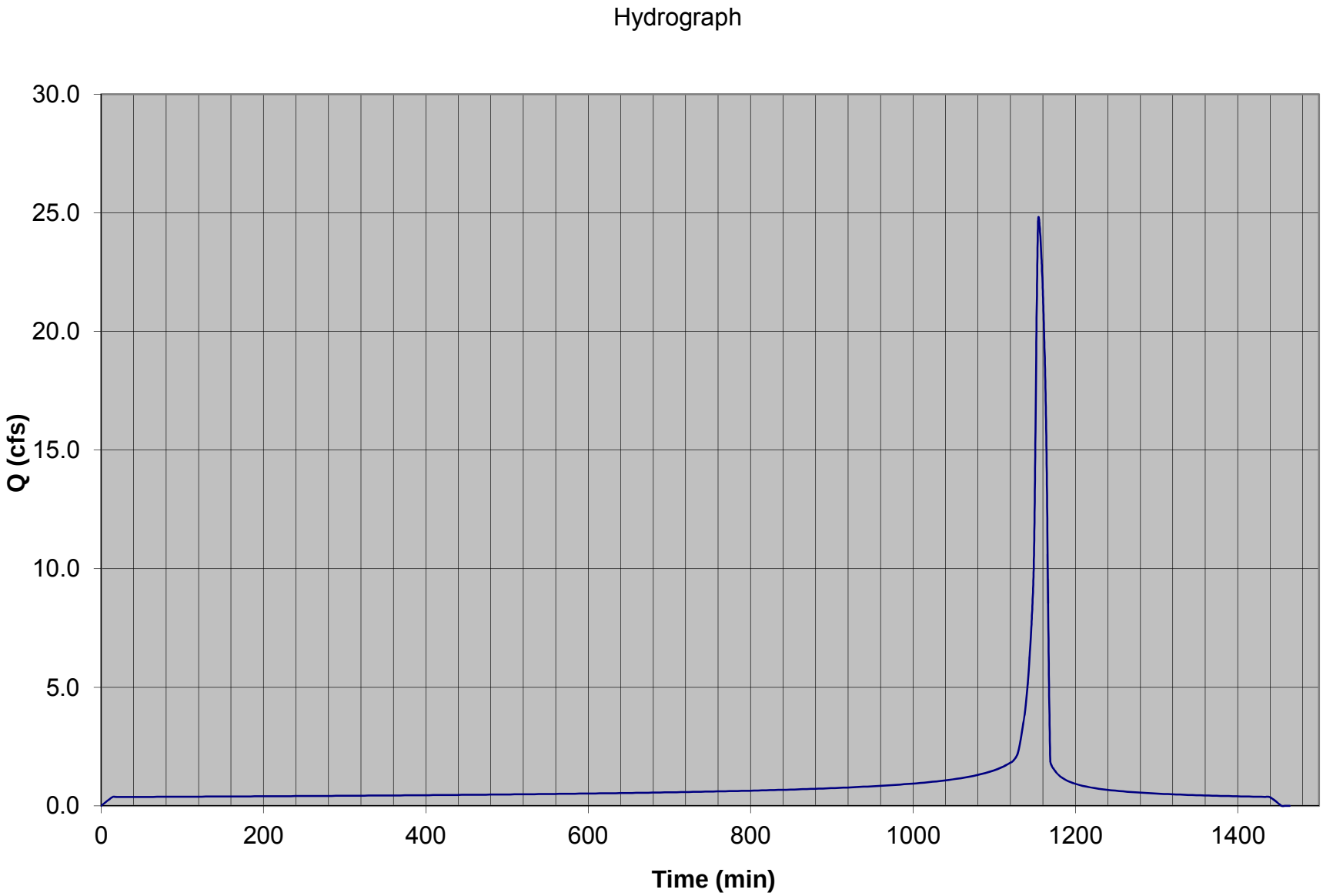

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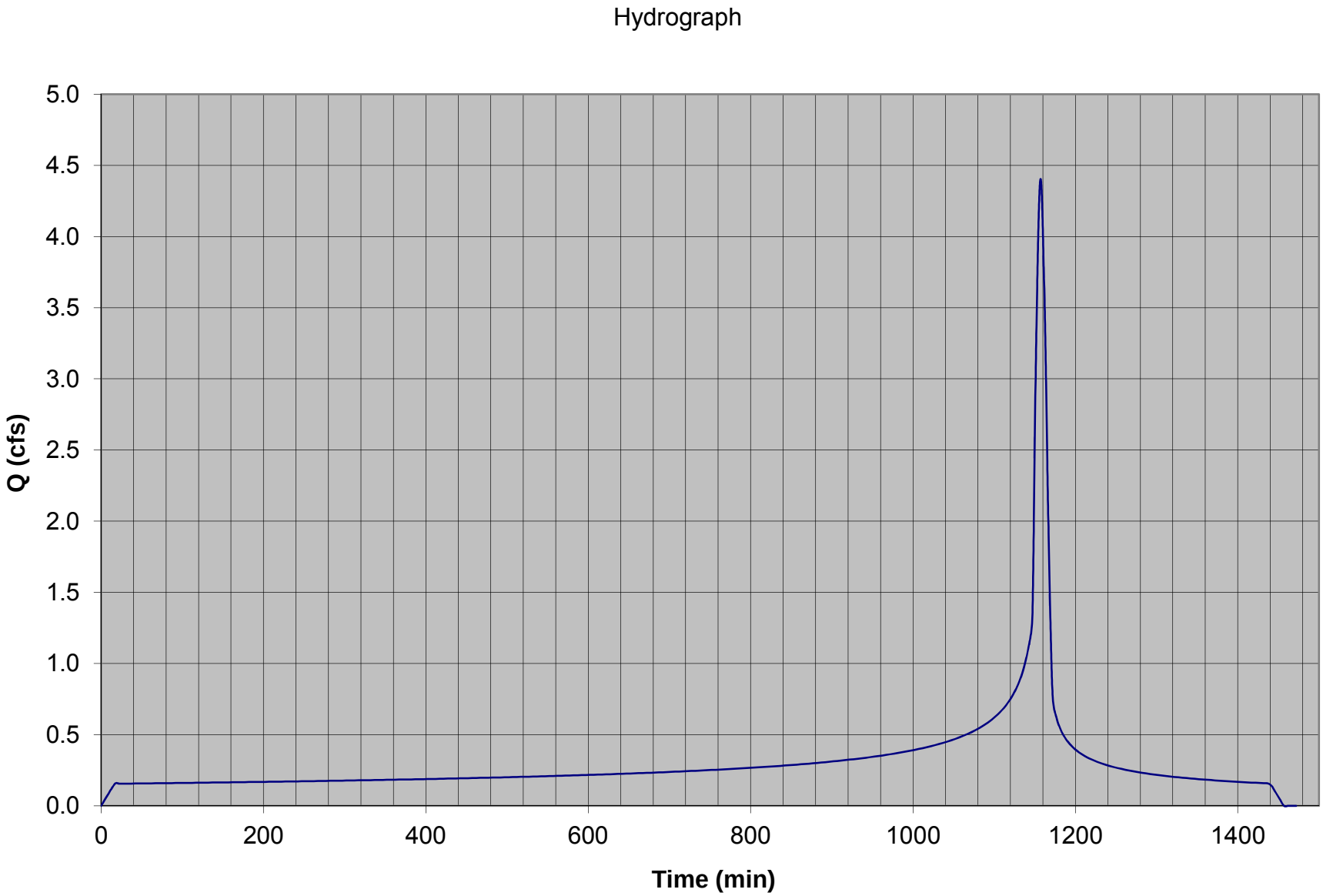

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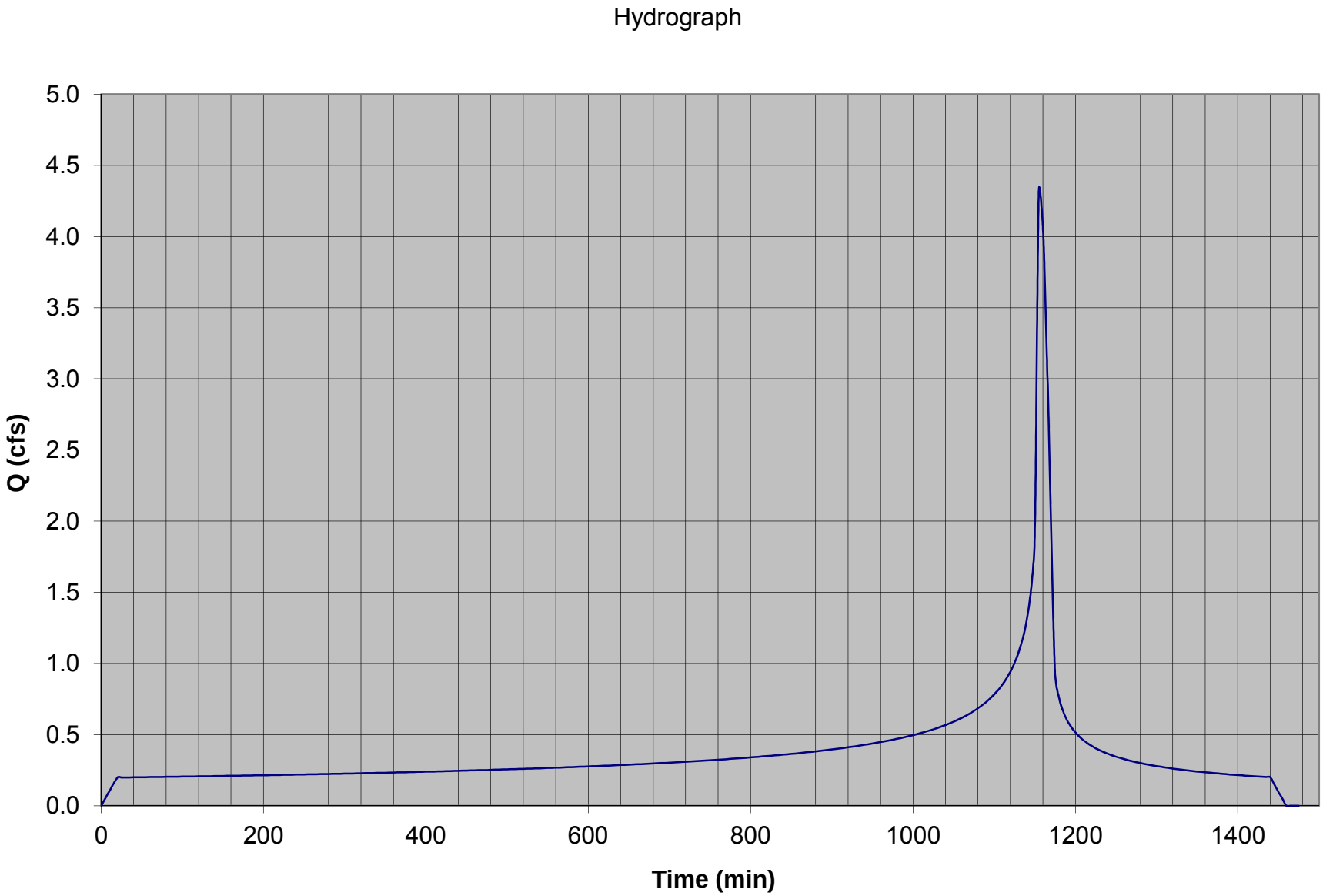

APPENDIX E:
IMPACT ANALYSIS CALCULATIONS

(1.) CHECK DEVELOPMENT'S IMPACT ON FLOW RATES & VOLUMES

* IGNORE EFFECT OF BASINS TO BE CONSERVATIVE SINCE BASINS REDUCE POST-DEVELOPMENT FLOW RATES & VOLUMES.

FLOW LINE #1:

PRE-DEVELOPMENT:

Q_{50} = 23.99 CFS

V_{50} = 1.54 AC·FT

POST-DEVELOPMENT:

Q_{50} = 24.75 CFS

V_{50} = 1.64 AC·FT

* FOR FLOW LINES, SEE ON-SITE DRAINAGE MAP, APPENDIX G. FLOWLINES CORRESPOND TO OUTFLOW FLOWLINES & ARE NUMBERED LEFT TO RIGHT.

* FOR BASIN NUMBERING, SEE WATER QUALITY CALCULATIONS.

% INCREASE:

$Q_{50} \Rightarrow \frac{24.75\,CFS - 23.99\,CFS}{23.99\,CFS} = 3.2\% < 10\%$ OK

$V_{50} \Rightarrow \frac{1.64\,AC\cdot FT - 1.54\,AC\cdot FT}{1.54\,AC\cdot FT} = 6.5\% < 10\%$ OK

∴ INCREASES ARE NEGLIGIBLE. NO FURTHER ANALYSIS NECESSARY.

FLOW LINE #2:

PRE-DEVELOPMENT:

Q_{50} = 59.08 CFS

V_{50} = 4.21 AC·FT

POST-DEVELOPMENT:

Q_{50} = 64.24 CFS

V_{50} = 4.96 AC·FT

% INCREASE:

$Q_{50} \Rightarrow \frac{64.24\,CFS - 59.08\,CFS}{59.08\,CFS} = 8.7\% < 10\%$ OK

$V_{50} \Rightarrow \frac{4.96\,AC\cdot FT - 4.21\,AC\cdot FT}{4.21\,AC\cdot FT} = 17.8\% > 10\%$ NG

∴ FLOW RATE INCREASE IS NEGLIGIBLE. FURTHER ANALYSIS IS NECESSARY FOR FLOW VOLUME. ACCOUNT FOR BASIN VOLUME.

FLOW LINE #2 CONT:

POST-DEVELOPMENT:

V_{50} = 4.96 AC·FT − 0.33 AC·FT = 4.63 AC·FT

↑ ΔV_{25} STORAGE OF INFILTRATION BASIN #5 1 of 7

% INCREASE:

V_{50} ⇒ $\frac{4.63\ AC\cdot FT - 4.21\ AC\cdot FT}{4.21\ AC\cdot FT}$ = 10.0% = 10% OK

∴ VOLUME INCREASE IS NEGLIGIBLE.

FLOW LINE # 3

PRE-DEVELOPMENT:

Q_{50} = 4.42 CFS

V_{50} = 0.78 AC·FT

POST-DEVELOPMENT:

Q_{50} = 7.62 CFS

V_{50} = 1.29 AC·FT

% INCREASE:

Q_{50} ⇒ $\frac{7.62\ CFS - 4.42\ CFS}{4.42\ CFS}$ = 72.4% > 10% NG.

V_{50} ⇒ $\frac{1.29\ AC\cdot FT - 0.78\ AC\cdot FT}{0.78\ AC\cdot FT}$ = 65.4% > 10% NG

∴ FLOW RATE & VOLUME REQUIRE FURTHER ANALYSIS. ACCOUNT FOR BASIN ROUTING OF FLOW RATES & FOR BASIN INFILTRATION VOLUME.

FLOW LINE # 3 CONT.

POST-DEVELOPMENT:

Q_{50} = 4.65 CFS (AFTER BASIN ROUTING)

V_{50} = 1.29 AC·FT − 0.99 AC·FT = 0.3 AC·FT

(ΔV_{26} STORAGE FOR BASIN #'S 2, 3, 4 + ½ #5)

% INCREASE:

$Q_{50} \Rightarrow \frac{4.65\ CFS - 4.42\ CFS}{4.42\ CFS} = 5.2\% < 10\%$ OK

$V_{50} \Rightarrow \frac{0.3\ AC\cdot FT - 0.78\ AC\cdot FT}{0.78\ AC\cdot FT} = -61.5\% < 10\%$ OK

∴ FLOW RATE & VOLUME INCREASES ARE NEGLIGIBLE.

FLOW LINE #4:

PRE-DEVELOPMENT:

Q_{50} = 504.18 CFS

V_{50} = 27.25 AC·FT

POST-DEVELOPMENT:

Q_{50} = 510.28 CFS

V_{50} = 28.62 AC·FT

% INCREASE:

$Q_{50} \Rightarrow \frac{510.28\ CFS - 504.18\ CFS}{504.18\ CFS} = 1.2\% < 10\%$ OK

$V_{50} \Rightarrow \frac{28.62\ AC\cdot FT - 27.25\ AC\cdot FT}{27.25\ AC\cdot FT} = 5.0\% < 10\%$ OK

∴ INCREASES ARE NEGLIGIBLE. NO FURTHER ANALYSIS NECESSARY.

FLOW LINE #5:

PRE-DEVELOPMENT:

Q_{50} = 387.17 CFS

V_{50} = 22.15 AC·FT

POST-DEVELOPMENT:

Q_{50} = 391.07 CFS

V_{50} = 23.02 AC·FT

% INCREASE:

$Q_{50} \Rightarrow \frac{391.07\,CFS - 387.17\,CFS}{387.17\,CFS} = 1.0\% < 10\%$ OK

$V_{50} \Rightarrow \frac{23.02\,AC\cdot FT - 22.15\,AC\cdot FT}{22.15\,AC\cdot FT} = 3.9\% < 10\%$ OK

∴ INCREASES ARE NEGLIGIBLE. NO FURTHER ANALYSIS NECESSARY.

(2.) CHECK DEVELOPMENT'S IMPACT ON FLOW DEPTHS & VELOCITIES.

* USE FLOW MASTER, RESULTS ATTACHED.

FLOWLINE #1:

PRE-DEVELOPMENT:

DEPTH = 0.14 FT

VELOCITY = 2.67 FT/S

POST-DEVELOPMENT:

DEPTH = 0.15 FT

VELOCITY = 2.70 FT/S

% INCREASE:

DEPTH $\Rightarrow \frac{0.15\,FT - 0.14\,FT}{0.14\,FT} = 7.1\% < 10\%$ OK

VELOCITY $\Rightarrow \frac{2.70\,FT/S - 2.67\,FT/S}{2.67\,FT/S} = 1.1\% < 10\%$ OK

∴ INCREASES ARE NEGLIGIBLE.

FLOW LINE # 2:

PRE-DEVELOPMENT:

DEPTH = 0.18 FT

VELOCITY = 3.83 FT/S

POST-DEVELOPMENT:

DEPTH = 0.18 FT

VELOCITY = 3.95 FT/S

% INCREASE:

DEPTH $\Rightarrow \frac{0.18\,FT - 0.18\,FT}{0.18\,FT} = 0\% < 10\%$ OK

VELOCITY $\Rightarrow \frac{3.95\,FT/S - 3.83\,FT/S}{3.83\,FT/S} = 3.1\% < 10\%$ OK

∴ INCREASES ARE NEGLIGIBLE:

FLOW LINE # 3

PRE-DEVELOPMENT:

DEPTH = 0.10 FT

VELOCITY = 2.07 FT/S

POST-DEVELOPMENT:

DEPTH = 0.10 FT

VELOCITY = 2.11 FT/S

% INCREASE:

DEPTH $\Rightarrow \frac{0.10\,FT - 0.10\,FT}{0.10\,FT} = 0\% < 10\%$ OK

VELOCITY $\Rightarrow \frac{2.11\,FT/S - 2.07\,FT/S}{2.07\,FT/S} = 1.9\% < 10\%$ OK

∴ INCREASES ARE NEGLIGIBLE

FLOW LINE # 4 & 5

* FLOW LINES 4 & 5 CONVERGE TOWARD ONE LOCATION @ THE PROPERTY BOUNDARY. THEREFORE, THE TWO ARE MODELED TOGETHER IN FLOW MASTER

PRE-DEVELOPMENT:

DEPTH = 0.65 FT

VELOCITY = 5.87 FT/S

POST-DEVELOPMENT:

DEPTH = 0.65 FT

VELOCITY = 5.88 FT/S

% INCREASE:

DEPTH => $\frac{0.65\,FT - 0.65\,FT}{0.65\,FT} = 0\% < 10\%$ OK

VELOCITY => $\frac{5.88\,FT/S - 5.87\,FT/S}{5.87\,FT/S} = 0.2\% < 10\%$ OK

∴ INCREASES ARE NEGLIGIBLE.

CONCLUSION:

THE DEVELOPMENT'S IMPACT TO 50-YEAR STORM EVENT FLOW RATES, VOLUMES, DEPTHS, & VELOCITIES LEAVING THE SITE IS NEGLIGIBLE.

TETRA TECH, INC.

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PROJECT PROJECT 2 DATE CHECKED DATE DECEMBER 2013

DETAIL BASIN ROUTING CHECKED BY JD COMPUTED BY JS

Length1 (L1)	149 ft	C	3	
Length2 (L2)	100 ft	Spread (Sp)	75 ft	
Depth (D)	4 ft	Δt	40 mins.	
Slope (Sl)	0.053	Infil. (I)	0.24 ft/40 mins.	

$S = [(1/2)*(H/3)*(L1/Sp)*(H/Sl) *(L2/Sp)*(H/Sl)] +[(1/2)*I*(L1/Sp)*(H/Sl)*(L2/Sp)*(H/Sl)]$

$O = C * (L1 + L2)*(H - D)^{1.5}$

Storage and Outflow Relationships Basin # 4			
Water El. (H) (Ft)	Storage (S) (ft^3)	Weir Outflow (O) (cfs)	2S/Δt + O (cfs)
0.000	0.00	0.00	0.00
4.000	11721.33	0.00	9.77
4.010	11804.97	0.75	10.58
4.020	11889.00	2.11	12.02
4.030	11973.43	3.88	13.86
4.040	12058.26	5.98	16.02
4.050	12143.49	8.35	18.47
4.060	12229.11	10.98	21.17
4.070	12315.14	13.83	24.10
4.080	12401.57	16.90	27.24
4.090	12488.40	20.17	30.58
4.100	12575.63	23.62	34.10
4.110	12663.27	27.25	37.81
4.120	12751.31	31.05	41.68
4.130	12839.76	35.01	45.71
4.140	12928.61	39.13	49.90
4.150	13017.88	43.40	54.25
4.160	13107.55	47.81	58.73
4.170	13197.63	52.36	63.36
4.180	13288.12	57.05	68.12
4.190	13379.03	61.87	73.02
4.200	13470.35	66.81	78.04
4.210	13562.08	71.89	83.19
4.220	13654.22	77.08	88.46
4.230	13746.78	82.40	93.85
4.240	13839.76	87.83	99.36
4.250	13933.15	93.37	104.99
4.260	14026.96	99.03	110.72
4.270	14121.19	104.80	116.57
4.280	14215.84	110.68	122.52
4.290	14310.91	116.66	128.58
4.300	14406.41	122.74	134.75
4.310	14502.32	128.93	141.02
4.320	14598.66	135.22	147.39
4.330	14695.43	141.61	153.86
4.340	14792.62	148.09	160.42
4.350	14890.23	154.68	167.08
4.360	14988.28	161.35	173.84
4.370	15086.75	168.12	180.69
4.380	15185.65	174.98	187.64
4.390	15284.98	181.94	194.67
4.400	15384.75	188.98	201.80

*I(n) + I(n+1) + ((2*S(n)/**Δ**t) - O(n)) =*
*((2*S(n+1)/**Δ**t) + O(n+1))*

*((2*S(n+1)/**Δ**t) - O(n+1)) =*
*((2*S(n+1)/**Δ**t) + O(n+1)) - 2* O(n+1)*

O(n+1) = See Storage and Outflow Relationships for Basin #4

Infiltration Basin # 4						
0	Time (min.)	I(n) (cfs)	I(n)+I(n+1) (cfs)	2S(n)/Δt-O(n) (cfs)	2S(n+1)/Δt + O(n+1) (cfs)	O(n+1) (cfs)
1	0	0.00	0.33	0.00	0.33	0.00
2	40	0.33	0.66	0.33	0.99	0.00
3	80	0.33	0.67	0.99	1.66	0.00
4	120	0.34	0.69	1.66	2.35	0.00
5	160	0.35	0.70	2.35	3.05	0.00
6	200	0.35	0.71	3.05	3.76	0.00
7	240	0.36	0.73	3.76	4.49	0.00
8	280	0.37	0.74	4.49	5.23	0.00
9	320	0.38	0.76	5.23	5.99	0.00
10	360	0.38	0.78	5.99	6.77	0.00
11	400	0.39	0.80	6.77	7.57	0.00
12	440	0.40	0.82	7.57	8.39	0.00
13	480	0.41	0.84	8.39	9.23	0.00
14	520	0.43	0.87	9.23	10.09	0.30
15	560	0.44	0.89	9.50	10.39	0.57
16	600	0.45	0.92	9.25	10.18	0.37
17	640	0.47	0.96	9.43	10.39	0.57
18	680	0.49	1.00	9.25	10.25	0.44
19	720	0.51	1.04	9.37	10.41	0.58
20	760	0.53	1.09	9.24	10.33	0.51
21	800	0.56	1.15	9.31	10.45	0.62
22	840	0.59	1.21	9.20	10.42	0.59
23	880	0.63	1.30	9.23	10.53	0.70
24	920	0.67	1.40	9.14	10.54	0.71
25	960	0.73	1.54	9.13	10.67	0.83
26	1000	0.81	1.73	9.02	10.75	0.90
27	1040	0.92	2.03	8.94	10.97	1.11
28	1080	1.11	2.60	8.74	11.34	1.47
29	1120	1.49	9.09	8.41	17.50	7.41
30	1160	7.59	8.49	2.69	11.17	1.31
31	1200	0.89	1.51	8.56	10.07	0.27
32	1240	0.61	1.12	9.52	10.64	0.80
33	1280	0.50	0.94	9.04	9.98	0.19
34	1320	0.44	0.83	9.59	10.42	0.59
35	1360	0.39	0.75	9.23	9.98	0.19
36	1400	0.36	0.69	9.59	10.28	0.47
37	1440	0.33	0.33	9.34	9.67	0.00
38	1480	0.00	0.00	9.67	9.67	0.00

TETRA TECH, INC.

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PROJECT PROJECT 2 DATE CHECKED DATE DECEMBER 2013

DETAIL BASIN ROUTING CHECKED BY JD COMPUTED BY JS

Length1 (L1)	133 ft	C	3
Length2 (L2)	113 ft	Spread (Sp)	77 ft
Depth (D)	4 ft	Δt	40 mins.
Slope (Sl)	0.052	Infil. (I)	0.24 ft/40 mins.

$$S = [(1/2)*(H/3)*(L1/Sp)*(H/Sl)*(L2/Sp)*(H/Sl)] + [(1/2)*I*(L1/Sp)*(H/Sl)*(L2/Sp)*(H/Sl)]$$

$$O = C * (L1 + L2) * (H - D)^{1.5}$$

Storage and Outflow Relationships Basin # 5			
Water El. (H) (Ft)	Storage (S) (ft^3)	Weir Outflow (O) (cfs)	2S/Δt + O (cfs)
0.000	0.00	0.00	0.00
4.000	11822.81	0.00	9.85
4.010	11907.18	0.74	10.66
4.020	11991.94	2.09	12.08
4.030	12077.10	3.83	13.90
4.040	12162.66	5.90	16.04
4.050	12248.62	8.25	18.46
4.060	12334.99	10.85	21.13
4.070	12421.76	13.67	24.02
4.080	12508.94	16.70	27.12
4.090	12596.52	19.93	30.42
4.100	12684.51	23.34	33.91
4.110	12772.90	26.92	37.57
4.120	12861.71	30.68	41.40
4.130	12950.92	34.59	45.38
4.140	13040.55	38.66	49.53
4.150	13130.58	42.87	53.82
4.160	13221.03	47.23	58.25
4.170	13311.89	51.73	62.82
4.180	13403.17	56.36	67.53
4.190	13494.86	61.12	72.37
4.200	13586.97	66.01	77.33
4.210	13679.49	71.02	82.42
4.220	13772.43	76.15	87.63
4.230	13865.80	81.40	92.96
4.240	13959.58	86.77	98.40
4.250	14053.78	92.25	103.96
4.260	14148.40	97.84	109.63
4.270	14243.45	103.54	115.41
4.280	14338.92	109.34	121.29
4.290	14434.81	115.25	127.28
4.300	14531.13	121.27	133.38
4.310	14627.88	127.38	139.57
4.320	14725.05	133.59	145.86
4.330	14822.66	139.90	152.26
4.340	14920.69	146.31	158.74
4.350	15019.15	152.81	165.33
4.360	15118.04	159.41	172.01
4.370	15217.37	166.10	178.78
4.380	15317.12	172.87	185.64
4.390	15417.32	179.74	192.59
4.400	15517.94	186.70	199.63

*I(n) + I(n+1) + ((2*S(n)/**Δ**t) - O(n)) =*
*((2*S(n+1)/**Δ**t) + O(n+1))*

*((2*S(n+1)/**Δ**t) - O(n+1)) =*
*((2*S(n+1)/**Δ**t) + O(n+1)) - 2* O(n+1)*

O(n+1) = See Storage and Outflow Relationships for Basin #5

Infiltration Basin #5						
Step (n)	Time (min.)	I(n) (cfs)	I(n)+I(n+1) (cfs)	2S(n)/Δt-O(n) (cfs)	2S(n+1)/Δt + O(n+1) (cfs)	O(n+1) (cfs)
1	0	0.00	0.00	0.00	0.00	0.00
2	40	0.00	0.00	0.00	0.00	0.00
3	80	0.00	0.00	0.00	0.00	0.00
4	120	0.00	0.00	0.00	0.00	0.00
5	160	0.00	0.00	0.00	0.00	0.00
6	200	0.00	0.00	0.00	0.00	0.00
7	240	0.00	0.00	0.00	0.00	0.00
8	280	0.00	0.00	0.00	0.00	0.00
9	320	0.00	0.00	0.00	0.00	0.00
10	360	0.00	0.00	0.00	0.00	0.00
11	400	0.00	0.00	0.00	0.00	0.00
12	440	0.00	0.00	0.00	0.00	0.00
13	480	0.00	0.30	0.00	0.30	0.00
14	520	0.30	0.87	0.30	1.17	0.00
15	560	0.57	0.94	1.17	2.11	0.00
16	600	0.37	0.94	2.11	3.05	0.00
17	640	0.57	1.01	3.05	4.06	0.00
18	680	0.44	1.02	4.06	5.08	0.00
19	720	0.58	1.09	5.08	6.17	0.00
20	760	0.51	1.13	6.17	7.31	0.00
21	800	0.62	1.22	7.31	8.53	0.00
22	840	0.59	1.29	8.53	9.82	0.00
23	880	0.70	1.40	9.82	11.22	1.27
24	920	0.71	1.53	8.68	10.22	0.33
25	960	0.83	1.73	9.55	11.28	1.33
26	1000	0.90	2.02	8.63	10.64	0.72
27	1040	1.11	2.58	9.20	11.78	1.80
28	1080	1.47	8.87	8.18	17.05	6.88
29	1120	7.41	8.71	3.28	11.99	2.01
30	1160	1.31	1.58	7.98	9.56	0.00
31	1200	0.27	1.07	9.56	10.63	0.71
32	1240	0.80	0.99	9.21	10.20	0.32
33	1280	0.19	0.79	9.57	10.36	0.46
34	1320	0.59	0.79	9.44	10.22	0.34
35	1360	0.19	0.66	9.55	10.21	0.33
36	1400	0.47	0.47	9.56	10.03	0.16
37	1440	0.00	0.00	9.71	9.71	0.00
38	1480	0.00	0.00	9.71	9.71	0.00

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PROJECT PROJECT 2 DATE CHECKED DATE DECEMBER 2013

DETAIL BASIN ROUTING CHECKED BY JD COMPUTED BY JS

Length1 (L1)	72 ft	C	3	
Length2 (L2)	137 ft	Spread (Sp)	56 ft	
Depth (D)	3 ft	Δt	40 mins.	
Slope (Sl)	0.054	Infil. (I)	0.24 ft/40 mins.	

$S = [(1/2)*(H/3)*(L1/Sp)*(H/Sl)*(L2/Sp)*(H/Sl)] + [(1/2)*I*(L1/Sp)*(H/Sl)*(L2/Sp)*(H/Sl)]$

$O = C * (L1 + L2) * (H - D)^{1.5}$

Storage and Outflow Relationships Basin # 2			
Water El. (H) (Ft)	Storage (S) (ft^3)	Weir Outflow (O) (cfs)	2S/Δt + O (cfs)
0.000	0.00	0.00	0.00
3.000	6115.68	0.00	5.10
3.010	6173.07	0.63	5.77
3.020	6230.81	1.77	6.97
3.030	6288.92	3.26	8.50
3.040	6347.38	5.02	10.31
3.050	6406.20	7.01	12.35
3.060	6465.38	9.21	14.60
3.070	6524.92	11.61	17.05
3.080	6584.83	14.19	19.67
3.090	6645.10	16.93	22.47
3.100	6705.73	19.83	25.42
3.110	6766.73	22.87	28.51
3.120	6828.10	26.06	31.75
3.130	6889.83	29.39	35.13
3.140	6951.94	32.84	38.64
3.150	7014.41	36.43	42.27
3.160	7077.26	40.13	46.03
3.170	7140.48	43.95	49.90
3.180	7204.07	47.88	53.89
3.190	7268.04	51.93	57.98
3.200	7332.39	56.08	62.19
3.210	7397.11	60.34	66.50
3.220	7462.21	64.70	70.92
3.230	7527.69	69.16	75.43
3.240	7593.54	73.72	80.05
3.250	7659.78	78.38	84.76
3.260	7726.41	83.12	89.56
3.270	7793.41	87.97	94.46
3.280	7860.80	92.90	99.45
3.290	7928.58	97.92	104.53
3.300	7996.74	103.03	109.69
3.310	8065.30	108.22	114.94
3.320	8134.24	113.50	120.28
3.330	8203.57	118.86	125.70
3.340	8273.29	124.30	131.20
3.350	8343.41	129.83	136.78
3.360	8413.91	135.43	142.44
3.370	8484.82	141.11	148.18
3.380	8556.11	146.87	154.00
3.390	8627.81	152.71	159.90
3.400	8699.90	158.62	165.87

*I(n) + I(n+1) + ((2*S(n)/**Δ**t) - O(n)) =*
*((2*S(n+1)/**Δ**t) + O(n+1))*

*((2*S(n+1)/**Δ**t) - O(n+1)) =*
*((2*S(n+1)/**Δ**t) + O(n+1)) - 2* O(n+1)*

O(n+1) = See Storage and Outflow Relationships for Basin #2

Infiltration Basin #2						
Step (n)	Time (min.)	I(n) (cfs)	I(n)+I(n+1) (cfs)	2S(n)/Δt-O(n) (cfs)	2S(n+1)/Δt + O(n+1) (cfs)	O(n+1) (cfs)
1	0	0.00	0.00	0.00	0.00	0.00
2	40	0.00	0.00	0.00	0.00	0.00
3	80	0.00	0.00	0.00	0.00	0.00
4	120	0.00	0.00	0.00	0.00	0.00
5	160	0.00	0.00	0.00	0.00	0.00
6	200	0.00	0.00	0.00	0.00	0.00
7	240	0.00	0.00	0.00	0.00	0.00
8	280	0.00	0.00	0.00	0.00	0.00
9	320	0.00	0.00	0.00	0.00	0.00
10	360	0.00	0.00	0.00	0.00	0.00
11	400	0.00	0.00	0.00	0.00	0.00
12	440	0.00	0.00	0.00	0.00	0.00
13	480	0.00	0.00	0.00	0.00	0.00
14	520	0.00	0.00	0.00	0.00	0.00
15	560	0.00	0.00	0.00	0.00	0.00
16	600	0.00	0.00	0.00	0.00	0.00
17	640	0.00	0.00	0.00	0.00	0.00
18	680	0.00	0.00	0.00	0.00	0.00
19	720	0.00	0.00	0.00	0.00	0.00
20	760	0.00	0.00	0.00	0.00	0.00
21	800	0.00	0.00	0.00	0.00	0.00
22	840	0.00	1.27	0.00	1.27	0.00
23	880	1.27	1.60	1.27	2.86	0.00
24	920	0.33	1.66	2.86	4.52	0.00
25	960	1.33	2.05	4.52	6.57	1.39
26	1000	0.72	2.52	3.78	6.31	1.14
27	1040	1.80	8.69	4.02	12.71	7.36
28	1080	6.88	8.89	-2.02	6.87	1.68
29	1120	2.01	2.01	3.51	5.51	0.38
30	1160	0.00	0.71	4.74	5.45	0.33
31	1200	0.71	1.03	4.79	5.82	0.67
32	1240	0.32	0.78	4.47	5.25	0.14
33	1280	0.46	0.80	4.97	5.76	0.62
34	1320	0.34	0.67	4.52	5.19	0.09
35	1360	0.33	0.49	5.02	5.50	0.38
36	1400	0.16	0.16	4.75	4.91	0.00
37	1440	0.00	0.00	4.91	4.91	0.00
38	1480	0.00	0.00	4.91	4.91	0.00

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PROJECT PROJECT 2 DATE CHECKED DATE DECEMBER 2013

DETAIL BASIN ROUTING CHECKED BY JD COMPUTED BY JS

Length1 (L1)	146 ft	C	3	
Length2(L2)	82 ft	Spread (Sp)	65 ft	
Depth (D)	4 ft	Δt	40 mins.	
Slope (Sl)	0.062	Infil. (I)	0.24 ft/40 mins.	

$S = [(1/2)*(H/3)*(L1/Sp)*(H/Sl)*(L2/Sp)*(H/Sl)] + [(1/2)*I*(L1/Sp)*(H/Sl)*(L2/Sp)*(H/Sl)]$

$O = C * (L1 + L2) * (H - D)^{1.5}$

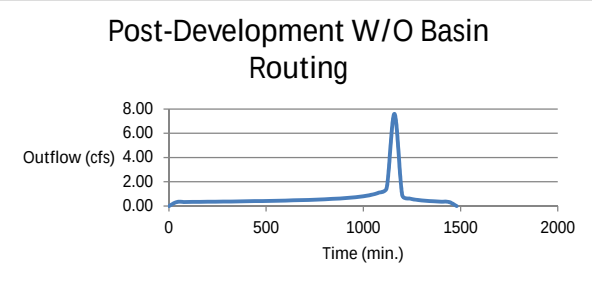
Storage and Outflow Relationships Basin # 3			
Water El. (H) (Ft)	Storage (S) (ft^3)	Weir Outflow (O) (cfs)	2S/Δt + O (cfs)
0.000	0.00	0.00	0.00
4.000	9417.97	0.00	7.85
4.010	9485.18	0.68	8.59
4.020	9552.70	1.93	9.90
4.030	9620.53	3.55	11.57
4.040	9688.69	5.47	13.55
4.050	9757.17	7.65	15.78
4.060	9825.97	10.05	18.24
4.070	9895.09	12.67	20.91
4.080	9964.54	15.48	23.78
4.090	10034.30	18.47	26.83
4.100	10104.39	21.63	30.05
4.110	10174.81	24.95	33.43
4.120	10245.55	28.43	36.97
4.130	10316.62	32.06	40.66
4.140	10388.01	35.83	44.49
4.150	10459.73	39.74	48.45
4.160	10531.78	43.78	52.55
4.170	10604.16	47.94	56.78
4.180	10676.87	52.24	61.13
4.190	10749.91	56.65	65.61
4.200	10823.29	61.18	70.20
4.210	10896.99	65.82	74.90
4.220	10971.03	70.58	79.72
4.230	11045.40	75.45	84.65
4.240	11120.10	80.42	89.69
4.250	11195.15	85.50	94.83
4.260	11270.52	90.68	100.07
4.270	11346.23	95.96	105.42
4.280	11422.29	101.34	110.86
4.290	11498.67	106.82	116.40
4.300	11575.40	112.39	122.04
4.310	11652.47	118.06	127.77
4.320	11729.88	123.82	133.59
4.330	11807.63	129.67	139.51
4.340	11885.72	135.60	145.51
4.350	11964.15	141.63	151.60
4.360	12042.93	147.74	157.78
4.370	12122.05	153.94	164.04
4.380	12201.52	160.23	170.39
4.390	12281.33	166.59	176.83
4.400	12361.49	173.04	183.34

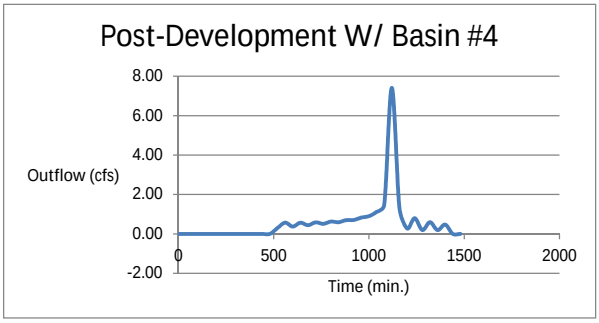
*I(n) + I(n+1) + ((2*S(n)/**Δ**t) - O(n)) =*
*((2*S(n+1)/**Δ**t) + O(n+1))*

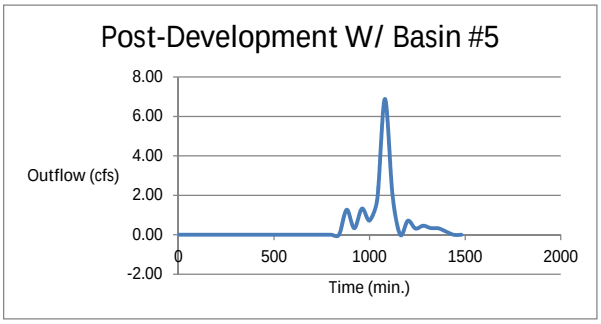
*((2*S(n+1)/**Δ**t) - O(n+1)) =*
*((2*S(n+1)/**Δ**t) + O(n+1)) - 2* O(n+1)*

O(n+1) = See Storage and Outflow Relationships for Basin #3

Infiltration Basin #3						
Step (n)	Time (min.)	I(n) (cfs)	I(n)+I(n+1) (cfs)	2S(n)/Δt-O(n) (cfs)	2S(n+1)/Δt + O(n+1) (cfs)	O(n+1) (cfs)
1	0	0.00	0.00	0.00	0.00	0.00
2	40	0.00	0.00	0.00	0.00	0.00
3	80	0.00	0.00	0.00	0.00	0.00
4	120	0.00	0.00	0.00	0.00	0.00
5	160	0.00	0.00	0.00	0.00	0.00
6	200	0.00	0.00	0.00	0.00	0.00
7	240	0.00	0.00	0.00	0.00	0.00
8	280	0.00	0.00	0.00	0.00	0.00
9	320	0.00	0.00	0.00	0.00	0.00
10	360	0.00	0.00	0.00	0.00	0.00
11	400	0.00	0.00	0.00	0.00	0.00
12	440	0.00	0.00	0.00	0.00	0.00
13	480	0.00	0.00	0.00	0.00	0.00
14	520	0.00	0.00	0.00	0.00	0.00
15	560	0.00	0.00	0.00	0.00	0.00
16	600	0.00	0.00	0.00	0.00	0.00
17	640	0.00	0.00	0.00	0.00	0.00
18	680	0.00	0.00	0.00	0.00	0.00
19	720	0.00	0.00	0.00	0.00	0.00
20	760	0.00	0.00	0.00	0.00	0.00
21	800	0.00	0.00	0.00	0.00	0.00
22	840	0.00	0.00	0.00	0.00	0.00
23	880	0.00	0.00	0.00	0.00	0.00
24	920	0.00	1.39	0.00	1.39	0.00
25	960	1.39	2.54	1.39	3.93	0.00
26	1000	1.14	8.50	3.93	12.43	4.39
27	1040	7.36	9.05	3.65	12.70	4.65
28	1080	1.68	2.07	3.40	5.47	0.00
29	1120	0.38	0.72	5.47	6.19	0.00
30	1160	0.33	1.00	6.19	7.19	0.00
31	1200	0.67	0.81	7.19	8.01	0.15
32	1240	0.14	0.76	7.71	8.48	0.58
33	1280	0.62	0.71	7.32	8.02	0.16
34	1320	0.09	0.47	7.70	8.17	0.29
35	1360	0.38	0.38	7.58	7.96	0.10
36	1400	0.00	0.00	7.76	7.76	0.00
37	1440	0.00	0.00	7.76	7.76	0.00
38	1480	0.00	0.00	7.76	7.76	0.00


Post-Development W/O Basin Routing
Outflow (cfs)
8.00
6.00
4.00
2.00
0.00
0
500
1000
1500
2000
Time (min.)


Post-Development W/ Basin #4
Outflow (cfs)
8.00
6.00
4.00
2.00
0.00
-2.00
0
500
1000
1500
2000
Time (min.)


Post-Development W/ Basin #5
Outflow (cfs)
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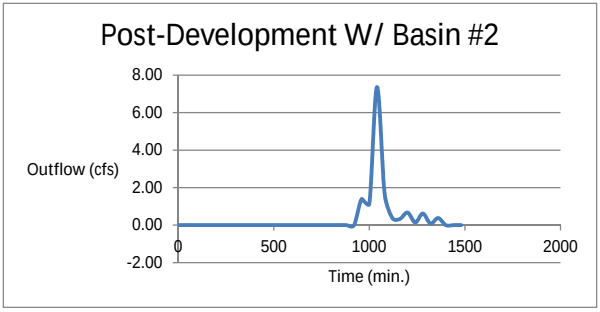
6.00
4.00
2.00
0.00
-2.00
0
500
1000
1500
2000
Time (min.)


Post-Development W/ Basin #2
Outflow (cfs)
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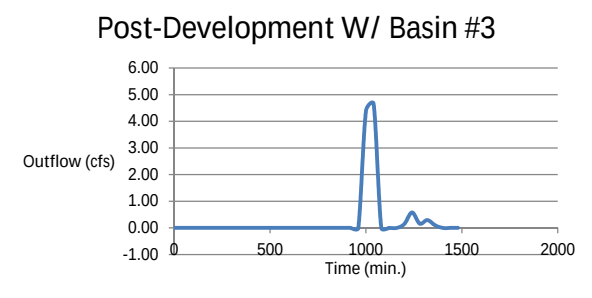
6.00
4.00
2.00
0.00
-2.00
0
500
1000
1500
2000
Time (min.)


Post-Development W/ Basin #3
Outflow (cfs)
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-1.00
0
500
1000
1500
2000
Time (min.)

Project 2 Flow 1 (Pre-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03200	ft/ft
Discharge	23.99	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2638.00
10+49	2636.45
11+11	2636.33
11+40	2636.38
12+16	2637.21
12+66	2637.47

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2638.00)	(10+49, 2636.45)	0.020
(10+49, 2636.45)	(11+11, 2636.33)	0.020
(11+11, 2636.33)	(11+40, 2636.38)	0.020
(11+40, 2636.38)	(12+16, 2637.21)	0.020
(12+16, 2637.21)	(12+66, 2637.47)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.14	ft
Elevation Range	2636.33 to 2638.00 ft	
Flow Area	9.00	ft²

Project 2 Flow 1 (Pre-Development)

Results

Wetted Perimeter		100.28	ft
Hydraulic Radius		0.09	ft
Top Width		100.28	ft
Normal Depth		0.14	ft
Critical Depth		0.18	ft
Critical Slope		0.01188	ft/ft
Velocity		2.67	ft/s
Velocity Head		0.11	ft
Specific Energy		0.25	ft
Froude Number		1.57	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.14	ft
Critical Depth	0.18	ft
Channel Slope	0.03200	ft/ft
Critical Slope	0.01188	ft/ft

Cross Section for Project 2 Flow 1 (Pre-Development)

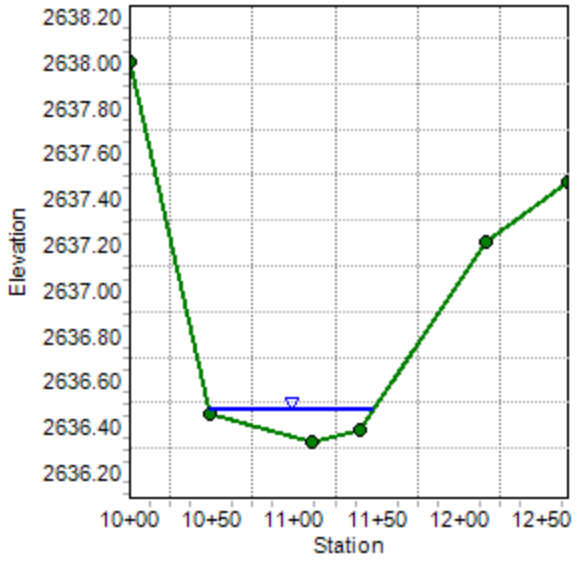
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03200	ft/ft
Normal Depth	0.14	ft
Discharge	23.99	ft³/s

Cross Section Image



Project 2 Flow 1 (Post-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03200	ft/ft
Discharge	24.75	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2638.00
10+49	2636.45
11+11	2636.33
11+40	2636.38
12+16	2637.21
12+66	2637.47

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2638.00)	(10+49, 2636.45)	0.020
(10+49, 2636.45)	(11+11, 2636.33)	0.020
(11+11, 2636.33)	(11+40, 2636.38)	0.020
(11+40, 2636.38)	(12+16, 2637.21)	0.020
(12+16, 2637.21)	(12+66, 2637.47)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.15	ft
Elevation Range	2636.33 to 2638.00 ft	
Flow Area	9.18	ft²

Project 2 Flow 1 (Post-Development)

Results

Wetted Perimeter		100.50	ft
Hydraulic Radius		0.09	ft
Top Width		100.50	ft
Normal Depth		0.15	ft
Critical Depth		0.18	ft
Critical Slope		0.01181	ft/ft
Velocity		2.70	ft/s
Velocity Head		0.11	ft
Specific Energy		0.26	ft
Froude Number		1.57	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.15	ft
Critical Depth	0.18	ft
Channel Slope	0.03200	ft/ft
Critical Slope	0.01181	ft/ft

Cross Section for Project 2 Flow 1 (Post-Development)

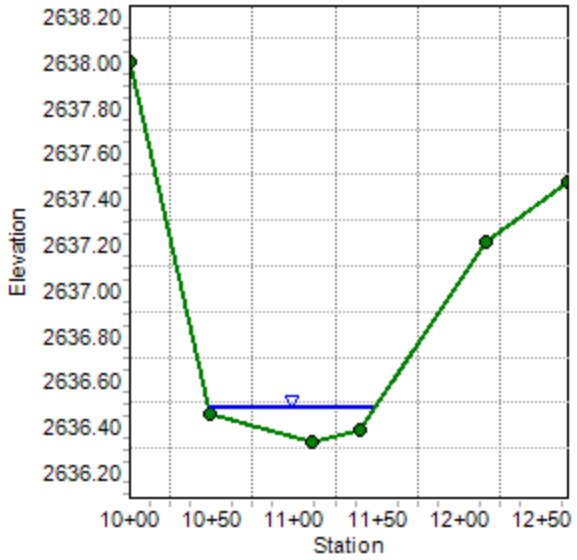
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03200	ft/ft
Normal Depth	0.15	ft
Discharge	24.75	ft³/s

Cross Section Image



Project 2 Flow 2 (Pre-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.04100	ft/ft
Discharge	59.08	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2616.00
11+09	2611.52
12+10	2610.14
13+13	2610.22
14+17	2612.77
15+10	2616.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2616.00)	(11+09, 2611.52)	0.020
(11+09, 2611.52)	(12+10, 2610.14)	0.020
(12+10, 2610.14)	(13+13, 2610.22)	0.020
(13+13, 2610.22)	(14+17, 2612.77)	0.020
(14+17, 2612.77)	(15+10, 2616.00)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.18	ft
Elevation Range	2610.14 to 2616.00 ft	
Flow Area	15.44	ft²

Project 2 Flow 2 (Pre-Development)

Results

Wetted Perimeter		119.90	ft
Hydraulic Radius		0.13	ft
Top Width		119.90	ft
Normal Depth		0.18	ft
Critical Depth		0.25	ft
Critical Slope		0.01018	ft/ft
Velocity		3.83	ft/s
Velocity Head		0.23	ft
Specific Energy		0.40	ft
Froude Number		1.88	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.18	ft
Critical Depth	0.25	ft
Channel Slope	0.04100	ft/ft
Critical Slope	0.01018	ft/ft

Cross Section for Project 2 Flow 2 (Pre-Development)

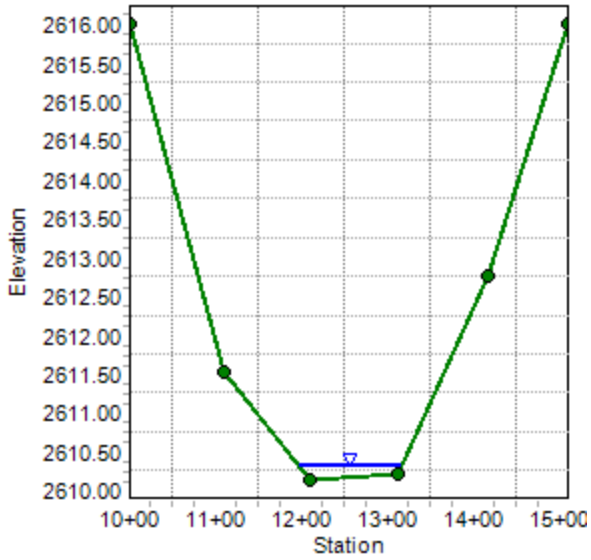
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.04100	ft/ft
Normal Depth	0.18	ft
Discharge	59.08	ft³/s

Cross Section Image



Project 2 Flow 2 (Post-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.04100	ft/ft
Discharge	64.24	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2616.00
11+09	2611.52
12+10	2610.14
13+13	2610.22
14+17	2612.77
15+10	2616.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2616.00)	(11+09, 2611.52)	0.020
(11+09, 2611.52)	(12+10, 2610.14)	0.020
(12+10, 2610.14)	(13+13, 2610.22)	0.020
(13+13, 2610.22)	(14+17, 2612.77)	0.020
(14+17, 2612.77)	(15+10, 2616.00)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.18	ft
Elevation Range	2610.14 to 2616.00 ft	
Flow Area	16.28	ft²

Project 2 Flow 2 (Post-Development)

Results

Wetted Perimeter		120.70	ft
Hydraulic Radius		0.13	ft
Top Width		120.69	ft
Normal Depth		0.18	ft
Critical Depth		0.26	ft
Critical Slope		0.01001	ft/ft
Velocity		3.95	ft/s
Velocity Head		0.24	ft
Specific Energy		0.43	ft
Froude Number		1.89	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.18	ft
Critical Depth	0.26	ft
Channel Slope	0.04100	ft/ft
Critical Slope	0.01001	ft/ft

Cross Section for Project 2 Flow 2 (Post-Development)

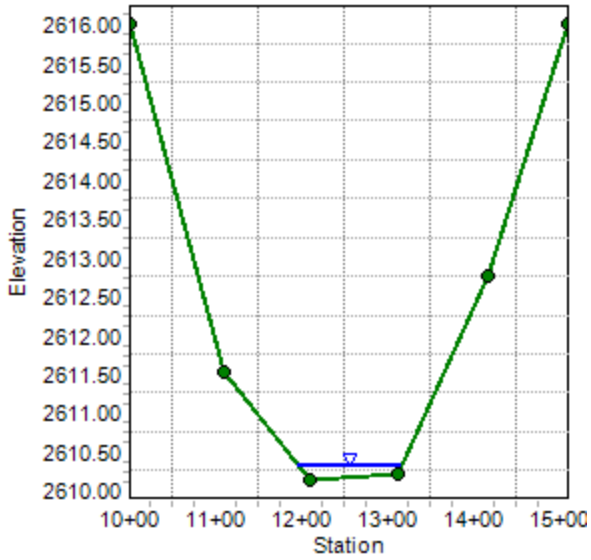
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.04100	ft/ft
Normal Depth	0.18	ft
Discharge	64.24	ft³/s

Cross Section Image



Project 2 Flow 3 (Pre-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02900	ft/ft
Discharge	4.42	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2600.00
10+52	2599.35
11+00	2597.99
11+13	2597.94
11+30	2598.00
11+70	2600.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2600.00)	(10+52, 2599.35)	0.020
(10+52, 2599.35)	(11+00, 2597.99)	0.020
(11+00, 2597.99)	(11+13, 2597.94)	0.020
(11+13, 2597.94)	(11+30, 2598.00)	0.020
(11+30, 2598.00)	(11+70, 2600.00)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.10	ft
Elevation Range	2597.94 to 2600.00 ft	
Flow Area	2.14	ft²

Project 2 Flow 3 (Pre-Development)

Results

Wetted Perimeter		32.42	ft
Hydraulic Radius		0.07	ft
Top Width		32.42	ft
Normal Depth		0.10	ft
Critical Depth		0.12	ft
Critical Slope		0.01343	ft/ft
Velocity		2.07	ft/s
Velocity Head		0.07	ft
Specific Energy		0.16	ft
Froude Number		1.42	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.10	ft
Critical Depth	0.12	ft
Channel Slope	0.02900	ft/ft
Critical Slope	0.01343	ft/ft

Cross Section for Project 2 Flow 3 (Pre-Development)

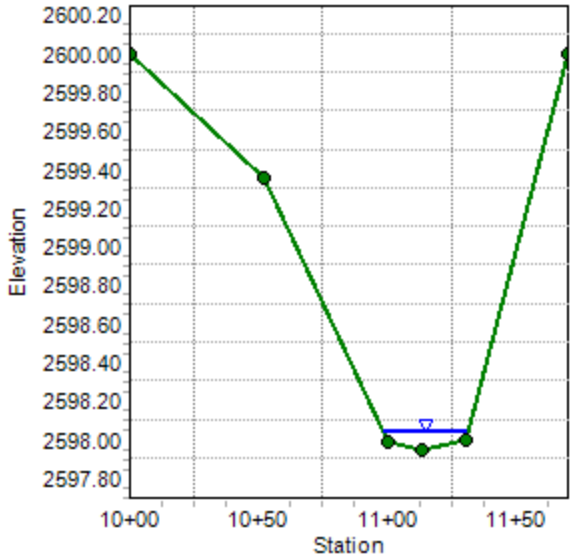
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02900	ft/ft
Normal Depth	0.10	ft
Discharge	4.42	ft³/s

Cross Section Image



Project 2 Flow 3 (Post-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02900	ft/ft
Discharge	4.65	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2600.00
10+52	2599.35
11+00	2597.99
11+13	2597.94
11+30	2598.00
11+70	2600.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2600.00)	(10+52, 2599.35)	0.020
(10+52, 2599.35)	(11+00, 2597.99)	0.020
(11+00, 2597.99)	(11+13, 2597.94)	0.020
(11+13, 2597.94)	(11+30, 2598.00)	0.020
(11+30, 2598.00)	(11+70, 2600.00)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.10	ft
Elevation Range	2597.94 to 2600.00 ft	
Flow Area	2.21	ft²

Project 2 Flow 3 (Post-Development)

Results

Wetted Perimeter		32.54	ft
Hydraulic Radius		0.07	ft
Top Width		32.54	ft
Normal Depth		0.10	ft
Critical Depth		0.12	ft
Critical Slope		0.01331	ft/ft
Velocity		2.11	ft/s
Velocity Head		0.07	ft
Specific Energy		0.17	ft
Froude Number		1.43	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.10	ft
Critical Depth	0.12	ft
Channel Slope	0.02900	ft/ft
Critical Slope	0.01331	ft/ft

Cross Section for Project 2 Flow 3 (Post-Development)

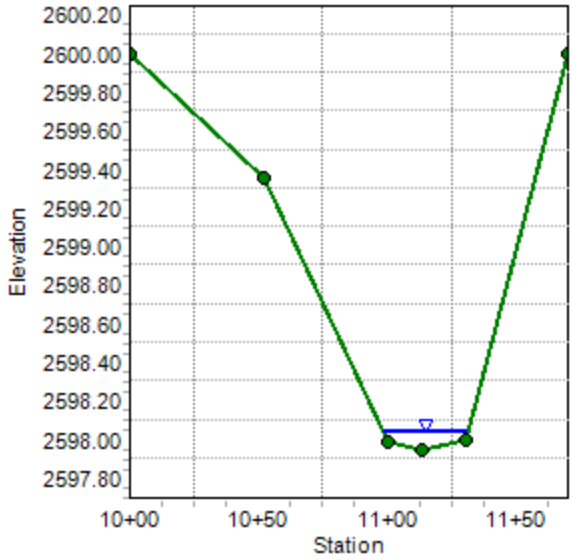
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02900	ft/ft
Normal Depth	0.10	ft
Discharge	4.65	ft³/s

Cross Section Image



Project 2 Flow 4&5 (Pre-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02300	ft/ft
Discharge	891.35	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2588.00
11+05	2586.78
12+05	2586.15
13+08	2586.25
14+14	2586.52
15+15	2586.82
16+36	2588.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2588.00)	(11+05, 2586.78)	0.020
(11+05, 2586.78)	(12+05, 2586.15)	0.020
(12+05, 2586.15)	(13+08, 2586.25)	0.020
(13+08, 2586.25)	(14+14, 2586.52)	0.020
(14+14, 2586.52)	(15+15, 2586.82)	0.020
(15+15, 2586.82)	(16+36, 2588.00)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.65	ft

Project 2 Flow 4&5 (Pre-Development)

Results

Elevation Range	2586.15 to 2588.00 ft		
Flow Area		151.97	ft²
Wetted Perimeter		404.43	ft
Hydraulic Radius		0.38	ft
Top Width		404.43	ft
Normal Depth		0.65	ft
Critical Depth		0.81	ft
Critical Slope		0.00733	ft/ft
Velocity		5.87	ft/s
Velocity Head		0.53	ft
Specific Energy		1.18	ft
Froude Number		1.69	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.65	ft
Critical Depth	0.81	ft
Channel Slope	0.02300	ft/ft
Critical Slope	0.00733	ft/ft

Cross Section for Project 2 Flow 4&5 (Pre-Development)

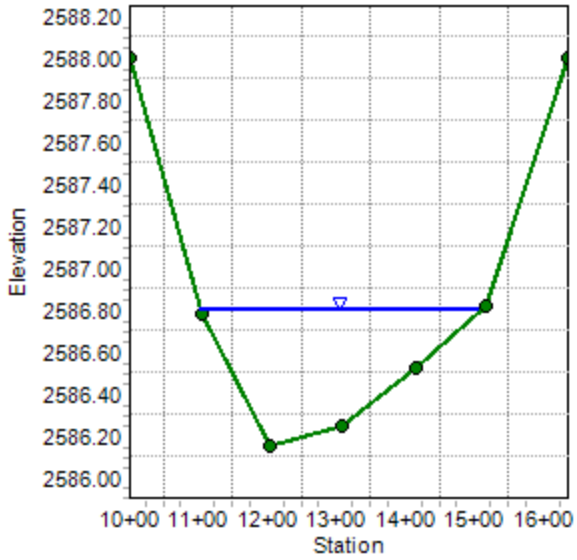
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02300	ft/ft
Normal Depth	0.65	ft
Discharge	891.35	ft³/s

Cross Section Image



Project 2 Flow 4&5 (Post-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02300	ft/ft
Discharge	901.35	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2588.00
11+05	2586.78
12+05	2586.15
13+08	2586.25
14+14	2586.52
15+15	2586.82
16+36	2588.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2588.00)	(11+05, 2586.78)	0.020
(11+05, 2586.78)	(12+05, 2586.15)	0.020
(12+05, 2586.15)	(13+08, 2586.25)	0.020
(13+08, 2586.25)	(14+14, 2586.52)	0.020
(14+14, 2586.52)	(15+15, 2586.82)	0.020
(15+15, 2586.82)	(16+36, 2588.00)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.65	ft

Project 2 Flow 4&5 (Post-Development)

Results

Elevation Range	2586.15 to 2588.00 ft		
Flow Area		153.17	ft²
Wetted Perimeter		405.68	ft
Hydraulic Radius		0.38	ft
Top Width		405.68	ft
Normal Depth		0.65	ft
Critical Depth		0.82	ft
Critical Slope		0.00731	ft/ft
Velocity		5.88	ft/s
Velocity Head		0.54	ft
Specific Energy		1.19	ft
Froude Number		1.69	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.65	ft
Critical Depth	0.82	ft
Channel Slope	0.02300	ft/ft
Critical Slope	0.00731	ft/ft

Cross Section for Project 2 Flow 4&5 (Post-Development)

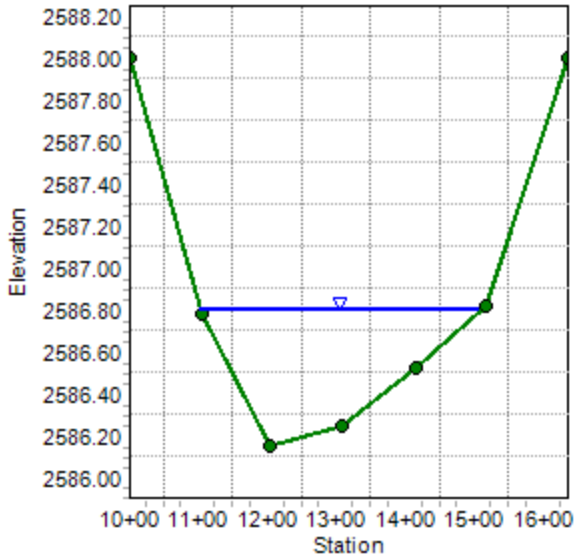
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.02300	ft/ft
Normal Depth	0.65	ft
Discharge	901.35	ft³/s

Cross Section Image



APPENDIX F:
WATER QUALITY CALCULATIONS

OWNER'S CERTIFICATION

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID

for

PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID for WESTERN ANTELOPE BLUE SKY RANCH has been prepared for Applicant, by Tetra Tech, Inc. This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is intended to comply with the requirements of the County of Los Angeles, requiring the preparation of a project specific HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.

I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for the gathered information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Los Angeles County Stormwater Quality Management Plan (SQMP), and the intent of the stormwater and urban runoff NPDES Permit and Waste Discharge Requirements for the County of Los Angeles, Los Angeles County Flood Control District and the incorporated Cities of Los Angeles County under the jurisdiction of the Los Angeles Regional Water Quality Control Board. A copy of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID will be maintained at the project site/office.

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party having responsibility for implementing portions of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID. At least one copy of the approved and certified copy of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID shall be available on the subject property in perpetuity. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.

OWNER:	Silverado Power
BY: (Garret Bean)	
Title:	
Address:	2 Embarcadero Center, Ste. 410
	San Francisco, California 94111
Telephone:	(415) 692 - 7740
Date:	

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Appendix A: Operations and Maintenance Plan

Appendix B: Treatment BMPs Calculations

Background

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is prepared by the developer's engineer. These are documents required by the Stormwater Quality Management Program (SQMP). It requires run-off, from all new development or significant re-development, to be managed during a project's planning phase, implemented during construction and ultimately maintained for the life of the project.

The HYDROLOGY STUDY/DRAINAGE CONCEPT/LID deals with the long-term post-construction of a project and describes the commitment to installation and maintenance of appropriate structural and non-structural Best Management Practices (BMPs).

BMPs are intended to provide measures that minimize or eliminate the introduction of pollutants into the storm water system. Non-Structural and Structural BMPs include education, clean up, and facility maintenance to prevent pollutants from entering the storm water system.

Compliance is MANDATORY and severe penalties may be levied for any violations. It is the duty of the owner or his designated representative to ensure that all BMPs are followed.

Discretionary Permit(s) and Water Quality Conditions

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is intended to comply with the requirements of the County of Los Angeles.

Project Description

The name of the project is WESTERN ANTELOPE BLUE SKY RANCH. The applicant is the owner of the property. The project is located west of 110th St., between W Avenue K to the south, W Avenue J to the north (see Location Map, Appendix A). The property is currently a dirt lot with scarce native vegetation. Site soils consist of silty fine to coarse sand. The site experiences infiltration rates of 3 min/in, which equates to 20.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 4.39 in/hr (see Geotechnical Report, Appendix H). The property experiences existing slopes of under 5% on average in the developed areas of the site and will only be minimally graded to avoid ponding at equipment pads. The property will accommodate 9 foot wide arrays of solar panels spaced at approximately 11 feet (see On-Site Drainage Map, Appendix G). The post-development project area is approximately 162.5 acres with a portion of the site being impervious. Construction of the solar panel arrays and other miscellaneous development equates to the Los Angeles County approved 10% impervious surface. Using this percentage, weighted averages of impervious surface were calculated for each on-site subarea (see On-Site Post Development Hydrologic Calculations, Appendix D). This combined impervious foot print equates to approximately 11.3 acres.

In the post-development condition, the majority of the runoff sheet flows and concentrates in natural channels from south to north, therefore mimicking pre-development conditions. As calculated later in this report, the ΔQ_{25} and $\Delta V_{25,}$ which are greater than the peak mitigation flow rate (Q_{PM}) and the mitigation volume (V_M), will be collected onsite with the help of 7 infiltration basins created by reinforced elevated road sections that are located at various locations within the site (see On-Site Drainage Map, Appendix G). The required treatment runoff (Q_{PM} & V_M) consists of the initial 0.75 inches of rain, which will infiltrate in the existing soil and also be treated by the existing soil due to being less than the delta runoff.

The project will have a substation for utility interconnection on the site. The majority of the area within the substation fence will be soil, covered with a layer of gravel. The majority of the substation equipment will be supported on steel or concrete piers or footings, with the exception of the main step-up transformer. The transformer will be located on a reinforced concrete slab and subsurface foundation, and enclosed in a secondary containment structure. The impervious area from the transformer footprint will be covered with the secondary containment structure, and any rain falling on the transformer area will be collected and held in the containment basin until the rainstorm has passed and the water can be inspected. If the collected water shows any oil sheen it will be pumped out and disposed at a permitted, offsite treatment facility by a licensed hazardous waste contractor. If the rainwater does not exhibit any sheen it will either be allowed to evaporate, or will be manually pumped out onto the ground and allowed to infiltrate. Any transformer oil that is released into the containment will be vacuumed out and disposed at a permitted, offsite treatment facility by a licensed hazardous waste contractor.

The applicant, the property owner, is responsible for all on-site maintenance activities.

Per the U.S. Census Bureau, the 2007 Standard Industrial Classification (SIC) Code is 221119 – "Other Electric Power Generation" for solar power sites.

The Anticipated and Potential Pollutants Generated by the proposed facility may be: TSS, nutrients, heavy metals, bacteria/virus, pesticides, organic compounds, trash and debris (litter), oxygen-demanding substances, and oil and grease.

The storage of outdoor materials is not a planned activity. Car washing, auto repair and/or vehicle fueling are also not a part of this facility.

The 85th % BMP peak mitigation flow rate (Q_{PM})is 4.80 cfs, while ΔQ_{25} is 17.19 cfs.

The mitigation volume (V_M) for the on-site watershed area of 162.5 acres is 1.54 ac-ft and ΔV_{25} is 3.23 ac-ft. The ΔV_{25} will be split among 7 infiltration basins of variable sizes. The total capacity of the 7 infiltration basins is 3.54 ac-ft.

Site Description

The site is approximately 162.5 acres and is located west of 110th St., between W Avenue K to the south, W Avenue J to the north, within an unincorporated region of Los Angeles County (see Location Map, Appendix A). The site experiences existing slopes under 5% on average in the developed areas of the site.

The site is located within the Antelope Valley Watershed.

The site does not appear to have been previously graded. No pre-existing watershed problems seem to be present.

Per the Geotechnical Report (see Appendix H) and per LA County Hydrology Manual, the project soil type consists of the following:

- Silty Fine to Coarse Sand

Soil Types 120 and 134 were used in the hydrology calculations.

Drainage and Permeability: Well-drained; slow runoff, good soil permeability. Infiltration rates of 3 min/in, which is equivalent to 20.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 4.39 in/hr.

The Total Maximum Daily Loads (TMDLs) have been established as "not applicable" for the Antelope Valley Watershed. The 303(d) List has no pollutants of concern for the Antelope Valley Watershed.

The Project site is not within the immediate vicinity of any known Environmentally Sensitive Areas (ESAs) and Areas of Special Biological Significance (ASBSs).

Best Management Practices

The following indicates the source control BMPs (routine non-structural and routine structural) included in this project and those that were not included.

Routine Non-Structural BMPs

Education for Property Owners, Tenants, Occupants and Employees. Best Management Practices (BMP) Fact Sheets for preventing stormwater pollution from the California Stormwater Best Management Practice Handbooks can be found at www.cabmphandbooks.com.

Activity Restrictions. The list of restrictions and guidelines for implementation and maintenance of all Best Management Practices specified herein include, but will not be limited to:

- TRASH: No rubbish, trash or other material shall be kept on site or on any street abutting the properties, except in sanitary containers located in an appropriate trash containment area.
- DRAINAGE: There shall be no interference or alteration of the established drainage pattern unless an alternative is approved by the regulatory agency.
- DUMPSTER LIDS: Dumpster lids shall be closed at all times.
- DEBRIS: No blowing or sweeping of litter anywhere at the site.

BMP Maintenance. Appendix A indicates the person(s) responsible for the implementation and maintenance of the non-structural and structural BMPs.

Title 22 CCR Compliance. Not applicable, per Title 22., Division 4.5., Chapter 11. of the California Code of Regulations definition of hazardous wastes. No Hazardous Materials are anticipated to be onsite.

Local Industrial Permit Compliance. Not applicable, there are no fuel dispensing areas and/or other areas of concern to the public proposed.

Spill Contingency Plan. A spill contingency plan will be prepared by the owner/building operator. As a minimum the Spill Contingency Plan will "mandate the stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials and documentation."

Hazardous Materials Disclosure Compliance. No hazardous materials are anticipated to be stored on-site. If deemed otherwise, a designated representative of the owner shall provide information to the Fire Authority in accordance with requirements of the Health & Safety Code.

Uniform Fire Code Implementation. A designated representative of the owner shall provide information to the Fire Authority in compliance with Article 80 of the UNIFORM FIRE CODE (UFC).

Common Area Litter Control. Site litter shall be strictly controlled by onsite maintenance personnel (not yet determined).

Employee Training. A representative of the owner will provide information available from the City/County on education regarding good housekeeping practices that contribute to the protection of storm water quality. Practical information material will be provided to employees on general good housekeeping practices. These materials will describe, but are not limited to, spill prevention and control and the use of chemicals, petroleum products, pesticides and fertilizers that should be limited to the property, with no discharge of wastes directly or indirectly to gutters, catch basins or the storm drain system. Information will be distributed directly to the employees as well as being posted in public areas. In addition to the attachments, the following resource can be contacted to obtain updated educational materials at no cost: American Oceans – www.americanoceans.org/runoff/epa-bro.htm

Routine Non-Structural BMPs

Properly Design Trash Storage Areas. Site waste receptacles shall be emptied on a weekly basis or more often if containers are overflowing. Upon inspection any debris or rubbish will be picked up and the site cleaned. The trash area/room is NOT to be cleaned by hosing down. The type of materials used to clean the area and storage of said materials will be determined by the Contractor. Signage will be posted that lids shall be kept closed at all times. The trash room(s) will be located inside the parking structures.

Protect Slopes and Channels. The protection of slopes and irrigation shall be implemented as indicated on the County of Los Angeles' approved Landscape Plans and shall be consistent with the County Water Conservation Resolution or County equivalent. Slope protection will be achieved through landscaping of the slopes. Runoff from irrigation shall be kept to a minimum. A designated representative of the owner will be responsible for continual maintenance of landscaped areas.

Site Design BMPs

The following table shows the site design BMPs that are included in this project. A description of each BMPs follows:

Technique	Included		Brief Description of Method
	Yes	No	
Minimize Impervious Area/Maximize Permeability (C-Factor Reduction)		√	
Minimize Directly Connected Impervious Areas (DCIAs) (C-Factor Reduction)		√	
Create Reduced or "Zero Discharge" Areas (Runoff Volume Reduction)	√		Infiltration Basins
Conserve Natural Areas (C-Factor Reduction)		√	

The site design BMPs that were used extensively in this design were to create "Runoff Volume Reduction" by utilizing the infiltration basin system design concept. The mitigation volume is captured behind the reinforced elevated road section and is allowed to infiltrate in the ground.

Treatment BMPs

The following table shows the treatment BMPs that are included in this project. A description of each BMPs follows:

Name	Included		If not applicable, state brief description
	Yes	No	
Vegetated (Grass) Strips		√	Not proposed.
Vegetated (Grass) Swales		√	Not proposed.
Proprietary Control Measures		√	Not proposed.
Dry Detention Basin		√	Not proposed.
Wet Detention Basin		√	Not proposed.
Constructed Wetland		√	Not proposed.
Detention Basin/Sand Filter		√	Not proposed.
Porous Pavement Detention		√	Not proposed.
Porous Landscape Detention		√	Not proposed.
Infiltration Basin	√		
Infiltration Trench		√	Not proposed.
Media Filter		√	Not proposed.
Proprietary Control Measures		√	Not proposed.

This Project is considered a Priority Project. This section of the HYDROLOGY STUDY/DRAINAGE CONCEPT/LID addresses Treatment Control BMPs. The primary control strategy for design Treatment Control BMPs is to treat the frequent, low-flow storm events. The selected treatment controls for this project is the Infiltration Basin. Appendix B – Verification Calculations for Treatment BMPs of this report has the Calculations and Detail Drawings for these Treatment BMPs.

Implementation, Maintenance and Inspection Responsibility for BMPs

A schedule will be established for all maintenance and a log for all cleanups shall be recorded (see Appendix A – Operations and Maintenance Plan). All documents relating to site maintenance and Best Management Practices (BMP) will be kept for a minimum of 5 years and be made available to Federal, State, County, or City Inspectors upon request.

The party responsible for all structural and non-structural BMPs and contact information for site maintenance records is as follows:

SILVERADO POWER

2 Embarcadero Center, STE. 410
SAN FRANCISCO, CA 94111
(415) 692 - 7740

Contact Person: Garret Bean

Appendices

APPENDIX A

Operations and Maintenance Plan

OPERATIONS AND MAINTENANCE PLAN

BMP Applicable? Yes/No	BMP Name and Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	Non-Structural Source Control BMPs		
Yes	Education for Property Owners, Tenants and Occupants Applicant will educate all onsite occupants. Education shall be given using the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.	New onsite employees to be educated within 2 weeks of hire. Each onsite employee shall receive an annual review	Applicant is responsible for educating all onsite occupants.
Yes	Activity Restrictions Ensure all users are adhering to activity restrictions as outlined in the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID and the County of Los Angeles' zoning ordinance and standards.	If a user is observed engaging in activity that may adverse impacts on stormwater, the authorized representative shall take corrective actions as necessary. Ongoing basis.	Applicant is responsible for educating all onsite employees.
Yes	Spill Containment Plan A spill contingency plan is not available. As a minimum the spill contingency plan will "mandate the stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials and documentation."	When spill occurs.	Through a maintenance firm that will be contracted with applicant.
Yes	Common Area Litter Control Perform parking lot/common area maintenance that will include the removal of litter from around the trash storage receptacles, drive aisles, parking lot and outdoor areas. All litter shall be placed in appropriate trash receptacles.	Weekly	Through a maintenance firm that will be contracted with applicant.
Yes	Employee Training Applicant will educate all onsite employees. Education shall be given using the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.	New onsite employees to be educated within 2 weeks of hire. Each onsite employee shall receive an annual review	Applicant is responsible for educating all onsite employees.
Yes	Design and Construct Trash and Waste Storage Areas to Reduce Pollution Introduction Site waste receptacles shall be emptied on a weekly basis or more often if overflowing. Signage will be posted that lids shall be kept closed at all times. Inspect the waste receptacles area for any loose trash on the ground. Inspect for damage to the structural elements of the waste receptacles.	Daily and weekly basis. Replace/Repair structural elements as needed.	Applicant through a maintenance firm.

BMP Applicable? Yes/No	BMP Name and Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	Non-Structural Source Control BMPs		
Yes	Protect Slopes and Channels The protection of slopes shall be implemented as indicated on the County of Los Angeles' approved Landscape Plans and shall be consistent with the County Water Conservation Resolution or County equivalent.	After each major storm event	Applicant through a maintenance firm.
	Treatment BMPs		
Yes	Infiltration Basin Infiltration basins shall be constructed concurrently with the solar arrays and shall be inspected of and cleaned from heavy silt deposits.	After each major storm event	Applicant through a maintenance firm.

APPENDIX B
Verification Calculations for Treatment BMPs

1.0 HYDROLOGIC ANALYSIS

The project size is 162.5 acres. Utilizing Appendix A of the Los Angeles County Department of Public Works- Hydrology Manual and a Geotechnical Report for the site (see Appendix H), predominating soil types of 120 and 134 and an infiltration rate of 3 min/in were found, which is equivalent to 20.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 4.39 in/hr. A small portion of the site (approximately 11.3 acres) is impervious with the remaining balance being pervious. This was found by calculating weighted averages of the impervious surface for each on-site subarea using the Los Angeles County approved value of 10% for the solar arrays and miscellaneous site development.

On-Site Hydrology Maps showing the drainage area, BMP and Drainage Structures are found in Appendix G. The peak mitigation flow rate (Q_{PM}) and the mitigation volume (V_M) found in Appendix D of this report are based on 0.75-inches of rainfall.

2.0 BMP SIZING

Infiltration Basins

Using the LA County Modified Rational Method TC Calculator, the Peak Mitigation Flow Rate (Q_{PM}) based on 0.75-inches of rainfall is 4.80 cfs and the total Mitigation Volume (V_M) is 1.54 ac-ft (see Post-Development On-Site Hydrologic Calculation, Appendix D). Since ΔV_{25} exceeds the mitigation volume (see Appendix D), it will be captured in 7 infiltration basins designed per the 2009 Los Angeles County LID Manual and Los Angeles County Stormwater BMP Design and Maintenance Manual; therefore the required total basin capacity is approximately 3.23 ac-ft, which is less than the 3.54 ac-ft of capacity provided by the 7 infiltration basins. By infiltrating the ΔV_{25}, the V_M will also infiltrate and be treated by the existing soils.

The proposed LID infiltration basins are located at various locations within the site. The basins are created by constructing reinforced elevated road sections of variable height (2.5 to 4 feet). The basins are of variable geometry (see On-Site Drainage Map, Appendix G) with flood widths ranging from 37 feet to 121 feet. The ponding water will infiltrate in approximately 11 hours at a Los Angeles County approved rate of 4.39 in/hr.

Treatment BMPs Calculations

TETRATECH

Sheet No. 1 of 8 Date: DECEMBER 2013
Checked By: _____ Office: _____
Telephone: _____
Engineer: J.S. Job No.: _____
Subject: PROJECT 2 INFILTRATION BASIN CALCULATION

DESIGN INFILTRATION BASIN #1 (PER STORMWATER BMP DESIGN & MAINTENANCE MANUAL)

DESIGN GOVERNED BY:

(1) SLOPE (EXISTING = 10.87%)

$S = \frac{d_c}{L}$

$0.1087 = \frac{4FT}{L}$

$L = 37\ FT$ (MAX. FLOOD WIDTH)

d_c = MAX. DEPTH OF SLOPED BASIN
= 4 FT

(2) AREA (PROPOSED = $2,132\ FT^2$)

FROM EQ 6-7:

$A = \frac{V}{[(T P_{DESIGN}/12) + d_p]}$

$2132\ FT^2 = \frac{V}{[(2\ HR \times 4.34\ IN/HR/12"/1') + 1.4\ FT]}$

$V = 4545\ FT^3$

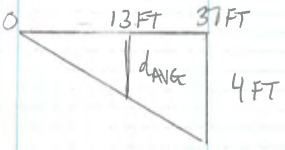
V = MITIGATION VOLUME OF BASIN

A = AREA OF BASIN

T = FILL TIME = 2 HRS PER MANUAL

P_{DESIGN} = INFILTRATION RATE
= 4.34 IN/HR

$d_p = d_{AVG}$ = WEIGHTED AVERAGE DEPTH OF TRIANGULAR BASIN



$\frac{4\ FT}{37\ FT} = \frac{d_{AVG}}{13\ FT}$

$d_{AVG} = 1.4\ FT$

TETRATECH

Sheet No. 2 of 8 Date: DECEMBER 2013
Checked By: _____ Office: _____
Telephone: _____
Engineer: J.S Job No.: _____
Subject: PROJECT 2 INFILTRATION BASIN CALCULATION

DESIGN BASIN # 2

DESIGN GOVERNED BY;

(1) SLOPE (EXISTING = 5.4%)

$S = \frac{d_c}{L}$

d_c = MAX DEPTH OF SLOPED BASIN
= 3FT

$0.054 = \frac{3\,FT}{L}$

$L = 56\,FT$ (MAX. FLOOD WIDTH)

(2) AREA (PROPOSED = $4{,}766\,FT^2$)

FROM EQ 6-7:

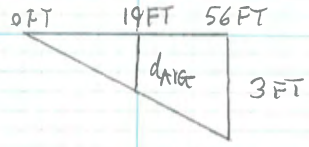
$$A = \frac{V}{[TP_{DESIGN}/12 + d_p]}$$

$T = 2\,HR$

$P_{DESIGN} = 4.39\,IN/HR$

$d_p = d_{AVG}$ = WEIGHTED AVERAGE DEPTH OF TRIANGULAR BASIN

$$4{,}766\,FT^2 = \frac{V}{[(2HR \times 4.39\,IN/HR/12"/1) + 1.0\,FT]}$$



$$\frac{3\,FT}{56\,FT} = \frac{d_{AVG}}{19\,FT}$$

$d_{AVG} = 1.0\,FT$

$V = 8{,}253\,FT^3$

DESIGN BASIN #3

DESIGN GOVERNED BY:

(1) SLOPE (EXISTING = 6.2%)

$S = \frac{d_c}{L}$ d_c = MAX DEPTH OF SLOPED BASIN

$= 4FT$

$0.062 = \frac{4FT}{L}$

$L = 65FT$ (MAX. FLOOD WIDTH)

(2) AREA (PROPOSED = $5,865FT^2$)

$A = \frac{V}{[(TP_{DESIGN}/12) + d_p]}$

$T = 2$ HRS

$P_{DESIGN} = 4.39$ IN/HR

$d_p = d_{AVG}$ = WEIGHTED AVERAGE DEPTH OF TRIANGULAR BASIN

$\frac{4FT}{65FT} = \frac{d_{AVG}}{22FT}$

$d_{AVG} = 1.4FT$

$5,865FT^2 = \frac{V}{[(2HRS \times 4.39IN/HR/12"/1) + 1.4FT]}$

$V = 12,502\ FT^3$

DESIGN BASIN # 4

DESIGN GOVERNED BY:

(1) SLOPE (EXISTING = 5.3%)

$S = \frac{d_E}{L}$ d_E = MAX. DEPTH OF SLOPED BASIN = 4 FT

$0.053 = \frac{4\,FT}{L}$

$L = 75\,FT$ (MAX. FLOOD WIDTH)

(2) AREA (PROPOSED = 7,259 FT^2)

$$A = \frac{V}{[(TP_{DESIGN}/12) + d_P]}$$

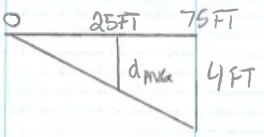
$$7{,}259\,FT^2 = \frac{V}{[(2HR \times 4.39\,IN/HR/12^{IN/FT}) + 1.3\,FT]}$$

$V = 14{,}748\,FT^3$

T = 2 HRS

$P_{DESIGN} = 4.39$ IN/HR

$d_P = d_{AVG}$ = WEIGHTED AVERAGE DEPTH OF TRIANGULAR BASIN



$\frac{4\,FT}{75\,FT} = \frac{d_{AVG}}{25\,FT}$

$d_{AVG} = 1.3\,FT$

DESIGN BASIN #5

DESIGN GOVERNED BY:

(1) SLOPE (EXISTING = 5.2%)

$S = \frac{d_c}{L}$ d_c = MAX. DEPTH OF SLOPED BASIN = 4 FT.

$0.052 = \frac{4\,FT}{L}$

$L = 77\,FT$ (MAX. FLOOD WIDTH)

(2.) AREA (PROPOSED = 7,357 FT^2)

$$A = \frac{V}{[(T P_{DESIGN}/12) + d_p]}$$

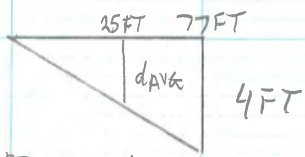
$$7{,}357\,FT^2 = \frac{V}{[(2HR \times 4.39\,IN/HR/12"/1) + 1.3\,FT]}$$

$V = 14{,}947\,FT^3$

T = 2 HRS

$P_{DESIGN} = 4.39\,IN/HR$

$d_p = d_{AVG}$ = WEIGHTED AVERAGE DEPTH OF TRIANGULAR BASIN



$\frac{4\,FT}{77\,FT} = \frac{d_{AVG}}{25\,FT}$

$d_{AVG} = 1.3\,FT$

DESIGN BASIN #6

DESIGN GOVERNED BY:

(1) SLOPE (EXISTING = 3.3%)

$S = \frac{d_c}{L}$ d_c = MAX. DEPTH OF SLOPED BASIN = 4FT

$0.033 = \frac{4FT}{L}$

$L = 121\ FT$ (FLOOD WIDTH)

(2) AREA (PROPOSED = 32,639 FT^2)

$A = \frac{V}{[(TP_{DESIGN}/12) + d_p]}$ T = 2HRS

$P_{DESIGN} = 4.39$ IN/HR

$d_p = d_{AVG}$ = AVERAGE DEPTH OF BASIN = 2FT

$32,639\ FT^2 = \frac{V}{[(2HRS \times 4.39IN/HR / 12''/1) + 2FT]}$

$V = 89,159\ FT^3$

DESIGN INFILTRATION BASIN #7

DESIGN GOVERNED BY:

① SLOPE (EXISTING = 3.76%)

$S = \frac{d_E}{L}$

d_E = MAX. DEPTH OF SLOPED BASIN = 2.5 FT

$0.0376 = \frac{2.5\,FT}{L}$

$L = 66\,FT$ (FLOOD WIDTH)

② AREA (PROPOSED = 6,605 FT^2)

$A = \frac{V}{[(T P_{DESIGN}/12) + d_p]}$

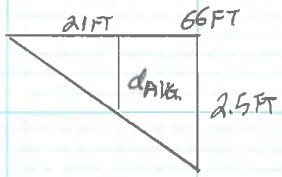
T = 2 HRS

P_{DESIGN} = 4.39 IN/HR

$d_p = d_{AVG}$ = WEIGHTED AVERAGE DEPTH OF TRIANGULAR BASIN.

$6{,}605\,FT^2 = \frac{V}{[(2HR \times 4.39\,IN/HR / 12"/1) + 0.8\,FT]}$

$V = 10117\,FT^3$



$\frac{d_{AVG}}{21FT} = \frac{2.5\,FT}{66\,FT}$

$d_{AVG} = 0.8\,FT$

TOTAL VOLUME OF BASINS #1-7

$V_{TOT} = 154{,}271\,FT^3 > DV_{25} = 140{,}699\,FT^3$ (3.23 AC·FT) OK

CHECK MAX DRAIN TIME:

MAX. = 72 HRS

$\frac{d_E}{P_{DESIGN}} = \frac{4\,FT}{[4.39\,IN/HR / 12"/1]} = 11\,HRS < 72\,HRS$ OK

TETRATECH

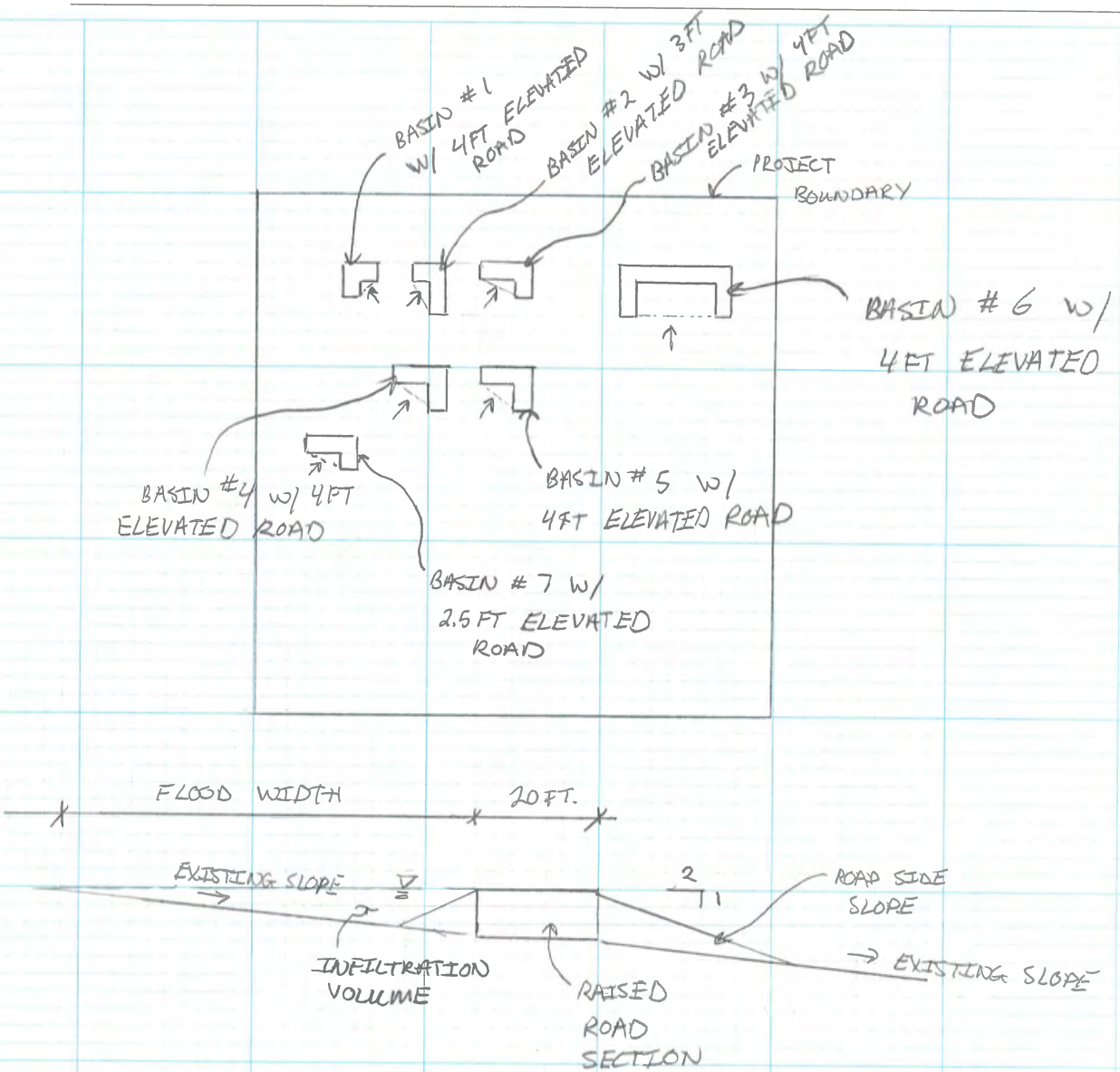
Sheet No. 8 of 8 Date: DECEMBER 2013

Checked By: _____ Office: _____

Telephone: _____

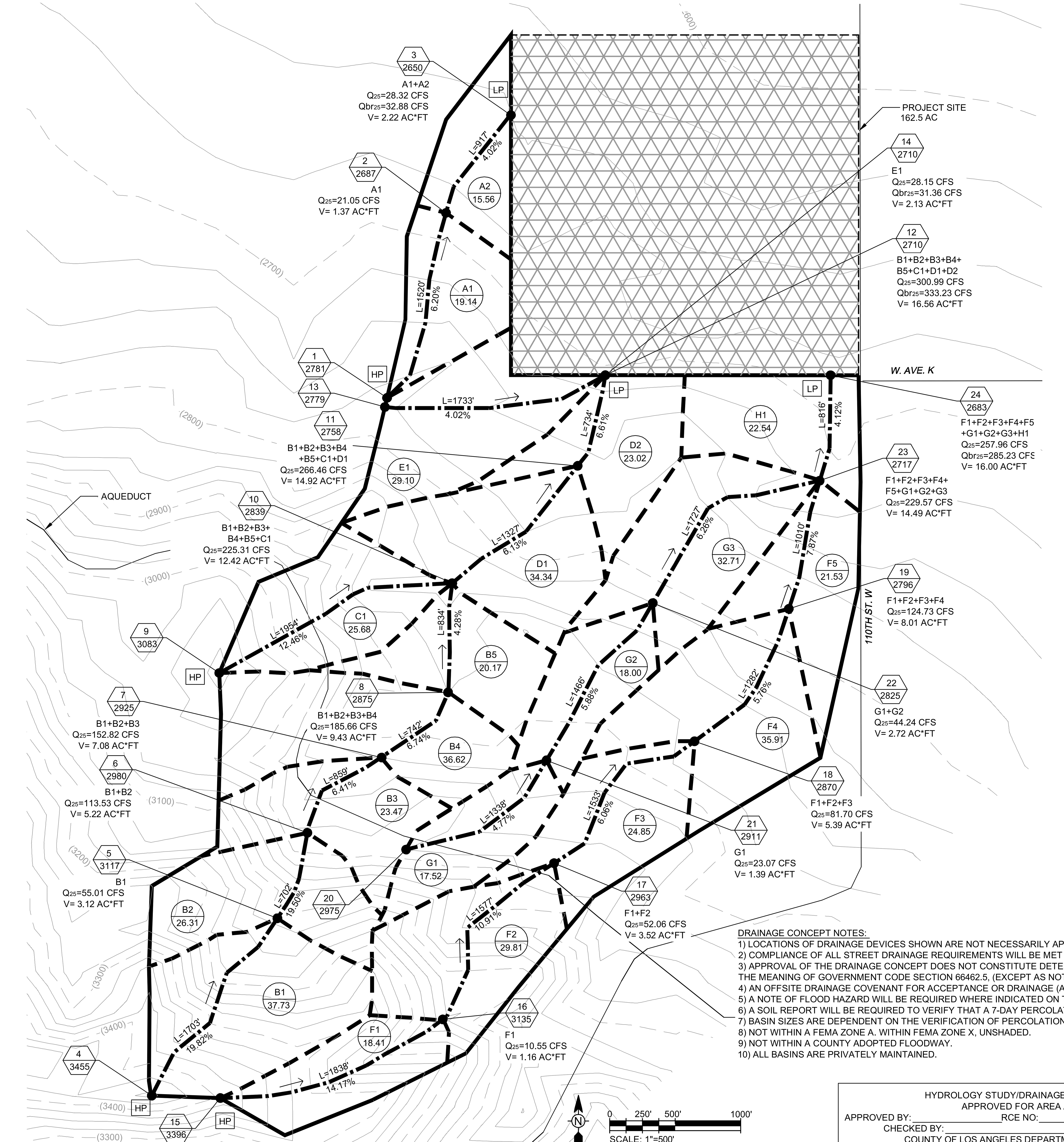
Engineer: J.S. Job No.: _____

Subject: PROJECT 2 INFILTRATION BASIN CALCULATION



APPENDIX G:
DRAINAGE MAPS (ON-/OFF-SITE)

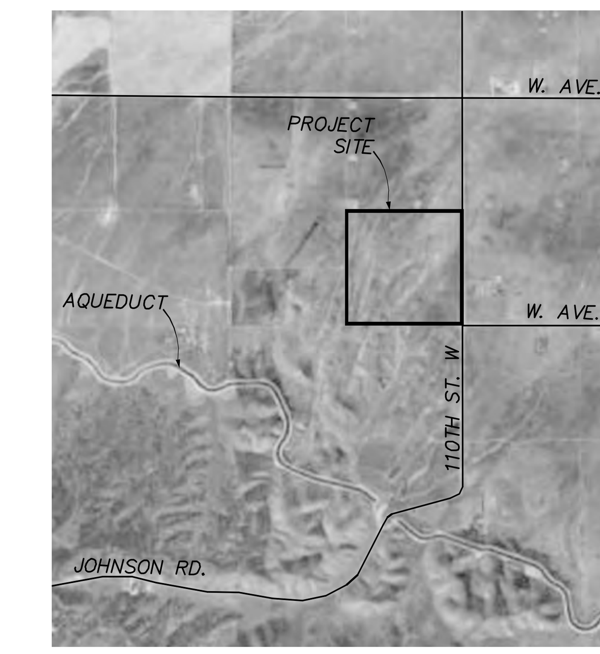
OFF-SITE DRAINAGE MAP



LEGEND:

Symbol	Description
XX / XX.X (circle)	SUBAREA ID / ACREAGE
XX / XXX (hexagon)	NODE ID / ELEVATION
HP	HIGH POINT
LP	LOW POINT
(heavy solid line)	WATERSHED BOUNDARY
(heavy dashed line)	SUB-AREA BOUNDARY
(light dashed line)	PROJECT BOUNDARY
(dash-dot line)	FLOW LINE

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Qbr_{25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (7,100 CY / SQ. MI.) * (TOTAL WATERSHED AREA 1.055 SQ. MI.) = 7,491 CY



LOCATION MAP
NOT TO SCALE
(THOMAS GUIDE PAGE 4103, GRID D-1, D-2, E-1, & E-2)

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

OFF-SITE HYDROLOGY																	
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 2	A1	19.14	0.01	2	120	1520	0.0620	2.5	30	0.64	0.10	0.11	1.35	0.34	2.43	0.43
Project 2	A2	15.56	0.01	2	134	917	0.0402	2.4	30	0.62	0.10	0.11	1.06	0.34	1.90	0.34
Project 2	B1	37.73	0.01	2	120	1703	0.1982	2.7	30	0.70	0.13	0.14	3.70	0.34	6.00	0.94
Project 2	B2	26.31	0.01	2	120	702	0.1950	2.7	30	0.69	0.13	0.14	2.54	0.34	4.12	0.64
Project 2	B3	23.47	0.01	2	120	859	0.0641	2.6	30	0.68	0.12	0.13	2.07	0.34	3.47	0.56
Project 2	B4	36.62	0.01	2	134	742	0.0674	2.6	30	0.68	0.10	0.11	2.74	0.34	4.97	0.87
Project 2	B5	20.17	0.01	2	120	834	0.0428	2.6	30	0.66	0.11	0.12	1.60	0.34	2.77	0.47
Project 2	C1	25.68	0.01	2	134	1954	0.1246	2.6	30	0.67	0.10	0.11	1.89	0.34	3.43	0.60
Project 2	D1	34.34	0.01	2	120	1327	0.0613	2.5	30	0.64	0.10	0.11	2.42	0.34	4.35	0.77
Project 2	D2	23.02	0.01	2	120	734	0.0661	2.4	30	0.63	0.10	0.11	1.60	0.34	2.87	0.51
Project 2	E1	29.10	0.01	2	120	1733	0.0402	2.5	30	0.65	0.10	0.11	2.08	0.34	3.75	0.66
Project 2	F1	18.41	0.01	2	134	1838	0.1417	2.7	30	0.70	0.10	0.11	1.42	0.34	2.58	0.45
Project 2	F2	29.81	0.01	2	120	1577	0.1091	2.6	30	0.68	0.12	0.13	2.64	0.34	4.41	0.71
Project 2	F3	24.85	0.01	2	120	1533	0.0606	2.6	30	0.66	0.11	0.12	1.97	0.34	3.41	0.57
Project 2	F4	35.91	0.01	2	120	1282	0.0576	2.5	30	0.64	0.10	0.11	2.53	0.34	4.55	0.80
Project 2	F5	21.53	0.01	2	120	1010	0.0787	2.4	30	0.62	0.10	0.11	1.47	0.34	2.64	0.47
Project 2	G1	17.52	0.01	2	120	1338	0.0477	2.6	30	0.68	0.12	0.13	1.55	0.34	2.59	0.42
Project 2	G2	18.00	0.01	2	120	1466	0.0588	2.5	30	0.65	0.10	0.11	1.29	0.34	2.32	0.41
Project 2	G3	32.71	0.01	2	120	1727	0.0626	2.4	30	0.63	0.10	0.11	2.27	0.34	4.08	0.72
Project 2	H1	22.54	0.01	2	120	816	0.0412	2.4	30	0.61	0.10	0.11	1.51	0.34	2.71	0.48
Project 2	A1	19.14	0.01	5	120	1520	0.0620	3.7	27	1.01	0.33	0.34	6.57	0.34	7.97	0.77
Project 2	A2	15.56	0.01	5	134	917	0.0402	3.6	30	0.93	0.10	0.11	1.59	0.34	2.98	0.51
Project 2	B1	37.73	0.01	5	120	1703	0.1982	4.1	20	1.27	0.40	0.41	19.65	0.34	22.90	1.74
Project 2	B2	26.31	0.01	5	120	702	0.1950	4.0	10	1.74	0.50	0.50	22.89	0.34	25.69	1.22
Project 2	B3	23.47	0.01	5	120	859	0.0641	4.0	15	1.41	0.44	0.44	14.56	0.34	16.74	1.06
Project 2	B4	36.62	0.01	5	134	742	0.0674	4.0	30	1.02	0.10	0.11	4.11	0.34	7.77	1.32
Project 2	B5	20.17	0.01	5	120	834	0.0428	3.9	17	1.29	0.40	0.41	10.67	0.34	12.44	0.88
Project 2	C1	25.68	0.01	5	134	1954	0.1246	3.9	30	1.01	0.10	0.11	2.85	0.34	5.39	0.91
Project 2	D1	34.34	0.01	5	120	1327	0.0613	3.7	24	1.07	0.34	0.35	12.86	0.34	15.52	1.39
Project 2	D2	23.02	0.01	5	120	734	0.0661	3.7	15	1.31	0.41	0.41	12.36	0.34	14.43	0.94
Project 2	E1	29.10	0.01	5	120	1733	0.0402	3.8	30	0.98	0.31	0.32	9.13	0.34	11.24	1.16
Project 2	F1	18.41	0.01	5	134	1838	0.1417	4.1	30	1.05	0.10	0.11	2.13	0.34	4.03	0.68
Project 2	F2	29.81	0.01	5	120	1577	0.1091	4.0	22	1.18	0.37	0.38	13.37	0.34	15.84	1.32
Project 2	F3	24.85	0.01	5	120	1533	0.0606	3.9	26	1.06	0.34	0.35	9.22	0.34	11.12	1.04
Project 2	F4	35.91	0.01	5	120	1282	0.0576	3.7	24	1.07	0.34	0.35	13.45	0.34	16.23	1.45
Project 2	F5	21.53	0.01	5	120	1010	0.0787	3.6	19	1.15	0.37	0.38	9.41	0.34	11.14	0.85
Project 2	G1	17.52	0.01	5	120	1338	0.0477	4.0	23	1.16	0.37	0.38	7.72	0.34	9.15	0.78
Project 2	G2	18.00	0.01	5	120	1466	0.0588	3.8	26	1.04	0.34	0.35	6.55	0.34	7.90	0.73
Project 2	G3	32.71	0.01	5	120	1727	0.0626	3.7	30	0.95	0.29	0.30	9.32	0.34	11.68	1.25
Project 2	H1	22.54	0.01	5	120	816	0.0412	3.6	19	1.13	0.36	0.37	9.42	0.34	11.23	0.87
Project 2	A1	19.14	0.01	10	120	1520	0.0620	4.6	19	1.46	0.45	0.45	12.57	0.34	14.39	1.03
Project 2	A2	15.56	0.01	10	134	917	0.0402	4.4	30	1.14	0.10	0.11	1.95	0.34	3.73	0.62
Project 2	B1	37.73	0.01	10	120	1703	0.1982	5.0	15	1.78	0.51	0.51	34.25	0.34	38.29	2.30
Project 2	B2	26.31	0.01	10	120	702	0.1950	4.9	8	2.36	0.59	0.59	36.63	0.34	39.91	1.64
Project 2	B3	23.47	0.01	10	120	859	0.0641	4.9	12	1.92	0.53	0.53	23.88	0.34	26.52	1.41
Project 2	B4	36.62	0.01	10	134	742	0.0674	4.9	18	1.59	0.22	0.23	13.39	0.34	18.79	1.72
Project 2	B5	20.17	0.01	10	120	834	0.0428	4.7	12	1.86	0.52	0.52	19.51	0.34	21.74	1.16
Project 2	C1	25.68	0.01	10	134	1954	0.1246	4.8	30	1.23	0.11	0.12	3.79	0.34	6.97	1.12
Project 2	D1	34.34	0.01	10	120	1327	0.0613	4.6	17	1.53	0.47	0.47	24.69	0.34	28.02	1.88
Project 2	D2	23.02	0.01	10	120	734	0.0661	4.5	11	1.85	0.52	0.52	22.15	0.34	24.67	1.23
Project 2	E1	29.10	0.01	10	120	1733	0.0402	4.6	24	1.32	0.41	0.41	15.75	0.34	18.38	1.58
Project 2	F1	18.41	0.01	10	134	1838	0.1417	5.0	30	1.28	0.12	0.13	3.06	0.34	5.43	0.84
Project 2	F2	29.81	0.01	10	120	1577	0.1091	4.9	16	1.68	0.49	0.49	24.54	0.34	27.64	1.74
Project 2	F3	24.85	0.01	10	120	1533	0.0606	4.7	19	1.50	0.46	0.46	17.15	0.34	19.54	1.40
Project 2	F4	35.91	0.01	10	120	1282	0.0576	4.6	17	1.53	0.47	0.47	25.82	0.34	29.30	1.96
Project 2	F5	21.53	0.01	10	120	1010	0.0787	4.4	14	1.63	0.48	0.48	16.85	0.34	19.05	1.13
Project 2	G1	17.52	0.01	10	120	1338	0.0477	4.9	17	1.63	0.48	0.48	13.71	0.34	15.50	1.04
Project 2	G2	18.00	0.01	10	120	1466	0.0588	4.6	19	1.48	0.46	0.46	12.25	0.34	13.96	0.99
Project 2	G3	32.71	0.01	10	120	1727	0.0626	4.5	22	1.34	0.42	0.42	18.41	0.34	21.37	1.72
Project 2	H1	22.54	0.01	10	120	816	0.0412	4.4	14	1.60	0.48	0.48	17.31	0.34	19.57	1.16
Project 2	A1	19.14	0.01	25	120	1520	0.0620	5.6	15	2.00	0.55	0.55	21.05	0.34	23.21	1.37
Project 2	A2	15.56	0.01	25	134	917	0.0402	5.4	19	1.73	0.26	0.27	7.27	0.34	9.67	0.85
Project 2	B1	37.73	0.01	25	120	1703	0.1982	6.1	12	2.43	0.60	0.60	55.01	0.34	59.76	3.12
Project 2	B2	26.31	0.01	25	120	702	0.1950	6.1	6	3.32	0.67	0.67	58.52	0.34	62.44	2.10
Project 2	B3	23.47	0.01	25	120	859	0.0641	6.0	9	2.70	0.62	0.62	39.29	0.34	42.46	1.86
Project 2	B4	36.62	0.01	25	134	742	0.0674	6.0	12	2.36	0.37	0.38	32.84	0.34	39.75	2.35
Project 2	B5	20.17	0.01	25	120	834	0.0428	5.8	10	2.50	0.60	0.60	30.26	0.34	32.88	1.51
Project 2	C1	25.68	0.01	25	134	1954	0.1246	5.9	27	1.59	0.22	0.23	9.39	0.34	13.17	1.48
Project 2	D1	34.34	0.01	25	120	1327	0.0613	5.6	13	2.14	0.56	0.56	41.15	0.34	45.25	2.50
Project 2	D2	23.02	0.01	25	120	734	0.0661	5.5	9	2.50	0.60	0.60	34.53	0.34	37.52	1.64
Project 2	E1	29.10	0.01	25	120	1733	0.0402	5.7	18	1.86	0.52	0.52	28.15	0.34	31.36	2.13
Project 2	F1	18.41	0.01	25	134	1838	0.1417	6.1	20	1.91	0.29	0.30	10.55	0.34	13.61	1.16
Project 2	F2	29.81	0.01	25	120	1577	0.1091	6.0	12	2.36	0.59	0.59	41.51	0.34	45.22	2.36
Project 2	F3	24.85	0.01	25	120	1533	0.0606	5.8	14	2.13	0.56	0.56	29.64	0.34	32.59	1.87
Project 2	F4	35.91	0.01	25	120	1282	0.0576	5.6	13	2.14	0.56	0.56	43.03	0.34	47.32	2.62
Project 2	F5	21.53	0.01	25	120	1010	0.0787	5.4	11	2.24	0.57	0.57	27.49	0.34	30.14	1.48
Project 2	G1	17.52	0.01	25	120	1338	0.0477	6.0	13	2.27	0.58	0.58	23.07	0.34	25.20	1.39
Project 2	G2	18.00	0.01	25	120	1466	0.0588	5.7	14	2.10	0.56	0.56	21.17	0.34	23.27	1.33
Project 2	G3	32.71	0.01	25	120	1727	0.0626	5.5	16	1.91	0.53	0.53	33.11	0.34	36.76	2.28
Project 2	H1	22.54	0.01	25	120	816	0.0412	5.4	11	2.21	0.57	0.57	28.39	0.34	31.12	1.51
Project 2	A1	19.14	0.01	50	120	1520	0.0620	6.4	12	2.53	0.61	0.61	29.54	0.34	32.00	1.67
Project 2	A2	15.56	0.01	50	134	917	0.0402	6.2	14	2.28	0.36	0.37	13.13	0.34	15.99	1.03
Project 2	B1	37.73	0.01	50	120	1703	0.1982	7.0	10	3.02	0.65	0.65	74.06	0.34	79.41	3.68
Project 2	B2	26.31	0.01	50	120	702	0.1950	6.9	6	3.78	0.70	0.70	69.62	0.34	73.75	2.52
Project 2	B3	23.47	0.01	50	120	859	0.0641	6.8	8	3.25	0.66	0.66	50.34	0.34	53.86	2.26
Project 2	B4	36.62	0.01	50	134	742	0.0674	6.8	9	3.08	0.46	0.46	51.88	0.34	60.08	2.79
Project 2	B5	20.17	0.01	50	120	834	0.0428	6.6	9	2.99	0.64	0.64	38.60	0.34	41.50	1.84
Project 2	C1	25.68	0.01	50	134	1954	0.1246	6.7	18	2.19	0.34	0.35	19.68	0.34	24.34	1.85
Project 2	D1	34.34	0.01	50	120	1327	0.0613	6.4	12	2.53	0.61	0.61	53.00	0.34	57.41	3.00
Project 2	D2	23.02	0.01	50	120	734	0.0661	6.3	8	3.01	0.64	0.64	44.35	0.34	47.69	2.00
Project 2	E1	29.10	0.01	50	120	1733	0.0402	6.5	15	2.31	0.58	0.58	38.99	0.34	42.61	2.55
Project 2	F1	18.41	0.01	50	134	1838	0.1417	7.0	15	2.49	0.39	0.40	18.34	0.34	21.91	1.41
Project 2	F2	29.81	0.01	50	120	1577	0.1091	6.8	11	2.80	0.63	0.63	52.58	0.34	56.67	2.78
Project 2	F3	24.85	0.01	50	120	1533	0.0606	6.6	12	2.61	0.61	0.61	39.56	0.34	42.88	2.27
Project 2	F4	35.91	0.01	50	120	1282	0.0576	6.4	12	2.53	0.61	0.61	55.42	0.34	60.04	3.13
Project 2	F5	21.53	0.01	50	120	1010	0.0787	6.2	9	2.81	0.63	0.63	38.11	0.34	41.08	1.80
Project 2	G1	17.52	0.01	50	120	1338	0.0477	6.8	12	2.69	0.62	0.62	29.22	0.34	31.58	1.66
Project 2	G2	18.00	0.01	50	120	1466	0.0588	6.5	12	2.57	0.61	0.61	28.22	0.34	30.58	1.60
Project 2	G3	32.71	0.01	50	120	1727	0.0626	6.3	14	2.32	0.58	0.58	44.01	0.34	48.11	2.76
Project 2	H1	22.54	0.01	50	120	816	0.0412	6.1	9	2.76	0.62	0.62	38.57	0.34	41.69	1.84

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTED).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____________RCE NO:___________DATE___________
CHECKED BY:_____________DATE___________
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00798 (RCUP201100070) H-1

P:\04546\135-04546-12001\SUPPORTDOCS\CALCS\HYDROLOGY\FINAL DESIGN\OFFSITE HYDROLOGY.DWG
PLOTUPDATE: Sep 9, 2014 9:21AM

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary
40MW AC Solar Photovoltaic Generation System
APN: 3267-015-001
SCH # 2012061068
Project Name: Project 2 Western Antelope Blue Sky Ranch
Project Address: 110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100070 OFF-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE
BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

ON-SITE DRAINAGE MAP

MATCHLINE: SEE SHEET C-04

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- X — SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{BrF25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (7,100CY / SQ. MI.) * (TOTAL WATERSHED AREA 1.055 SQ. MI.) = 7,491 CY

B 17.43
C 22.59
E 21.40
F 13.24
G 18.44
J 22.34
K 7.96

11 / 2717 — OFF-SITE Q_{25}=14.16 CFS Q_{BrF25}=16.44 CFS V=1.11 AC*FT (HALF OF SUBAREAS A1 & A2) (PRE/POST -DEVELOPMENT)

31 / 2700 — OFF-SITE Q_{25}=28.15 CFS Q_{BrF25}=31.36 CF S V=2.13 AC*FT (SUBAREA E1) (PRE/POST -DEVELOPMENT)

41 / 2690 — OFF-SITE Q_{25}=300.99 CFS Q_{BrF25}=333.23 CF S V=16.56 AC*FT (SUBAREAS B1, B2, B3, B4, B5, C1, D1, & D2) (PRE/POST -DEVELOPMENT)

51 / 2672 — OFF-SITE Q_{25}=257.96 CFS Q_{BrF25}=285.23 CF S V=16.00 AC*FT (SUBAREAS F1, F2, F3, F4, F5, G1, G2, G3, & H1) (PRE/POST -DEVELOPMENT)

52 / 2634 — OFF-SITE+J (PRE) Q_{25}=280.57 CFS V=17.50 AC*FT; OFF-SITE+J (POST) Q_{25}=282.61 CFS V=17.79 AC*FT

L=1710' 4.70%
L=1710' 4.49%
L=1155' 3.28%
L=1196' 5.29%

FLOW LINE (TYPICAL ON-SITE FLOW)
SUB-AREA DRAINAGE BOUNDARY, TYP.
ANTICIPATED FLOOD LIMITS, TYP.
ANTICIPATED FUTURE PROPERTY LINE AFTER ROW DEDICATION
ON-SITE WATERSHED BOUNDARY (CURRENT PROPERTY LINE)
10' SETBACK TO FENCE
STANDARD 8' SECURITY FENCE W/3-STRAND BARBED WIRE
32' SETBACK TO FENCE
110TH ST. W.
W. AVE. K

DRAINAGE CONCEPT NOTES:
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4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 8.7%, THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 10.0%, THE DEPTHS INCREASED BY A MAXIMUM OF 7.1%, AND THE VELOCITIES INCREASED BY A MAXIMUM OF 3.1%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N

0 50 100 200
SCALE: 1":100' (ON FULL SIZE DWG.)

R2011-00798 (RCUP201100070) C-03

P:\34546\135--34546--12001\SUPPORTDOCS\CALCS\HYDROLOGY\7\FINAL DESIGN\ONSITE HYDROLOGY C03.DWG
PLOT/UPDATE: Dec 6, 2013 11:45:20 AM

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100070 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 15.93 CFS	Q_{25}= 16.48 CFS	Q_{PM}=4.80 CFS
Qbr_{25}= 18.70 CFS	Qbr_{25}= 19.24 CF S	V_M=1.54 AC*FT
V= 1.27 AC*FT	V= 1.36 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=17.19 CFS
		ΔV_{25}=3.23 AC*FT

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 38.99 CFS	Q_{25}= 42.22 CFS	Q_{PM}=4.80 CFS
Qbr_{25}= 46.38 CF S	Qbr_{25}= 49.42 CF S	V_M=1.54 AC*FT
V= 3.46 AC*FT	V= 4.15 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=17.19 CFS
		ΔV_{25}=3.23 AC*FT

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 2.76 CFS	Q_{25}= 4.05 CFS	Q_{PM}=4.80 CFS
Qbr_{25}= 4.58 CF S	Qbr_{25}= 5.70 CF S	V_M=1.54 AC*FT
V= 0.66 AC*FT	V= 1.08 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=17.19 CFS
		ΔV_{25}=3.23 AC*FT

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 371.27 CFS	Q_{25}= 376.40 CFS	Q_{PM}=4.80 CFS
Qbr_{25}= 414.48 CF S	Qbr_{25}= 419.28 CF S	V_M=1.54 AC*FT
V= 22.64 AC*FT	V= 23.85 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=17.19 CFS
		ΔV_{25}=3.23 AC*FT

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 284.39 CFS	Q_{25}= 291.38 CFS	Q_{PM}=4.80 CFS
Qbr_{25}= 316.54 CF S	Qbr_{25}= 323.50 CF S	V_M=1.54 AC*FT
V= 18.34 AC*FT	V= 19.16 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=17.19 CFS
		ΔV_{25}=3.23 AC*FT

2 / 2636 — LP — 10' SETBACK TO FENCE — 13 / 2610 — LP — 22 / 2595 — LP — 44 / 2587 — LP — 54 / 2586 — LP

ON-SITE WATERSHED BOUNDARY (CURRENT PROPERTY LINE)

STANDARD 8' SECURITY FENCE W/3-STRAND BARBED WIRE

ANTICIPATED FUTURE PROPERTY LINE AFTER ROW DEDICATION

ANTICIPATED FLOOD LIMITS, TYP.

A / 2.94 — L=632' 3.63%

4' REINFORCED ELEVATED ROAD SECTION

INFILTRATION BASIN FLOOD AREA (0.10 AC*FT)

54' TYP. — 84' TYP. — 20' TYP.

3' REINFORCED ELEVATED ROAD SECTION

146' TYP. — 72' TYP. — 137' TYP. — 20' TYP. — 20' TYP. — 82' TYP.

4' REINFORCED ELEVATED ROAD SECTION

INFILTRATION BASIN FLOOD AREA (0.29 AC*FT)

INFILTRATION BASIN FLOOD AREA (0.19 AC*FT)

OFF-SITE+E+F+G+H (PRE)
Q_{25}=368.86 CFS
V=22.40 AC*FT
OFF-SITE+E+F+G+H (POST)
Q_{25}=373.16 CFS
V=23.47 AC*FT

I / 4.84 — 43 / 2595

FLOW LINE (TYPICAL ON-SITE FLOW)

L=470' 1.89%

L / 9.93

4' REINFORCED ELEVATED ROAD SECTION MIN. L = 272'

20' TYP. — 121' TYP. — 20' TYP.

32' SETBACK TO FENCE — 2.69% — L=827'

OFF-SITE+J+K (PRE)
Q_{25}=282.60 CFS
V=17.89 AC*FT
OFF-SITE+E+J+K (POST)
Q_{25}=287.04 CFS
V=18.40 AC*FT

INFILTRATION BASIN FLOOD AREA (2.05 AC*FT)

53 / 2608

1 / 2659 — HP

OFF-SITE
Q_{25}=14.16 CFS
Q_{PM25}=16.44 CF S
V=1.11 AC*FT
(HALF OF SUBAREAS A1 & A2)
(PRE/POST -DEVELOPMENT)

C / 22.59

FLOW LINE (TYPICAL ON-SITE FLOW)

L=1262' 3.46%

159' TYP. — 84' TYP. — 20' TYP.

2.5' REINFORCED ELEVATED ROAD SECTION

INFILTRATION BASIN FLOOD AREA (0.23 AC*FT)

D / 13.85 — L=1667' 4.79%

FLOW LINE (TYPICAL ON-SITE FLOW)

4' REINFORCED ELEVATED ROAD SECTION

149' TYP. — 100' TYP. — 20' TYP.

INFILTRATION BASIN FLOOD AREA (0.34 AC*FT)

SUB-AREA DRAINAGE BOUNDARY, TYP.

4' REINFORCED ELEVATED ROAD SECTION

133' TYP. — 113' TYP. — 20' TYP.

INFILTRATION BASIN FLOOD AREA (0.34 AC*FT)

H / 7.58 — L=632' 3.13% — 1.89% — L=1040'

K / 7.96

32 / 2620

OFF-SITE+E (PRE)
Q_{25}=47.58 CFS
V=3.60 AC*FT
OFF-SITE+E (POST)
Q_{25}=47.96 CFS
V=3.69 AC*FT

F / 13.24 — 2.57% — L=585'

SUB-AREA DRAINAGE BOUNDARY, TYP.

42 / 2614

OFF-SITE+G (PRE)
Q_{25}=317.13 CFS
V=17.81 AC*FT
OFF-SITE+G (POST)
Q_{25}=319.25 CFS
V=18.35 AC*FT

G / 18.44

12 / 2654

OFF-SITE+B (PRE)
Q_{25}=34.00 CFS
V=2.33 AC*FT
OFF-SITE+B (POST)
Q_{25}=34.36 CFS
V=2.41 AC*FT

B / 17.43

21 / 2674

E / 21.40

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- X — SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Qbr_{25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (7,100CY / SQ. MI.) * (TOTAL WATERSHED AREA 1.055 SQ. MI.) = 7,491 CY

MATCHLINE: SEE SHEET C-03

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
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8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
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11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 8.7%, THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 10.0%, THE DEPTHS INCREASED BY A MAXIMUM OF 7.1%, AND THE VELOCITIES INCREASED BY A MAXIMUM OF 3.1%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____ RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N

0 50 100 200
SCALE: 1":100' (ON FULL SIZE DWG.)

R2011-00798 (RCUP201100070) | C-04

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER — JOSEPH E. DIETZ — No. 67032 EXP: 9-30-14 — CIVIL — STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100070
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE
BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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PLOT/UPDATE: Dec 6, 2013 11:36:08 AM

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

ON SITE HYDROLOGY (PRE-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc calculated (min.)	Intensity (in./hr)	C_{10}	C_{25}	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 2	A	2.94	0.01	2	134	632	0.0363	2.3	30	0.60	0.10	0.11	0.33	0.34	0.35	0.06
Project 2	B	17.43	0.01	2	120	1196	0.0529	2.4	30	0.62	0.10	0.11	1.19	0.34	2.13	0.38
Project 2	C	22.59	0.01	2	134	1262	0.0346	2.4	30	0.61	0.10	0.11	1.52	0.34	2.72	0.48
Project 2	D	13.85	0.01	2	134	1667	0.0473	2.3	30	0.59	0.10	0.11	0.90	0.34	1.60	0.29
Project 2	E	21.40	0.01	2	120	1710	0.0470	2.4	30	0.62	0.10	0.11	1.46	0.34	2.62	0.46
Project 2	F	13.24	0.01	2	134	995	0.0257	2.3	30	0.59	0.10	0.11	0.86	0.34	1.53	0.27
Project 2	G	18.44	0.01	2	120	1702	0.0449	2.4	30	0.61	0.10	0.11	1.24	0.34	2.22	0.39
Project 2	H	7.58	0.01	2	134	1040	0.0188	2.3	30	0.59	0.10	0.11	0.48	0.34	0.86	0.16
Project 2	I	4.84	0.01	2	134	470	0.0169	2.2	30	0.57	0.10	0.11	0.30	0.34	0.54	0.10
Project 2	J	22.34	0.01	2	120	1155	0.0328	2.4	30	0.61	0.10	0.11	1.50	0.34	2.69	0.48
Project 2	K	7.96	0.01	2	134	832	0.0313	2.3	30	0.59	0.10	0.11	0.52	0.34	0.92	0.16
Project 2	L	9.93	0.01	2	134	827	0.0269	2.2	30	0.57	0.10	0.11	0.62	0.34	1.11	0.20
Project 2	A	2.94	0.01	5	134	632	0.0363	3.5	30	0.90	0.10	0.11	0.29	0.34	0.54	0.09
Project 2	B	17.43	0.01	5	120	1196	0.0529	3.6	26	1.03	0.33	0.34	6.10	0.34	7.41	0.67
Project 2	C	22.59	0.01	5	134	1262	0.0346	3.6	30	0.92	0.10	0.11	2.29	0.34	4.28	0.73
Project 2	D	13.85	0.01	5	134	1667	0.0473	3.4	30	0.89	0.10	0.11	1.36	0.34	2.53	0.43
Project 2	E	21.40	0.01	5	120	1710	0.0470	3.6	30	0.93	0.28	0.29	5.77	0.34	7.30	0.80
Project 2	F	13.24	0.01	5	134	995	0.0257	3.4	30	0.88	0.10	0.11	1.30	0.34	2.42	0.41
Project 2	G	18.44	0.01	5	120	1702	0.0449	3.6	30	0.92	0.27	0.28	4.75	0.34	6.07	0.67
Project 2	H	7.58	0.01	5	134	1040	0.0188	3.4	30	0.88	0.10	0.11	0.74	0.34	1.38	0.24
Project 2	I	4.84	0.01	5	134	470	0.0169	3.3	30	0.86	0.10	0.11	0.46	0.34	0.85	0.15
Project 2	J	22.34	0.01	5	120	1155	0.0328	3.6	29	0.93	0.28	0.29	6.03	0.34	7.62	0.82
Project 2	K	7.96	0.01	5	134	832	0.0313	3.4	30	0.89	0.10	0.11	0.78	0.34	1.45	0.25
Project 2	L	9.93	0.01	5	134	827	0.0269	3.3	30	0.86	0.10	0.11	0.94	0.34	1.75	0.30
Project 2	A	2.94	0.01	10	134	632	0.0363	4.3	30	1.10	0.10	0.11	0.36	0.34	0.68	0.11
Project 2	B	17.43	0.01	10	120	1196	0.0529	4.4	17	1.49	0.46	0.46	11.95	0.34	13.61	0.91
Project 2	C	22.59	0.01	10	134	1262	0.0346	4.4	30	1.12	0.10	0.11	2.78	0.34	5.31	0.89
Project 2	D	13.85	0.01	10	134	1667	0.0473	4.2	30	1.08	0.10	0.11	1.65	0.34	3.13	0.53
Project 2	E	21.40	0.01	10	120	1710	0.0470	4.4	24	1.26	0.40	0.41	11.06	0.34	12.88	1.09
Project 2	F	13.24	0.01	10	134	995	0.0257	4.2	30	1.08	0.10	0.11	1.57	0.34	2.99	0.50
Project 2	G	18.44	0.01	10	120	1702	0.0449	4.4	25	1.22	0.38	0.39	8.77	0.34	10.34	0.91
Project 2	H	7.58	0.01	10	134	1040	0.0188	4.2	30	1.08	0.10	0.11	0.90	0.34	1.71	0.29
Project 2	I	4.84	0.01	10	134	470	0.0169	4.1	30	1.05	0.10	0.11	0.56	0.34	1.06	0.18
Project 2	J	22.34	0.01	10	120	1155	0.0328	4.4	19	1.39	0.43	0.43	13.35	0.34	15.43	1.13
Project 2	K	7.96	0.01	10	134	832	0.0313	4.2	30	1.08	0.10	0.11	0.95	0.34	1.80	0.30
Project 2	L	9.93	0.01	10	134	827	0.0269	4.1	30	1.05	0.10	0.11	1.15	0.34	2.18	0.37
Project 2	A	2.94	0.01	25	134	632	0.0363	5.3	14	1.54	0.30	0.31	2.27	0.34	2.26	0.11
Project 2	B	17.43	0.01	25	120	1196	0.0529	5.4	13	2.07	0.55	0.55	19.84	0.34	21.89	1.22
Project 2	C	22.59	0.01	25	134	1262	0.0346	5.4	30	1.38	0.15	0.16	4.99	0.34	8.05	1.13
Project 2	D	13.85	0.01	25	134	1667	0.0473	5.2	30	1.33	0.14	0.15	2.76	0.34	4.58	0.66
Project 2	E	21.40	0.01	25	120	1710	0.0470	5.4	18	1.78	0.51	0.51	19.43	0.34	21.72	1.47
Project 2	F	13.24	0.01	25	134	995	0.0257	5.2	30	1.33	0.14	0.15	2.64	0.34	4.38	0.63
Project 2	G	18.44	0.01	25	120	1702	0.0449	5.4	18	1.75	0.50	0.50	16.14	0.34	18.11	1.25
Project 2	H	7.58	0.01	25	134	1040	0.0188	5.2	30	1.33	0.14	0.15	1.51	0.34	2.51	0.36
Project 2	I	4.84	0.01	25	134	470	0.0169	5.0	15	1.78	0.27	0.28	2.41	0.34	3.17	0.24
Project 2	J	22.34	0.01	25	120	1155	0.0328	5.4	15	1.91	0.53	0.53	22.61	0.34	25.11	1.50
Project 2	K	7.96	0.01	25	134	832	0.0313	5.2	26	1.42	0.17	0.18	2.03	0.34	3.13	0.39
Project 2	L	9.93	0.01	25	134	827	0.0269	5.0	30	1.29	0.13	0.14	1.79	0.34	3.07	0.45
Project 2	A	2.94	0.01	50	134	632	0.0363	6.0	12	2.37	0.37	0.38	2.65	0.34	3.21	0.19
Project 2	B	17.43	0.01	50	120	1196	0.0529	6.2	12	2.45	0.60	0.60	25.62	0.34	27.84	1.46
Project 2	C	22.59	0.01	50	134	1262	0.0346	6.1	21	1.85	0.28	0.29	12.12	0.34	15.79	1.40
Project 2	D	13.85	0.01	50	134	1667	0.0473	5.9	30	1.52	0.20	0.21	4.42	0.34	6.40	0.78
Project 2	E	21.40	0.01	50	120	1710	0.0470	6.2	15	2.21	0.57	0.57	26.96	0.34	29.55	1.75
Project 2	F	13.24	0.01	50	134	995	0.0257	5.9	19	1.88	0.29	0.30	7.47	0.34	9.63	0.80
Project 2	G	18.44	0.01	50	120	1702	0.0449	6.1	16	2.11	0.56	0.56	21.79	0.34	23.95	1.47
Project 2	H	7.58	0.01	50	134	1040	0.0188	5.9	23	1.72	0.26	0.27	3.52	0.34	4.69	0.45
Project 2	I	4.84	0.01	50	134	470	0.0169	5.7	12	2.25	0.35	0.36	3.92	0.34	4.81	0.29
Project 2	J	22.34	0.01	50	120	1155	0.0328	6.1	12	2.41	0.59	0.59	31.77	0.34	34.62	1.83
Project 2	K	7.96	0.01	50	134	832	0.0313	5.9	15	2.10	0.33	0.34	5.68	0.34	7.08	0.49
Project 2	L	9.93	0.01	50	134	827	0.0269	5.7	17	1.91	0.29	0.30	5.48	0.34	7.34	0.58

ON SITE HYDROLOGY (POST-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc calculated (min.)	Intensity (in./hr)	C_{10}	C_{25}	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 2	A	2.94	0.10	2	134	632	0.0363	2.3	30	0.60	0.10	0.18	0.32	0.34	0.46	0.10
Project 2	B	17.43	0.03	2	120	1196	0.0529	2.4	30	0.62	0.10	0.12	1.30	0.34	2.23	0.41
Project 2	C	22.59	0.09	2	134	1262	0.0346	2.4	30	0.61	0.10	0.17	2.34	0.34	3.45	0.75
Project 2	D	13.85	0.10	2	134	1667	0.0473	2.3	30	0.59	0.10	0.18	1.47	0.34	2.11	0.47
Project 2	E	21.40	0.02	2	120	1710	0.0470	2.4	30	0.62	0.10	0.12	1.59	0.34	2.74	0.51
Project 2	F	13.24	0.06	2	134	995	0.0257	2.3	30	0.59	0.10	0.15	1.17	0.34	1.81	0.37
Project 2	G	18.44	0.10	2	120	1702	0.0449	2.4	30	0.61	0.10	0.18	2.02	0.34	2.92	0.64
Project 2	H	7.58	0.09	2	134	1040	0.0188	2.3	30	0.59	0.10	0.17	0.76	0.34	1.12	0.24
Project 2	I	4.84	0.10	2	134	470	0.0169	2.2	30	0.57	0.10	0.18	0.50	0.34	0.71	0.16
Project 2	J	22.34	0.05	2	120	1155	0.0328	2.4	30	0.61	0.10	0.14	1.91	0.34	3.05	0.61
Project 2	K	7.96	0.09	2	134	832	0.0313	2.3	30	0.59	0.10	0.17	0.80	0.34	1.17	0.25
Project 2	L	9.93	0.10	2	134	827	0.0269	2.2	30	0.57	0.10	0.18	1.02	0.34	1.46	0.32
Project 2	A	2.94	0.10	5	134	632	0.0363	3.5	28	0.93	0.10	0.18	0.49	0.34	0.73	0.15
Project 2	B	17.43	0.03	5	120	1196	0.0529	3.6	25	1.05	0.34	0.36	6.55	0.34	7.86	0.73
Project 2	C	22.59	0.09	5	134	1262	0.0346	3.6	30	0.92	0.10	0.17	3.53	0.34	5.37	1.13
Project 2	D	13.85	0.10	5	134	1667	0.0473	3.4	30	0.89	0.10	0.18	2.22	0.34	3.29	0.71
Project 2	E	21.40	0.02	5	120	1710	0.0470	3.6	30	0.93	0.28	0.29	5.77	0.34	7.29	0.85
Project 2	F	13.24	0.06	5	134	995	0.0257	3.4	30	0.89	0.10	0.15	1.77	0.34	2.83	0.56
Project 2	G	18.44	0.10	5	120	1702	0.0449	3.6	30	0.92	0.27	0.33	5.60	0.34	6.91	1.04
Project 2	H	7.58	0.09	5	134	1040	0.0188	3.4	30	0.88	0.10	0.17	1.15	0.34	1.74	0.37
Project 2	I	4.84	0.10	5	134	470	0.0169	3.3	27	0.90	0.10	0.18	0.78	0.34	1.16	0.24
Project 2	J	22.34	0.05	5	120	1155	0.0328	3.6	26	0.98	0.31	0.34	7.44	0.34	9.01	1.02
Project 2	K	7.96	0.09	5	134	832	0.0313	3.4	30	0.89	0.10	0.17	1.20	0.34	1.83	0.38
Project 2	L	9.93	0.10	5	134	827	0.0269	3.3	30	0.86	0.10	0.18	1.54	0.34	2.27	0.49
Project 2	A	2.94	0.10	10	134	632	0.0363	4.3	23	1.25	0.12	0.20	0.74	0.34	1.07	0.19
Project 2	B	17.43	0.03	10	120	1196	0.0529	4.4	17	1.49	0.46	0.47	12.21	0.34	13.83	0.97
Project 2	C	22.59	0.09	10	134	1262	0.0346	4.4	30	1.12	0.10	0.17	4.30	0.34	6.64	1.38
Project 2	D	13.85	0.10	10	134	1667	0.0473	4.2	30	1.08	0.10	0.18	2.69	0.34	4.04	0.86
Project 2	E	21.40	0.02	10	120	1710	0.0470	4.4	24	1.26	0.40	0.41	11.06	0.34	12.88	1.16
Project 2	F	13.24	0.06	10	134	995	0.0257	4.2	30	1.08	0.10	0.15	2.14	0.34	3.49	0.69
Project 2	G	18.44	0.10	10	120	1702	0.0449	4.4	23	1.27	0.40	0.45	10.54	0.34	12.00	1.37
Project 2	H	7.58	0.09	10	134	1040	0.0188	4.2	30	1.08	0.10	0.17	1.39	0.34	2.14	0.45
Project 2	I	4.84	0.10	10	134	470	0.0169	4.1	24	1.16	0.10	0.18	1.01	0.34	1.53	0.29
Project 2	J	22.34	0.05	10	120	1155	0.0328	4.4	19	1.39	0.43	0.45	13.97	0.34	15.96	1.36
Project 2	K	7.96	0.09	10	134	832	0.0313	4.2	30	1.08	0.10	0.17	1.46	0.34	2.25	0.47
Project 2	L	9.93	0.10	10	134	827	0.0269	4.1	30	1.05	0.10	0.18	1.88	0.34	2.81	0.60
Project 2	A	2.94	0.10	25	134	632	0.0363	5.3	12	2.08	0.32	0.38	2.37	0.34	2.80	0.25
Project 2	B	17.43	0.03	25	120	1196	0.0529	5.4	13	2.07	0.55	0.56	20.20	0.34	22.20	1.30
Project 2	C	22.59	0.09	25	134	1262	0.0346	5.4	27	1.45	0.18	0.24	7.86	0.34	10.78	1.74
Project 2	D	13.85	0.10	25	134	1667	0.0473	5.2	30	1.33	0.14	0.22	4.05	0.34	5.70	1.08
Project 2	E	21.40	0.02	25	120	1710	0.0470	5.4	18	1.78	0.51	0.52	19.81	0.34	22.05	1.56
Project 2	F	13.24	0.06	25	134	995	0.0257	5.2	28	1.38	0.15	0.20	3.65	0.34	5.36	0.87
Project 2	G	18.44	0.10	25	120	1702	0.0449	5.4	17	1.80	0.51	0.55	18.26	0.34	20.08	1.79
Project 2	H	7.58	0.09	25	134	1040	0.0188	5.2	28	1.38	0.15	0.22	2.30	0.34	3.25	0.56
Project 2	I	4.84	0.10	25	134	470	0.0169	5.0	13	1.91	0.29	0.35	3.24	0.34	3.97	0.38
Project 2	J	22.34	0.05	25	120	1155	0.0328	5.4	14	1.97	0.54	0.56	24.65	0.34	27.04	1.79
Project 2	K	7.96	0.09	25	134	832	0.0313	5.2	17	1.74	0.26	0.32	4.43	0.34	5.57	0.61
Project 2	L	9.93	0.10	25	134	827	0.0269	5.0	20	1.56	0.21	0.28	4.34	0.34	5.66	0.76
Project 2	A	2.94	0.10	50	134	632	0.0363	6.0	10	2.58	0.40	0.45	3.41	0.34	3.95	0.20
Project 2	B	17.43	0.03	50	120	1196	0.0529	6.2	11	2.55	0.61	0.62	27.56	0.34	29.75	1.52
Project 2	C	22.59	0.09	50	134	1262	0.0346	6.1	19	1.94	0.30	0.35	15.34	0.34	18.85	2.09
Project 2	D	13.85	0.10	50	134	1667	0.0473	5.9	23	1.72	0.26	0.32	7.62	0.34	9.57	1.29
Project 2	E	21.40	0.02	50	120	1710	0.0470	6.2	15	2.21	0.57	0.58	27.43	0.34	29.96	1.86
Project 2	F	13.24	0.06	50	134	995	0.0257	5.9	18	1.93	0.30	0.34	8.69	0.34	10.77	1.06
Project 2	G	18.44	0.10	50	120	1702	0.0449	6.1	15	2.17	0.57	0.60	24.01	0.34	26.00	2.09
Project 2	H	7.58	0.09	50	134	1040	0.0188	5.9	19	1.88	0.29	0.34	4.85	0.34	6.00	0.68
Project 2	I	4.84	0.10	50	134	470	0.0169	5.7	11	2.35	0.37	0.42	4.78	0.34	5.61	0.44
Project 2	J	22.34	0.05	50	120	1155	0.0328	6.1	12	2.41	0.59	0.61	32.84	0.34	35.53	2.15
Project 2	K	7.96	0.09	50	134	832	0.0313	5.9	14	2.17	0.34	0.39	6.74	0.34	8.06	0.72
Project 2	L	9.93	0.10	50	134	827	0.0269	5.7	15	2.03	0.31	0.37	7.46	0.34	9.03	0.90
Project 2	A	2.94	0.10	MIT.	134	632	0.0363	0.75	30	0.19	0.10	0.18	0.10	0.34	0.13	0.03
Project 2	B	17.43	0.03	MIT.	120	1196	0.0529	0.75	30	0.19	0.10	0.12	0.40	0.34	0.59	0.13
Project 2	C	22.59	0.09	MIT.	134	1262	0.0346	0.75	30	0.19	0.10	0.17	0.73	0.34	0.97	0.24
Project 2	D	13.85	0.10	MIT.	134	1667	0.0473	0.75	30	0.19	0.10	0.18	0.47	0.34	0.62	0.15
Project 2	E	21.40	0.02	MIT.	120	1710	0.0470	0.75	30	0.19	0.10	0.12	0.49	0.34	0.73	0.16
Project 2	F	13.24	0.06	MIT.	134	995	0.0257	0.75	30	0.19	0.10	0.15	0.38	0.34	0.52	0.12
Project 2	G	18.44	0.10	MIT.	120	1702	0.0449	0.75	30	0.19	0.10	0.18	0.63	0.34	0.82	0.20
Project 2	H	7.58	0.09	MIT.	134	1040	0.0188	0.75	30	0.19	0.10	0.17	0.24	0.34	0.32	0.08
Project 2	I	4.84	0.10	MIT.	134	470	0.0169	0.75	30	0.19	0.10	0.18	0.17	0.34	0.22	0.05
Project 2	J	22.34	0.05	MIT.	120	1155	0.0328	0.75	30	0.19	0.10	0.14	0.59	0.34	0.84	0.19
Project 2	K	7.96	0.09	MIT.	134	832	0.0313	0.75	30	0.19	0.10	0.17	0.26	0.34	0.34	0.08
Project 2	L	9.93	0.10	MIT.	134	827	0.0269	0.75	30	0.19	0.10	0.18	0.34	0.34	0.44	0.11

Incremental Flow and Volume Increase for Various Storm Events

Storm Event	Pre-Q (cfs)	Post-Q (cfs)	Delta-Q (cfs)	Pre-V (acre-ft)	Post-V (acre-ft)	Delta-V (acre-ft)
2	10.79	13.2	4.41	3.43	4.81	1.40
5	80.81	86.08	7.27	5.56	7.67	2.11
10	55.65	63.39	8.34	7.21	9.79	2.58
25	97.92	151.11	17.53	9.46	12.69	3.23
50	151.61	170.71	19.12	11.49	15.09	3.60

NOTE: FOR INFILTRATION BASIN MITIGATION VOLUME, SUM MIT. FREQUENCY VOLUMES UNDER POST-DEVELOPMENT TABLE. V_{PM}=1.54 AC*FT.

DELTA QUANTITIES FOR DRAINAGE AREA A:
ΔQ25 = 2.32 - 1.77 = 0.55 CFS
ΔV25 = 0.25 - 0.16 = 0.09 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA B:
ΔQ25 = 20.20 - 19.84 = 0.36 CFS
ΔV25 = 1.30 - 1.22 = 0.08 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA C
ΔQ25 = 7.86 - 4.99 = 2.87 CFS
ΔV25 = 1.74 - 1.13 = 0.61 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA D
ΔQ25 = 4.05 - 2.76 = 1.29 CFS
ΔV25 = 1.08 - 0.66 = 0.42 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA E
ΔQ25 = 19.81 - 19.43 = 0.38 CFS
ΔV25 = 1.56 - 1.47 = 0.09 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA F
ΔQ25 = 3.65 - 2.64 = 1.01 CFS
ΔV25 = 0.87 - 0.63 = 0.24 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA G
ΔQ25 = 18.26 - 16.14 = 2.12 CFS
ΔV25 = 1.79 - 1.25 = 0.54 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA H
ΔQ25 = 2.30 - 1.51 = 0.79 CFS
ΔV25 = 0.56 - 0.36 = 0.20 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA I
ΔQ25 = 3.24 - 2.41 = 0.83 CFS
ΔV25 = 0.38 - 0.24 = 0.14 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA J
ΔQ25 = 24.65 - 22.61 = 2.04 CFS
ΔV25 = 1.79 - 1.50 = 0.29 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA K
ΔQ25 = 4.43 - 2.03 = 2.40 CFS
ΔV25 = 0.61 - 0.39 = 0.22 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA L
ΔQ25 = 4.34 - 1.79 = 2.55 CFS
ΔV25 = 0.76 - 0.45 = 0.31 AC*FT

TOTAL DELTA QUANTITIES
ΔQ25 = 17.19 CFS
ΔV25 = 3.23 AC*FT

NOTE: DUE TO THE LID Δ QUANTITIES ABOVE BEING GREATER THAN THE MITIGATION QUANTITIES (Q_{PM} AND V_{PM}) THEY REPRESENT THE WORST CASE SCENARIO BETWEEN THE PRE-/POST DEVELOPMENT CONDITIONS AND THEREFORE SHALL BE USED FOR SIZING THE INFILTRATION BASINS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00798 (RCUP201100070) C-05

P:\04546\135-04546-12001\SUPPORTDOCS\CALCS\HYDROLOGY\TV\FINAL DESIGN\ONSITE HYDROLOGY 035.DWG
PLOT/UPDATE: Nov 27, 2013 1:28:47 PM

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

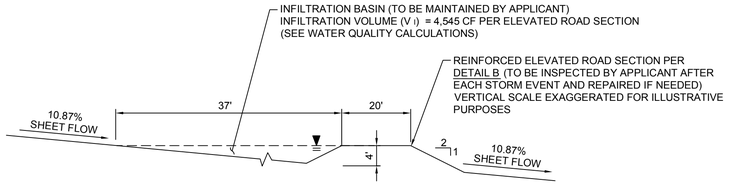
HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100070 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

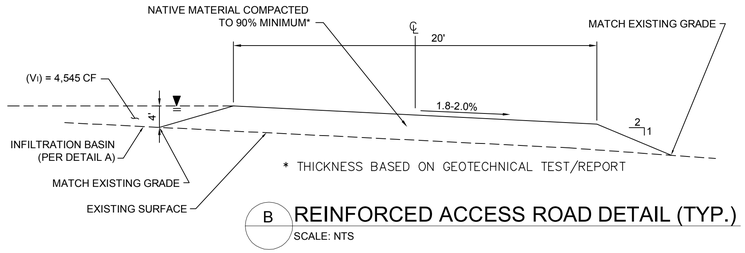
SILVERADO power

PROJECT 2
WESTERN ANTELOPE BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



A INFILTRATION BASIN DETAIL
SCALE: NTS



B REINFORCED ACCESS ROAD DETAIL (TYP.)
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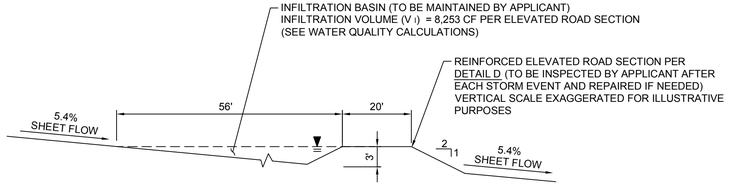

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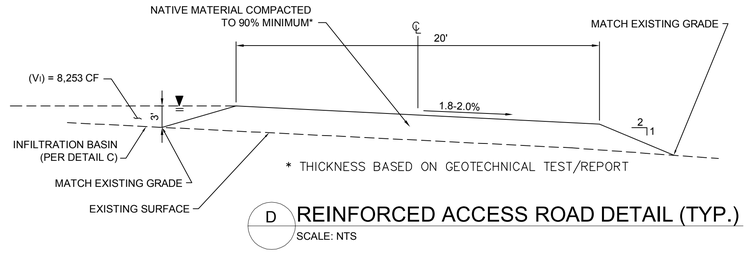

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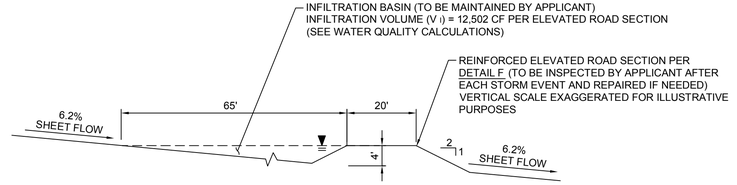

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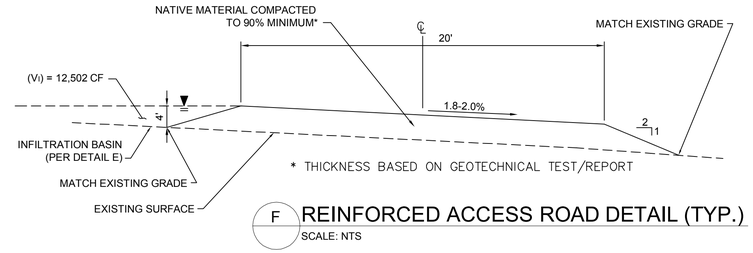

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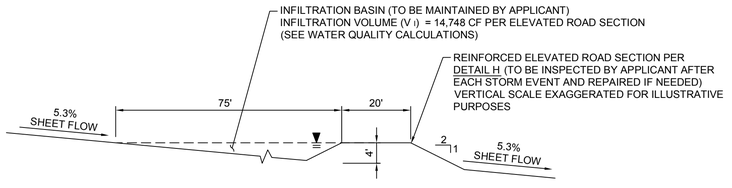

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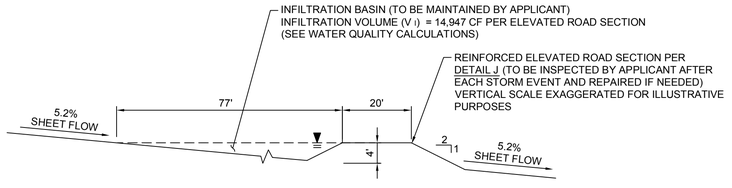

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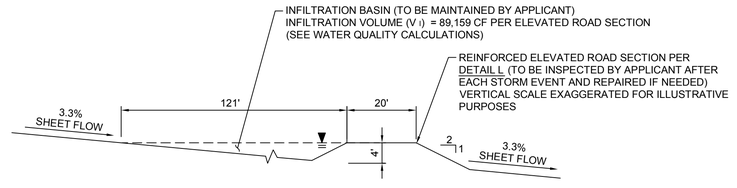

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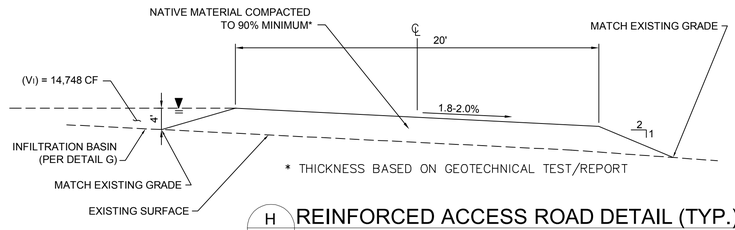

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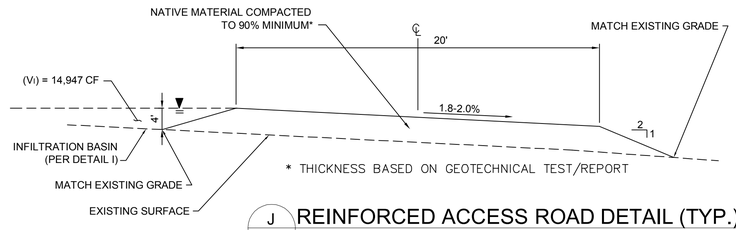

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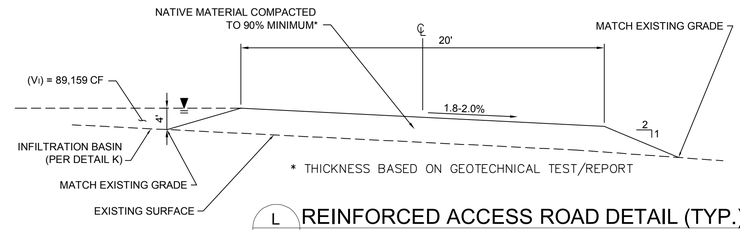

L REINFORCED ACCESS ROAD DETAIL (TYP.)
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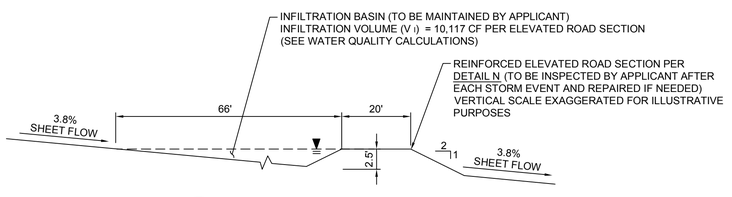

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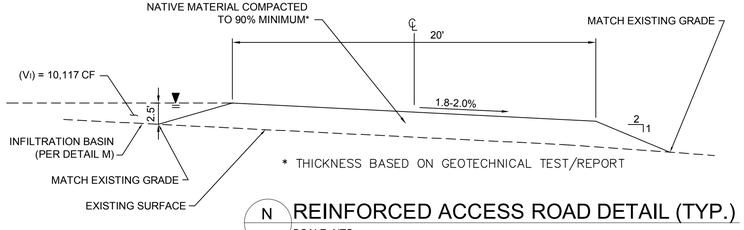

N REINFORCED ACCESS ROAD DETAIL (TYP.)
SCALE: NTS

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00798 (RCUP201100070) C-06

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER
JOSEPH E. DIETZ
No. 67032
EXP: 9-30-14
CIVIL
STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100070
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE
BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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PLOT/UPDATE: Dec 2, 2013 8:57:52 AM

APPENDIX H:
GEOTECHNICAL REPORT

TETRA TECH

August 7, 2013

Brian Smith
County of Los Angeles
Department of Public Works
900 South Fremont Ave
Alhambra, CA 91803

Reference: **Infiltration Rates for Silverado Solar Project Sites, Antelope Valley, CA**

Dear Brian:

The purpose of this letter is to establish a basis for the infiltration rates to be used for various Low Impact Development facilities to treat and infiltrate storm water to meet the Standard Urban Stormwater Mitigation Plan requirements. Currently, LA County Public Works has provided guidance to use an infiltration rate equal to .25 in/hr. We feel this value is extremely conservative based on our experience in the area, and in other high desert areas in the region. Bruin GSI performed preliminary percolation testing at each of the six solar project sites based on the Excavation Percolation Testing Procedure or Ryon Method as outlined in LA County Administrative Manual GS200.1. The results of these preliminary tests show percolation rates much higher than the LA County provided rate of .25 in/hr. The table below shows the preliminary percolation rates recorded by Bruin GSI, the corresponding Reduction Factor, Factor of Safety and requested site specific Infiltration Rate:

Project Site	Absorption Rate (minutes/inch)[1]	Preadjusted Percolation Rate (in/hr)	Reduction Factor[2]	Factor of Safety[3]	Infiltration Rate[4] (in/hr)
North Lancaster Ranch (RCUP201100079)	7	8.57	1.52	3	**1.88**
Western Antelope Blue Sky Ranch (RCUP201100070)	3	20.0	1.52	3	**4.39**
American Solar Greenworks (RCUP201100071)	3	20.0	1.52	3	**4.39**
Antelope Solar Greenworks (RCUP201100076)	4	15.0	1.52	3	**3.29**
Silver Sun Greenworks (RCUP201100072)	5	12.0	1.52	3	**2.63**
Lancaster WAD (RCUP201100074)	3	20.0	1.52	3	**4.39**

[1] Absorption rate was measured between the drop from 6" to 5" above bottom of the percolation pit

[2] Reduction factor is based on Rf=(2di-�d)/13.5 + 1 per GS200.1

[3] Factor of Safety accounts for variations across the site and for silt accumulation over time.

[4] Infiltration rate = Preadjusted Percolation Rate/(Reduction Factor x Factor of Safety)

Tetra Tech, Inc.
17885 Von Karman Avenue, Suite 500, Irvine, CA 92614
Tel 949.809.5000 Fax 949.809.5004 www.tetratech.com

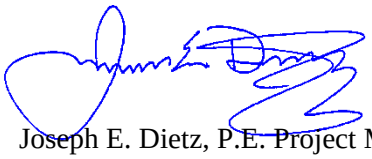
The Low Impact Development, LID, features on each project site will consist of a road that will create a berm to allow for the retention area. The road, which provides a berm of approximately 4 to 8 inches, enables run-off water to be captured and treated on-site at original grade level. Any flow in excess of retention capability of these berms will continue and normalize before it leaves the project boundaries thereby maintaining existing project conditions.

The excavations that Bruin GSI performed support our request to utilize these infiltration rates with the findings that the soil to a depth of 10 feet had no impermeable layers and the materials that were found were uniform. The density of the alluvial material, silty sand (SM) and sandy silt (ML) was generally loose to medium density with dry to moist conditions. The conditions of these materials further leads us to our conclusion that the above reference infiltration rates would be suitable to design the retention features on the respective project sites.

Groundwater conditions in the area, based on Bruin GSI review and Tetra Tech research, are at least 100 feet below ground surface elevation in the subject project areas.

As shown in the table above, the site specific infiltration rates based on preliminary testing are much higher than the .25 in/hr currently allowed. We request the use of the infiltration rates above for the design of the, LID, features at each site.

Sincerely,



Joseph E. Dietz, P.E. Project Manager

jd
P:\04546\135-04546-12001\Docs\Letters\LTR_InfiltrationRates_20130626.docx

Attachments:
Bruin GSI Preliminary Percolation Feasibility Study dated August 1, 2013

BRUIN GSI PRELIMINARY PERCOLATION FEASIBILITY STUDY DATED AUGUST 1, 2013

REVISED PRELIMINARY PERCOLATION FEASIBILITY STUDY FOR SURFACE INFILTRATION DATA FOR SILVERADO POWER ON PROPOSED SOLAR SITES

NORTH LANCASTER RANCH
WESTERN ANTELOPE BLUE SKY RANCH
AMERICAN SOLAR GREENWORKS
ANTELOPE SOLAR GREENWORKS
SILVER SUN GREENWORKS
LANCASTER WAD

LANCASTER, LOS ANGELES COUNTY
CALIFORNIA

Prepared by:
Bruin Geotechnical Services, Inc.
1817 East Avenue Q, Unit A1
Palmdale, California 93550

August 1, 2013
J.N. 12-59

BRUIN GSI

SOIL AND MATERIAL
TESTING AND INSPECTIONS

August 1, 2013 J.N. 12-59

Mr. Ryan Galeria
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

Project: Proposed Solar Sites, Lancaster, California

Sites:

1- North Lancaster Ranch

2- Western Antelope Blue Sky Ranch

3- American Solar Greenworks

4- Antelope Solar Greenworks

5- Silver Sun Greenworks

6- Lancaster WAD

Subject: Revised Preliminary Percolation Feasibility Study for Surface Infiltration Data via Los Angeles County Ryon Method

Presented herewith, per your request, are the results of the percolation testing program for the referenced project. The purpose of this report is to provide preliminary surficial percolation rates for the referenced sites for use by the client to determine the infiltration rates of the existing native soils at existing grade for the proposed water run-off of impermeable areas, such as drive access roadways and small equipment pad areas. This report concludes the scope of our services per our contract.

Site Description

The subject sites are located in the southwest portion of the Antelope Valley, in the Lancaster area of Los Angeles County. The subject sites vary in size and topography. However the sites are relatively flat and level with general slopes of approximately 1-3 percent, with drainage occurring by sheetflow, except site 2, Western Antelope Blue Sky Ranch, which sloped up to the southwest with minor rolling hills.

At the time of our investigation, the sites were vacant of structures. Vegetation consisted of native desert flora, with varying amounts of shrubs, annual grass and weeds. Oak trees were not observed at the sites. The site locations and site plan are presented in Appendix A. The approximate percolation test locations for each site are also indicated on the site plan.

Proposed Development and Drainage

Based on our review of the preliminary site plan, it is our understanding that a solar farm is proposed. The impermeable areas that create water run-off consist of raised access roadways on the perimeter of the site with access roadways, which locations vary by site, dissecting the sites. In addition, concrete equipment pads at various locations on each site will create small impermeable areas. The impermeable surface areas on each site range from 7.5% to 15% of the entire site areas. It is intended that the raised access roads serve as a berm and capture the run-off water and allow it to infiltrate at existing ground elevation. The height of the roadway will range from four to eight inches in height and will create the retention basins on each site and to allow infiltration into native soil at exiting grade elevation. Any additional flow will continue over the roads, therefore maintaining existing sheet flow patterns.

Percolation Testing Protocol

Testing for percolation rates was performed in accordance with the Los Angeles County Ryon Method. This method was performed by excavating a cubic foot test hole at existing ground surface which is the anticipated elevation of the infiltration basins. The test hole is pre-soaked by filling with clean water to existing grade (12 inches). Once all the water has been absorbed, the test hole is cleaned of loose material and filled again with clean water. The percolation rate is determined by monitoring the time of drop for each inch from 0 to 6 inches. The time of absorption between the 5th to 6th inch is the percolation rate in minutes per inch.

On December 1, 2012, the field-testing program was instigated. A minimum of one (1) cubic foot percolation test hole was excavated at each site. The test holes were excavated at the existing ground elevation to a depth of one (1) foot below existing ground elevation with hand equipment. The soil types were logged by our representative. Soil profile information and classifications are presented in Appendix B.

The same day, the cubic foot hole prepared was filled to the initial fill level of existing ground elevation with clean water for pre-soaking. Pre-soaking time varied with each test hole, however all the water percolated within ten to fifteen minutes of the addition of the water. The test hole was then cleaned and re-filled with water to the initial fill level (existing ground). The drop was monitored and documented to determine the absorption rate (drop from the 5th to 5th inch). The percolation rates are provided in Appendix B. Our representative David Michel performed the tests.

Subsurface Investigation

On July 31, 2013, seven (7) additional excavations were performed utilizing a tractor-mounted backhoe to a depth of ten (10) feet below existing ground surface at the locations of each test hole. The purpose of the excavations was to log the soil types, determine the soil classifications and if any impermeable material was present below the test holes. Our representative observed the excavations and prepared field logs of the material encountered. The final logs of the excavations are presented in Appendix C.

Groundwater Conditions

A review of various website databases regarding water well data and groundwater for the Antelope Valley area was performed. The sites included the United States Geological Survey, Los Angeles County Department of Public Works, State of California Department of Conservation, and published State of California Seismic Zone Hazard Maps (Del Sur Quadrangle and West Lancaster Quadrangle), with associated reports regarding liquefaction which is relative to groundwater levels. Based on our review, groundwater in the areas of the subject sites is a minimum of 100 feet below ground surface elevation.

Conclusions

Based on the excavations performed at the subject sites, the material encountered was uniform and no impermeable layers were observed within the total depth of the excavations (10 feet bgs). The areas observed consist of alluvial material, silty sand (SM) and sandy silt (ML). This material was observed to be generally loose to medium dense and dry to moist. Some cementation was observed. The soils appeared porous and permeable.

Groundwater is over 100 feet below ground surface elevation in the subject site areas.

The percolation rates, indicated as minutes per inch, may be utilized to determine the infiltration rate of the soil at existing grade to design the specific area required for the amount of water run-off based on the size of the impermeable areas. The design should include a minimum safety factor of 2.0.

The proposed use of the project site as a solar farm is not expected to significantly change the imperviousness of the sites, with the exception of road construction, which is anticipated to cover 7-15%, depending on the site. It is our professional opinion, provided the drainage and infiltration basins are properly designed, the use of these raised roadway areas as berms to capture run-off water to allow infiltration at existing ground elevation is feasible.

Limitations

The percolation test data provided is based on Los Angeles County Health Department Guidelines (Ryon Method) typically required for septic system design to determine

in minutes per inch at the location on the site as indicated in this report only. Other areas of the each site may vary. The purpose of the testing is to provide the client with preliminary soil absorption rates for their use in preparing information in regards to water run-off and minor surficial detention of water for infiltration in order to comply with the Limited Impact Development standards. Los Angeles County may require additional testing or methodology for final approval.

If there are any changes in the proposed construction or additional testing is necessary, this office should be notified immediately. If soils encountered are different than indicated in this report, contact this office. No warranty is expressed or implied. Test results indicate the rates at the locations indicated. This report does not guarantee issuance of a permit. This report is subject to approval from the governing agency.

Closure

Information and procedures described in the report were performed in accordance with general standards of practice. We trust this reports meets your needs. If you have any questions or require additional information, Please contact our office.

Sincerely,

Bruin Geotechnical Services Inc.

Dennis J. Sloan, P.E.

REGISTERED PROFESSIONAL ENGINEER
DENNIS J. SLOAN
No. 29704
Expires 03/31/15
CIVIL
STATE OF CALIFORNIA

DJS/mes

APPENDIX A

Site Location Map
Site Plans with Approximate Test Locations

Plotting Date: 6/27/2012 4:18:17 PM
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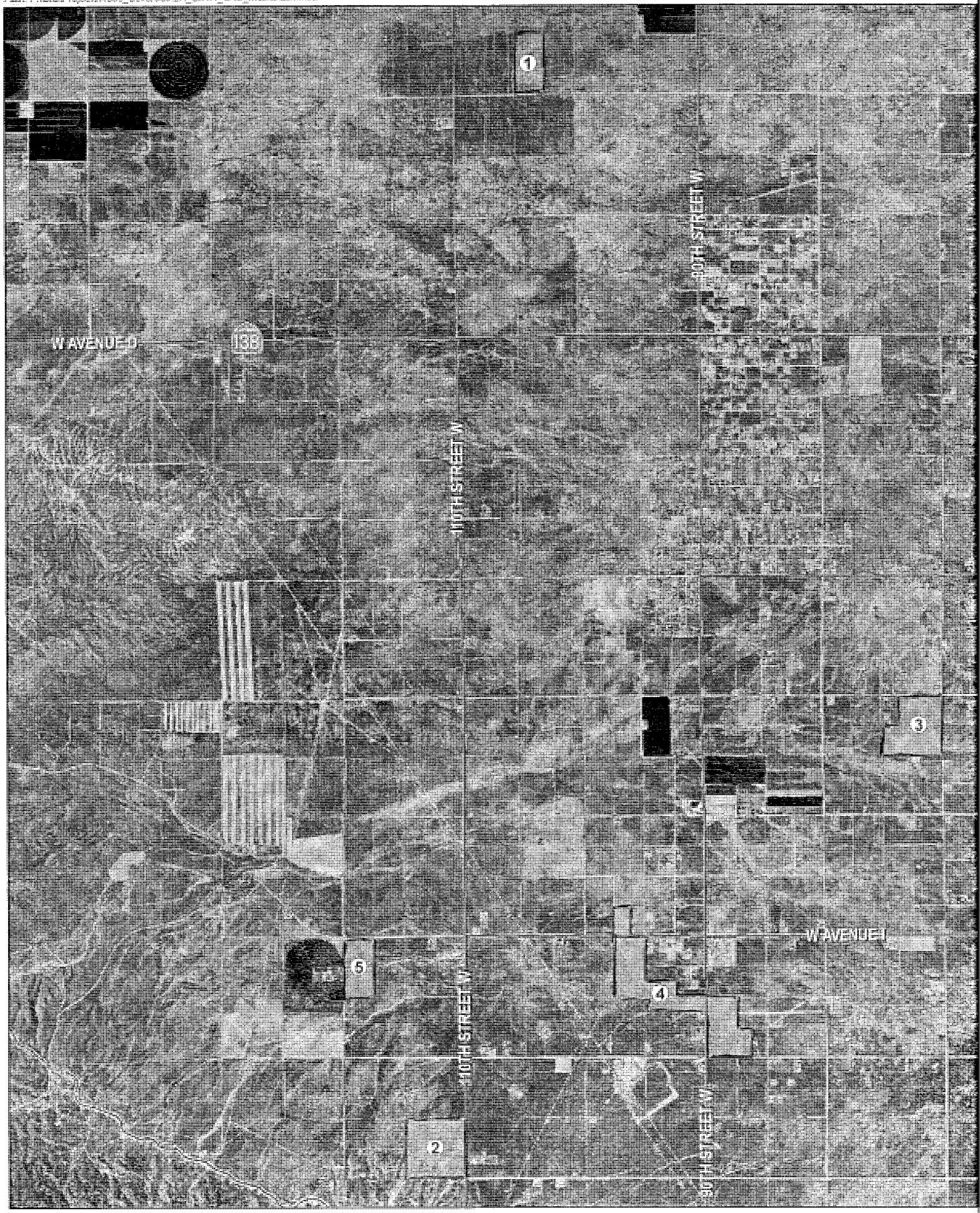
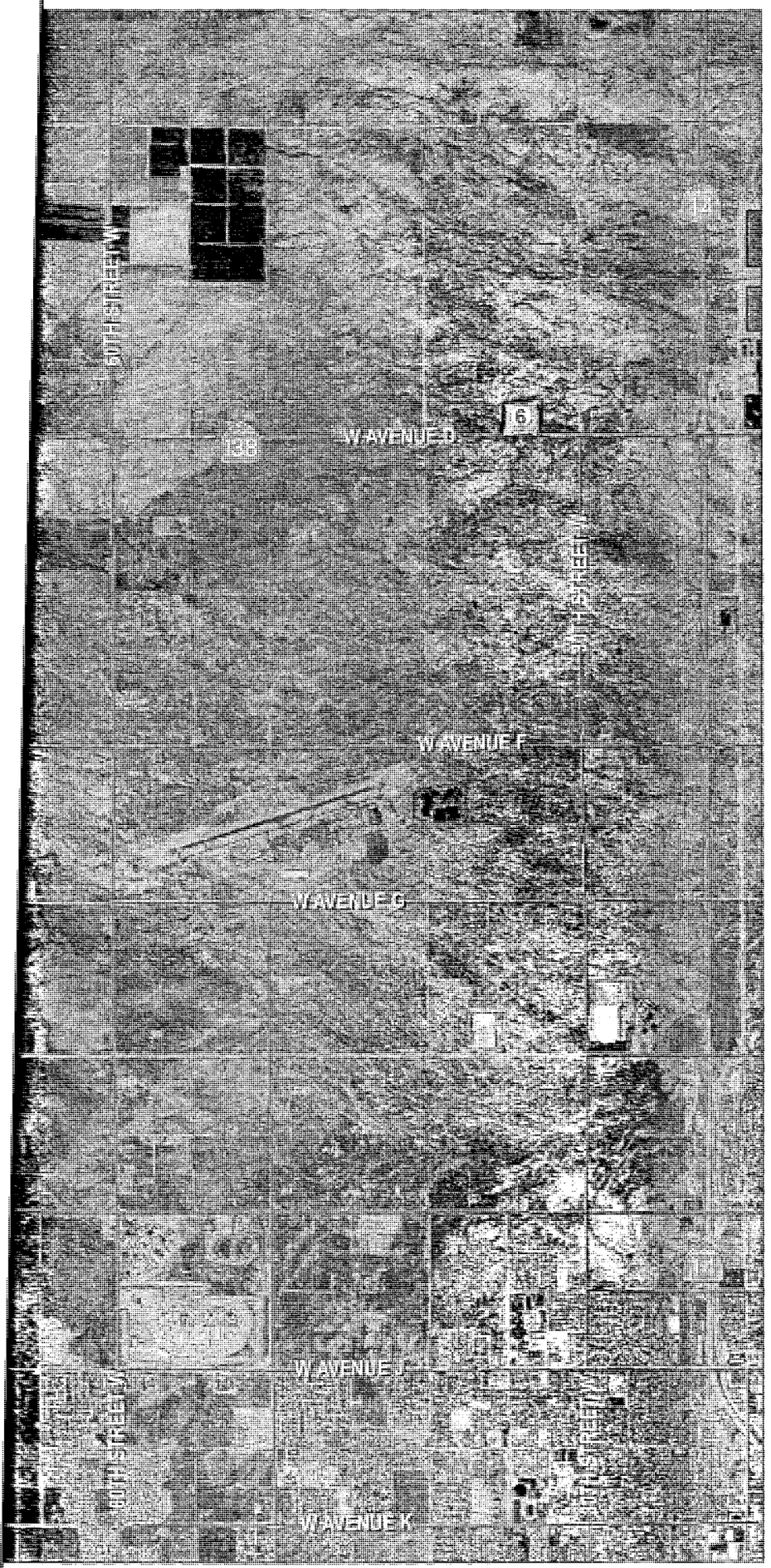
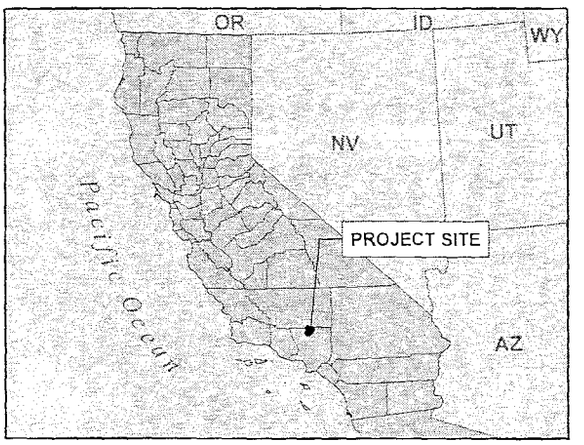




SILVERADO power

SILVERADO POWER WEST
LOS ANGELES COUNTY



LEGEND

PROJECT 1 - NORTH LANCASTER RANCH

PROJECT 2 - WESTERN ANTELOPE BLUE SKY RANCH

PROJECT 3 - AMERICAN SOLAR GREENWORKS

PROJECT 4 - ANTELOPE SOLAR GREENWORKS

PROJECT 5 - SILVER SUN GREENWORKS

PROJECT 6 - LANCASTER WAD

NOTE:
(a) State Plane, Zone V (NAD83), US Survey Feet.
(b) Source Data: ESRI, TTEC.

FIGURE 1
SILVERADO POWER WEST
LOS ANGELES COUNTY
PROJECTS

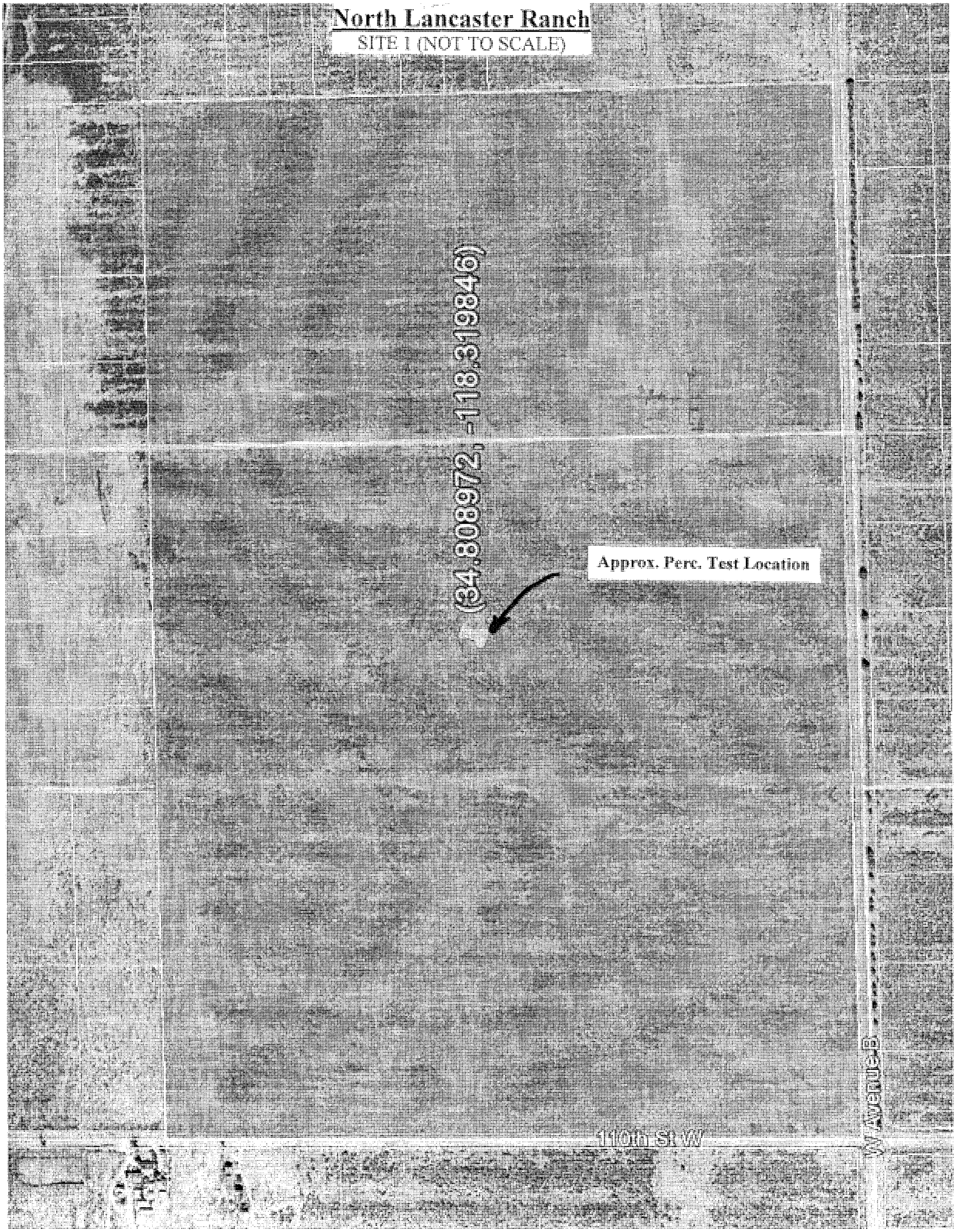
0 0.5 1 2

Miles

TETRA TECH EC, INC.

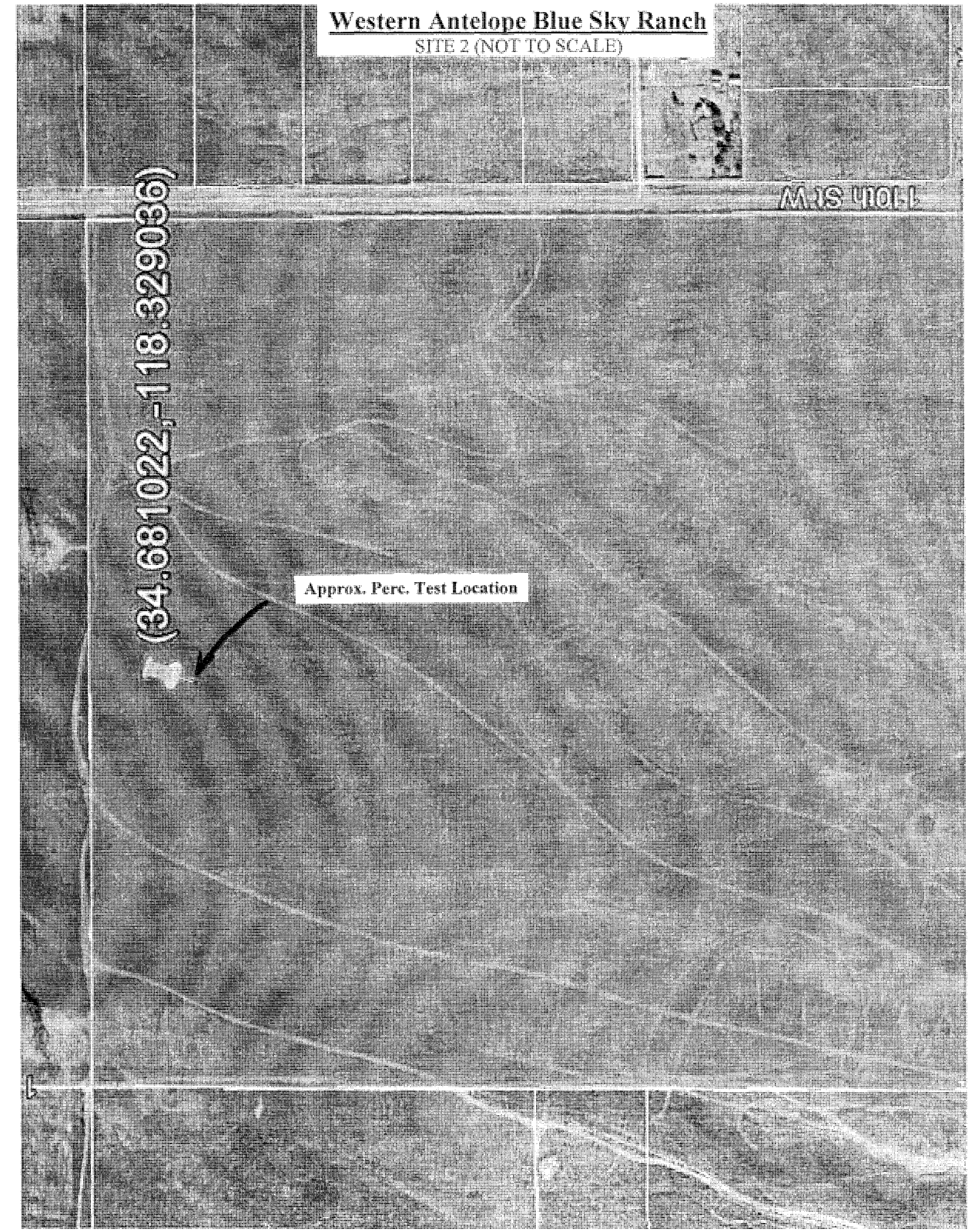
North Lancaster Ranch

SITE 1 (NOT TO SCALE)



Western Antelope Blue Sky Ranch

SITE 2 (NOT TO SCALE)

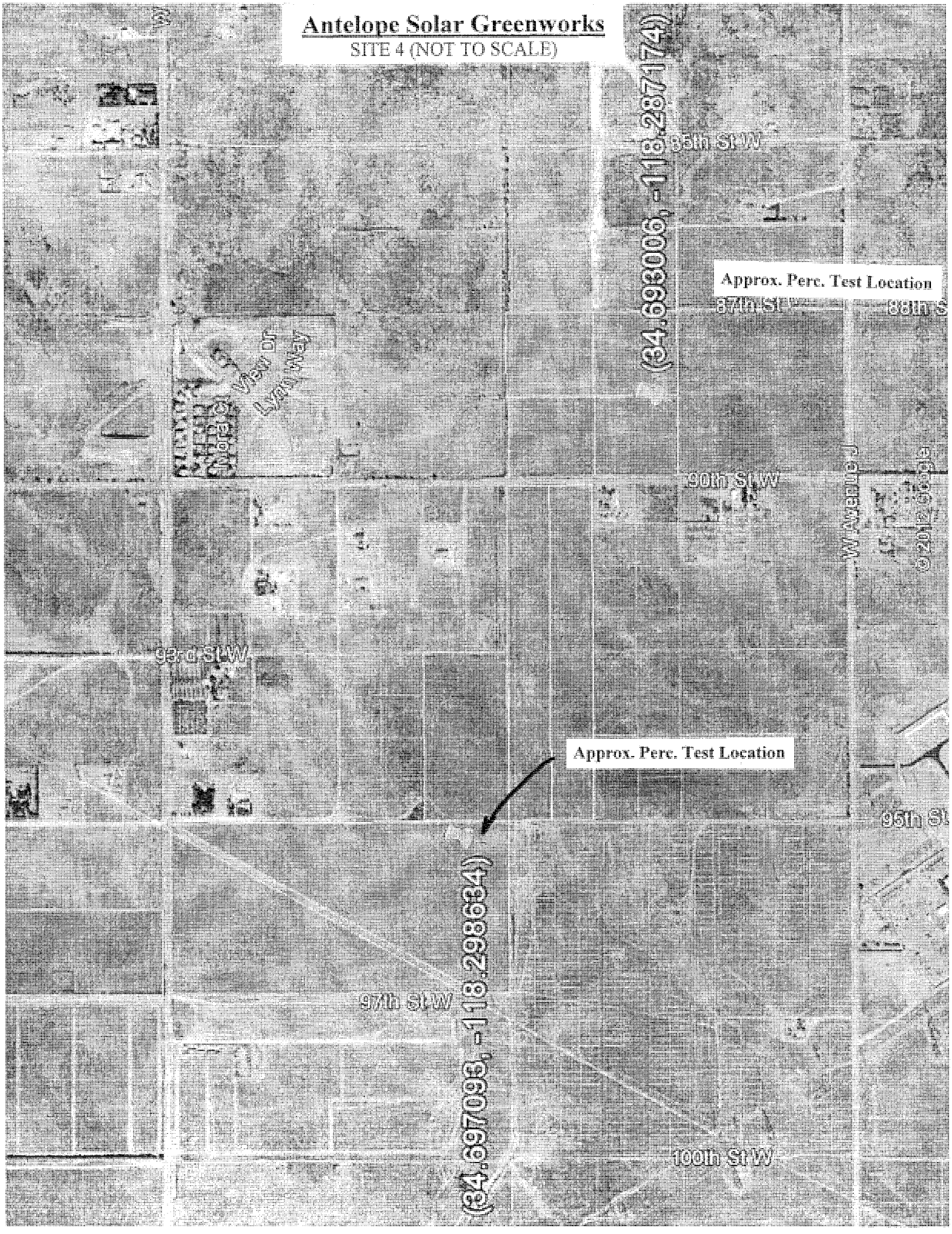


American Solar Greenworks

SITE 3 (NOT TO SCALE)

Antelope Solar Greenworks

SITE 4 (NOT TO SCALE)



Silver Sun Greenworks

SITE 5 (NOT TO SCALE)

Lancaster WAD

SITE 6 (NOT TO SCALE)

APPENDIX B

Soil Profile, Classifications and Absorption Rate

Site	Soil Description	USCS Classification	Absorption Rate (MPI)
Site 1 North Lancaster Ranch Ave. B & 110th St. West	Light brown fine sandy silt w/ medium to coarse sand (cemented)	ML	7
Site 2 Western Antelope Blue Sky Ranch Ave. K & 110th St. West	Dark Yellow brown silty fine to coarse sand	SM	3
Site 3 American Solar Greenworks Ave. G-8 & 70th St. West	Light brown silty fine to medium sand with coarse sand (slightly cemented)	SM	3
Site 4 Antelope Solar Greenworks Ave. J & 90th St. West (2 tests- A=NW portion, B=SE portion)	A-Moderate brown very silty fine to medium sand	SM	4
	B-Light brown silty fine to medium sand with coarse sand	SM	3
Site 5 Silver Sun Greenworks Ave. I & 120th St. West	Strong brown silty fine to coarse sand (slightly cemented)	SM	5
Site 6 Lancaster WAD Ave. D & 30th St. West	Light brown very silty fine to medium sand (cemented)	SM	3

APPENDIX C

Excavation Logs

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 1 North Lancaster Ranch	**Drill Type:** Case backhoe
Location: Ave. B &110th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
5'		ML	Light brown fine sandy silt w/ medium to coarse sand medium dense, dry (cemented)					
			(slightly cemented)					
10'		SM	Grey brown very silty fine sand w/ medium sand medium dense, moist (slightly cemented)					
		SM	Medium brown silty fine to medium medium dense, moist (slightly cemented)					
15'			Excavation terminated @ 10' bgs No free groundwater encountered No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 2 Western Antelope Blue Sky Ranch	**Drill Type:** Case backhoe
Location: K-8 & 110th St West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Dark yellow silty fine to medium sand w/ occasional coarse sand, medium dense, dry (slightly cemented)					
5'		SM	Reddish brown silty fine to coarse sand & clay binder medium dense, slightly moist					
		SM	Yellow brown silty fine to coarse sand w/ occasional #4 gravel medium dense moist (cemented)					
10'		SM	Yellow brown silty fine to coarse w/ occasional #4 gravel medium dense moist					
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 3 American Solar Greenworks	**Drill Type:** Case backhoe
Location: 70th st west & Ave G-8	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Light brown silty fine to medium sand medium dense, dry (slightly cemented)					
		SM	Moderate brown silty fine to coarse sand loose, moist					
5'								
		SM	Moderate brown silty fine to medium sand w/ coarse sand moist medium dense, moist (slightly cemented)					
		ML	Yellow brown silty fine to medium sand medium dense, moist					
10'								
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1 (A)

Client: Silverado Power	**Project No:** 12-59
Project: Site 4 Antelope Solar Greenworks	**Drill Type:** Case backhoe
Location: 90th West & Ave J	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
5'		SM	Moderate brown very silty fine to medium sand w/ coarse sand medium dense, dry (cemented dry)					
10'		SM	Yellow brown silty fine to medium sand w/ coarse sand loose, dry (slightly cemented)					
		SM/ML	Light brown very silty fine to medium sand w/ occasional coarse sand medium dense, moist (cemented)					
15'		SM/ML	Light brown very silty fine to medium sand w/ occasional coarse sand medium dense, moist (cemented) Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E2 (B)

Client: Silverado Power	**Project No:** 12-59
Project: Site 4 Antelope Solar Greenworks	**Drill Type:** Case backhoe
Location: 90th West & Ave J	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		ML	Light brown silty fine to medium sand medium dense, dry (slightly cemneted)					
5'		SM	Moderate brown silty fine to medium sand medium dense, moist (slightly cemented)					
		SM	Orange brown silty fine to medium sand w/ occasional #4-1/2 gravel loose, moist					
10'		SP	Yellowish brown slightly silty fine to medium sand w/ coarse sand medium dense, slightly moist					
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 5 Silver Sun Greenworks	**Drill Type:** Case backhoe
Location: Ave I & 120th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Medium brown silty fine to w/coarse sand					
			medium dense, dry (slightly cemneted)					
		SM	Dark brown silty fine to coarse sand w/ clay binder					
5'			medium dense (slightly cemented)					
		SM	Dark yellowish brown slightly silty fine to coarse sand w/ #4 gravel					
			loose, moist					
10'		SM	Dark brown slightly silty fine to coarse sand w/ #4 gravel & occasional 1"- 3" gravel					
			loose, moist					
15'			Excavation Terminated @ 10' bgs					
			No free groundwater encountered					
20'			No caving					
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 6 Lancaster WAD	**Drill Type:** Case backhoe
Location: Ave D & 30th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Light grey very silty brown fine to medium sand					
			medium dense (cemented)					
		ML	Light grey brown fine sandy silt					
			firm, slightly moist (cemented)					
5'		ML	Pale brown fine sandy silt					
			dense, dry					
		SM	Light brown silty fine sand w/ occasional medium sand					
			loose, dry					
10'		SM	Light brown silty sand w/ occasional medium sand					
			loose, dry					
			Excavation Terminated @ 10' bgs					
			No free groundwater encountered					
15'			No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

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APPENDIX B-7.3

PROJECT 3 AMERICAN SOLAR GREENWORKS HYDROLOGY STUDY/DRAINAGE CONCEPT/SUSMP/LID

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HYDROLOGY STUDY/DRAINAGE CONCEPT/LID

PROJECT 3
AMERICAN SOLAR GREENWORKS
R2011-00799 (RCUP201100071)

W AVE. G & 70TH ST. W
LANCASTER
LOS ANGELES COUNTY, CA

December 2013

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID APPROVED FOR AREA AND Q ONLY

APPROVED BY: _____ RCE NO. _____DATE_____

CHECKED BY:_____ DATE_____

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS LAND DEVELOPMENT DIVISION

Prepared for:

SILVERADO power

2 Embarcadero Center, Suite 410
San Francisco, CA 94111
(415) 692-7740

Prepared by:

TETRA TECH, INC.

17885 Von Karman, Suite 500
Irvine, CA 92614
(949) 809-5000

Under the supervision of:
Joseph E. Dietz, P.E.

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.

12.6.13

Joseph E. Dietz P.E. 67032 Date Seal

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I. INTRODUCTION **4**

II. PROJECT BACKGROUND **4**

III. EXISTING DRAINAGE CONDITION **5**

IV. METHODOLOGY **5**

V. SUMMARY OF RESULTS **7**

APPENDIX

A: LOCATION MAP

B: EXISTING DRAINAGE CONDITION

C: HYDROLOGY MANUAL REFERENCES

D: PRE-/POST DEVELOPMENT ON-/OFF-SITE HYDROLOGIC CALCULATIONS – 2, 5, 10, 25, 50 YEAR EVENTS

E: IMPACT ANALYSIS CALCULATIONS

F: WATER QUALITY CALCULATIONS

G: DRAINAGE MAPS (ON-/OFF-SITE)

H: GEOTECHNICAL REPORT

I. INTRODUCTION

Project 3 American Solar Greenworks is a solar power project located between 75th St. to the west, 70th St. to the east, and between W Ave. H to the south, W Ave. G to the north (see **Location Map, Appendix A**). The property is owned by Silverado Power (referred to as "applicant" for the remainder of this report). The scope of this hydrology report is to analyze the pre-development and post-development hydrological conditions (once the installation of the solar panels is complete) in order determine runoff effects on and off the site. The peak runoff calculations were developed for the 2-, 5-, 10-, 25-, and 50-year storm events. Currently, runoff from approximately 172.9 acres of offsite area enters the 134.6 acre project site from the west, creating a study watershed area of approximately 307.5 acres. Due to the elevated cross section of 80th St., as well as the existence of 2 graded swales located on both sides of the street, some of the westerly portion of the watershed runoff does not make its way onto the site (see **Existing Drainage Condition Appendix B).** The remaining off-site runoff west of the site was added into the on-site runoff areas as shown on the attached Drainage Maps (see **Appendix G**). The majority of the watershed consists of un-developed land.

II. PROJECT BACKGROUND

Due to the predominantly flat nature of the site (average 0.5% longitudinal slope), the project will involve minimal grading for construction of dirt access roads between the proposed arrays of solar panels. The project site currently drains from west to east. The post-development condition will maintain this flow path. The post-development runoff will continue to sheet flow in the pre-development condition in order to avoid disturbance to downstream drainage structures and wildlife. The construction of the solar panel arrays and other miscellaneous site development will be accounted for by increasing the site's impervious percentage from 1% to the Los Angeles County approved value of 10%. Per the LACDPW Flood Control Division, the additional amount of runoff generated by this increase in impervious surface will be collected onsite with the help of 1 reinforced elevated road section that runs north to south near the center of the site (see **On-Site Drainage Map, Appendix G)**. The ponding water will infiltrate in about 3.0 hours (see **Water Quality Calculations, Appendix F**). Additionally, the basin will ensure that the flow rate, volume, velocity, and depth corresponding to the 50-year storm event at the property boundary will only exceed pre-development values by a negligible amount (see **Impact Analysis Calculations, Appendix E**). The placement of this basin within the first half of the site will allow flows to normalize before leaving the site.

III. EXISTING DRAINAGE CONDITION

In order to delineate the existing drainage conditions for the American Solar Greenworks project site and its watershed, USGS and site specific topographic data were reviewed. A watershed boundary was developed for the project site (see **Off-Site Drainage Map, Appendix G)**. A site visit was conducted on June 1, 2012 by Joe Dietz, PE to verify the delineated watersheds and to take site photos of the existing drainage features. A map showing locations where the photos were taken as well as photos identifying typical site drainage conditions are attached under the **Existing Drainage Condition Appendix B** of this report.

Review of the topographic information and results of the site survey found that storm runoff generally sheet flows in an eastern direction. Flow does not seem to concentrate anywhere on the site in any naturally formed channels. There are no signs of erosion due to the presence of vegetation and soils with high infiltration rates.

A Geotechnical Report (see **Appendix H**) was prepared for the site. The report shows site soils consist of silty fine to medium sand with coarse sand. The percolation test performed shows soil infiltration rates of 3 min/in, which is equivalent to 20.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 4.39 in/hr.

IV. METHODOLOGY

HYDROLOGIC CALCULATIONS

To determine the watershed boundaries tributary to the project site, existing USGS and site specific topographic data was reviewed. Hydrologic Calculations for the proposed project site were performed in conformance with the Los Angeles County Hydrology Manual, dated January 2006, utilizing the Modified Rational Method TC Calculator. The Modified Rational Method was used to estimate the runoff flows for each sub-area of the watershed, which were limited to 40 acres (see **Appendix D**). The Modified Rational Method equation relates rainfall intensity, time of concentration, runoff coefficient, and drainage area size to the direct runoff from each drainage sub-area. The TC Calculator along with rainfall intensity maps from the Los Angeles County Hydrology Manual were used to model the various watersheds and determine the peak flows.

Hydrologic Soil number 120 and 124 were used as the soils group for the project site per the Los Angeles County Hydrology Manual, Map 1-H1.66 (see **Appendix C**). Times of concentration for the various sub-areas were calculated by the TC Calculator based on the approximate length and the elevation difference over that length. Lastly, peak flows from each sub-area were summed in order to achieve a total peak runoff for the entire watershed. This approach is conservative due to the fact that it yields a slightly higher peak runoff if compared to an alternative approach which analyzes all sub-areas and utilizes surface routing to generate lag times.

BASIN ROUTING CALCULATIONS

The Modified Puls Routing Method per Chapter 8 of the Los Angeles County Hydrology Manual was used to determine the development's impact on the 50-year storm event flow rates leaving the project site. The method routes the 50-year post-development hydrograph (obtained from the TC Calculator results) through the proposed infiltration basin using storage-elevation and outflow-elevation relationships, along with Continuity Equation 8.1 and Equation 8.2 in a series of time steps. The results are included within **Appendix E** of this report.

FLOOD DEPTH AND VELOCITY CALCULATIONS

To determine the development's impact on the 50-year storm event flood depth and velocity leaving the site, Bently FlowMaster V8i was used to calculate the pre-development and post-development 50-year flood depths and velocities. FlowMaster uses the Manning's Formula to calculate the normal depth and velocity for a given cross-section given information for the slope, peak flow rate, and roughness coefficient for the section. The peak flow rate from the TC Calculator was used for the pre-development condition, while the peak flow rate after basin routing was used for the post-development condition. The results are included within **Appendix E** of this report.

DEBRIS POTENTIAL CALCULATIONS

A debris production rate was calculated for the site using the Debris Production Rate figure for the Antelope Valley from Appendix B of the LACDPW Sedimentation Manual (see **Appendix C**). This rate multiplied by the square mileage of the site provides the debris potential for the site (see **Appendix G**). The site does not produce high levels of debris due to its relatively flat nature. Therefore, no debris protection will be provided for the low levels of debris produced.

V. SUMMARY OF RESULTS

Hydrologic calculations were performed for the pre-/post development conditions. Summary tables and detailed calculations for the 2-, 5-, 10-, 25-, and 50-year storm events showing drainage area size, soil type, storm frequency, flow length, slope, flow rate, burned flow rate, storm volumes, etc., are located in **Appendices D and G** of this report. The pre-development 25-year storm event (including the off-site area) yielded a clean runoff of 21.89 cfs and a storm volume of 6.99 ac-ft. The proposed use of the project site as a solar farm is not expected to significantly change the imperviousness of the site. With the addition of the solar panel arrays and other miscellaneous development, the site's impervious surface was increased to the Los Angeles County approved value of 10%. With this increase in impervious surface, the post-development 25-year storm event (including the off-site area) yielded a clean runoff of 27.82 cfs and a storm volume of 8.89 ac-ft. The additional runoff of 5.93 cfs and the additional storm volume of 1.90 ac-ft represent the delta quantities which require mitigation in order for the pre- and post-development flow rate and storm volume to be the same for the 25-year storm event. The off-site and on-site clean runoffs and storm volumes from the Modified Rational Method TC Calculator are shown in Table 1, 2, and 3 below.

Table 1 – Pre/Post Development Off-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A1	2-YEAR	0.44	0.14
	5-YEAR	0.66	0.21
	10-YEAR	0.81	0.26
	25-YEAR	1.01	0.32
	50-YEAR	1.15	0.37
A2	2-YEAR	1.11	0.35
	5-YEAR	1.64	0.53
	10-YEAR	2.02	0.65
	25-YEAR	2.52	0.80
	50-YEAR	2.86	0.91
A3	2-YEAR	1.25	0.40
	5-YEAR	1.85	0.60
	10-YEAR	2.28	0.73
	25-YEAR	2.84	0.90
	50-YEAR	3.22	1.03
A4	2-YEAR	1.17	0.37
	5-YEAR	1.74	0.56
	10-YEAR	2.14	0.69
	25-YEAR	2.67	0.85
	50-YEAR	3.04	0.97
B1	2-YEAR	0.80	0.26
	5-YEAR	1.19	0.39
	10-YEAR	1.47	0.47
	25-YEAR	1.83	0.58
	50-YEAR	2.08	0.66
B2	2-YEAR	0.74	0.24
	5-YEAR	1.10	0.35
	10-YEAR	1.35	0.43
	25-YEAR	1.69	0.54
	50-YEAR	1.91	0.61

Table 2 – Pre Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A	2-YEAR	0.62	0.20
	5-YEAR	0.92	0.30
	10-YEAR	1.12	0.36
	25-YEAR	1.39	0.45
	50-YEAR	2.16	0.52
	MITIGATION	0.42	0.14
B	2-YEAR	1.08	0.34
	5-YEAR	1.62	0.52
	10-YEAR	1.97	0.64
	25-YEAR	2.43	0.78
	50-YEAR	3.79	0.91
	MITIGATION	0.73	0.24
C	2-YEAR	1.14	0.36
	5-YEAR	1.70	0.55
	10-YEAR	2.07	0.67
	25-YEAR	2.56	0.82
	50-YEAR	3.99	0.95
	MITIGATION	0.77	0.25
D	2-YEAR	0.75	0.24
	5-YEAR	1.13	0.36
	10-YEAR	1.37	0.44
	25-YEAR	1.70	0.55
	50-YEAR	2.65	0.63
	MITIGATION	0.51	0.17
E	2-YEAR	0.56	0.18
	5-YEAR	0.84	0.27
	10-YEAR	1.02	0.33
	25-YEAR	1.25	0.40
	50-YEAR	1.95	0.47
	MITIGATION	0.38	0.12

Table 3 – Post Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)	ΔQ (CFS)	ΔV (AC-FT)
A	2-YEAR	1.01	0.32	0.39	0.12
	5-YEAR	1.51	0.49	0.59	0.19
	10-YEAR	1.84	0.59	0.72	0.23
	25-YEAR	2.27	0.73	0.88	0.28
	50-YEAR	3.17	0.84	1.01	0.32
	MITIGATION	0.68	0.22	0.26	0.08
B	2-YEAR	1.77	0.56	0.69	0.22
	5-YEAR	2.65	0.85	1.03	0.33
	10-YEAR	3.22	1.04	1.25	0.40
	25-YEAR	3.98	1.28	1.55	0.50
	50-YEAR	5.56	1.47	1.77	0.56
	MITIGATION	1.20	0.39	0.47	0.15
C	2-YEAR	1.86	0.59	0.72	0.23
	5-YEAR	2.79	0.90	1.09	0.35
	10-YEAR	3.39	1.09	1.32	0.42
	25-YEAR	4.18	1.34	1.62	0.52
	50-YEAR	5.84	1.55	1.85	0.60
	MITIGATION	1.26	0.41	0.49	0.16
D	2-YEAR	1.23	0.39	0.48	0.15
	5-YEAR	1.85	0.59	0.72	0.23
	10-YEAR	2.25	0.73	0.88	0.29
	25-YEAR	2.78	0.89	1.08	0.34
	50-YEAR	3.88	1.03	1.23	0.40
	MITIGATION	0.84	0.27	0.33	0.10
E	2-YEAR	0.91	0.29	0.35	0.11
	5-YEAR	1.37	0.44	0.53	0.17
	10-YEAR	1.66	0.54	0.64	0.21
	25-YEAR	2.05	0.66	0.80	0.26
	50-YEAR	2.87	0.76	0.92	0.29
	MITIGATION	0.62	0.20	0.24	0.08

Basin routing calculations were performed to determine the post-development 50-year storm event flow rates. Calculations are included within **Appendix E** of this report. After routing through a basin created by a 9 inch road section, the 50-year storm event yielded a clean runoff of 31.64 cfs, which represents a 9.9% increase from the pre-development value of 28.80 cfs. Likewise, the post-development 50-year storm event yielded a flow volume of 8.30 ac-ft after accounting for the ΔV_{25} storage of the infiltration basin. This represents a 3.4% increase over the pre-development value of 8.03 ac-ft. This value is conservative as the proposed basin has storage greater than the ΔV_{25} (see **Appendix** F). For both cases, the post-development condition experiences a negligible change from the pre-development.

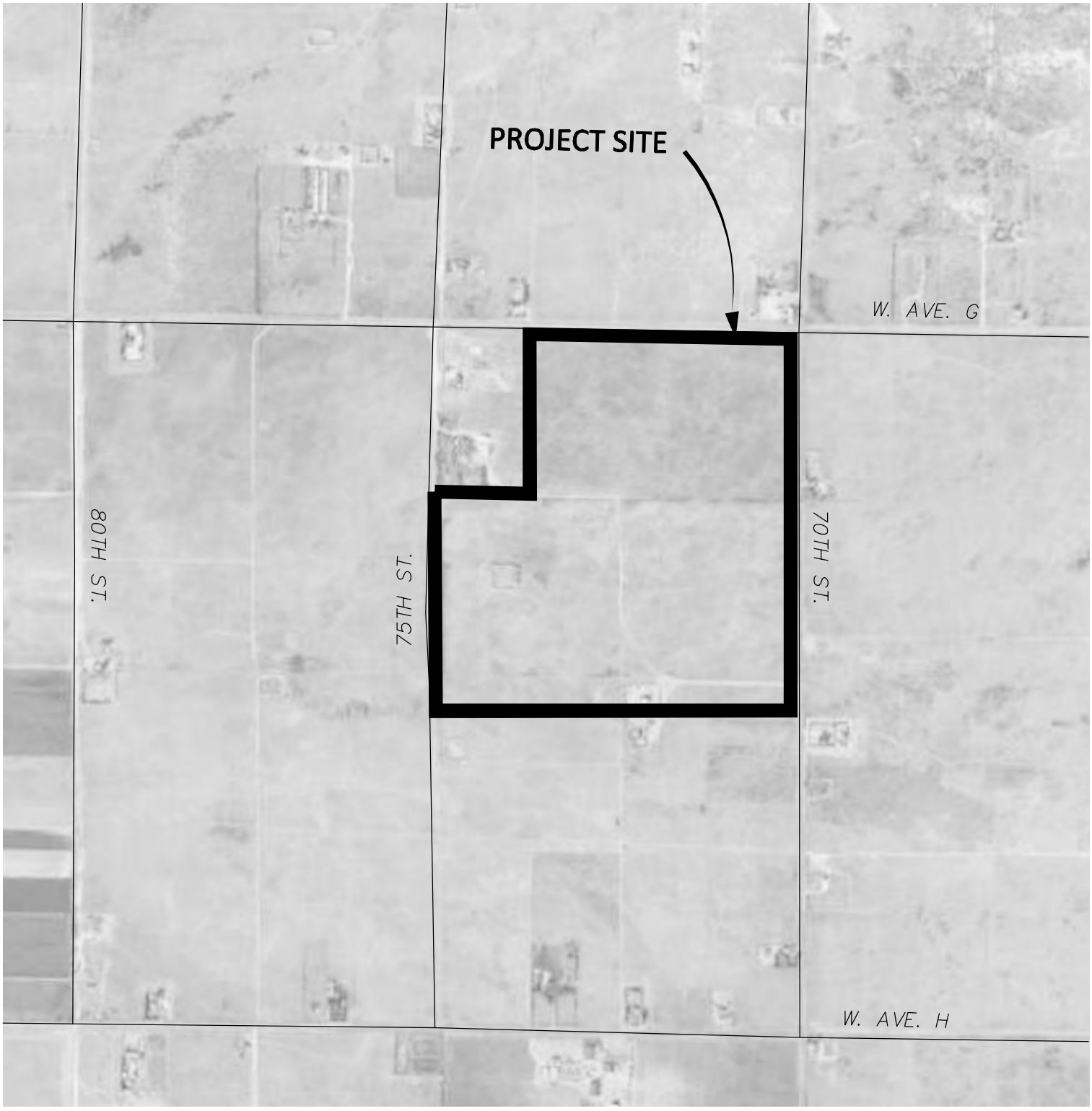
Flood depth and velocity calculations were performed for the 50-year storm event to determine the site's impact. Results are included within **Appendix E** of this report. The pre-development calculations used the peak flow results from the TC Calculator calculations, while the post-development calculations considered the peak flow rate after basin routing. The results yielded a pre-development maximum normal depth of 3 inches and a post-development maximum normal depth of 3 inch. The depth experienced a 4.8% increase overall. Furthermore, the results yielded a pre-development velocity of 0.85 ft/s and a post-development velocity of 0.85 ft/s. This represents a 0.0% increase. For both cases, the post-development condition experiences a negligible change from the pre-development.

As discussed further in the Water Quality Calculations, the peak mitigation flow rate (Q_{PM}) of 4.60 cfs and the mitigation volume (V_M) of 1.49 ac-ft from the post-development condition represent required mitigation quantities (see **Water Quality Calculations, Appendix F**). The LID mitigation measures will be sized to account for the 25-year storm event pre-/post-development delta quantities since they exceed the mitigation quantities.

The proposed infiltration basin was sized to meet the ΔV_{25} of 1.90 ac-ft. The proposed basin will be created by 1 north to south reinforced elevated access road section located near the center of the site. The calculations resulted in a minimum road height of 4.3 inches. Since the basin routing calculations called for a minimum road height of 9 inches, a height of 9 inches governed the design (see **Appendix E and F**). The role of the 9 inch tall reinforced road section is to capture the ΔV_{25} and allow it to infiltrate. In doing so, the whole V_M will be infiltrated and treated by the existing soils. At capacity, additional flow will continue over the road toward the eastern part of the project site, therefore mimicking pre-development sheet flow patterns.

Due to the predominantly flat nature of the site, no points of concentration exist such as natural channels. Therefore, the 624 cubic yards of debris produced (see **Appendix G**) will be spread evenly over the 307.5 acre project site and watershed. This amounts to approximately 0.02 inches of debris depth spread evenly across the 307.5 acres. Since the debris production volume is very small, protections measures will not be implemented at the project site.

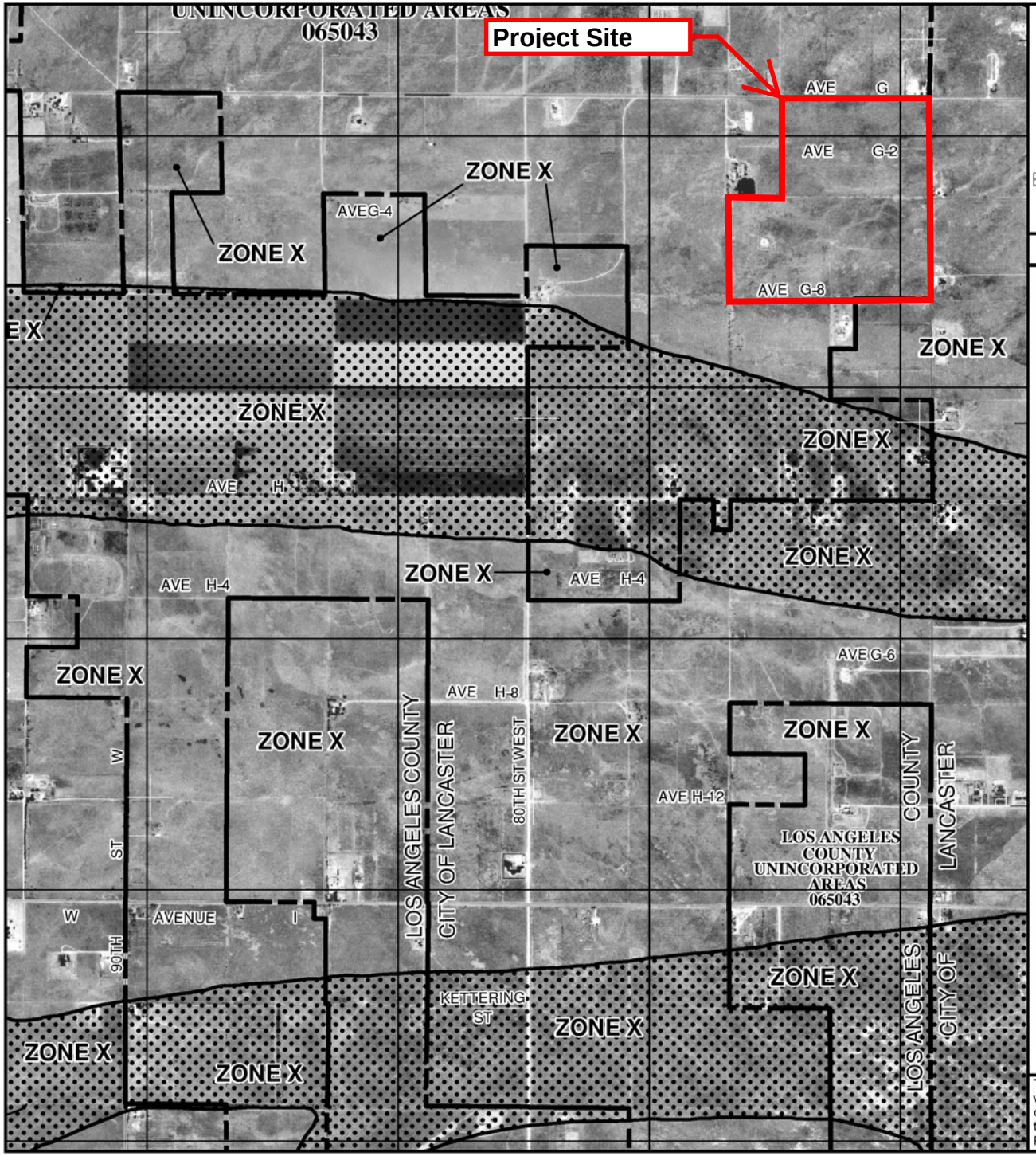
APPENDIX A:
LOCATION MAP



N

TETRA TECH 17885 VON KARMAN AVE., STE. 500 IRVINE, CA 92614-6213 949-809-5000	LOS ANGELES COUNTY	
	PROJECT 3 AMERICAN SOLAR GREENWORKS LOCATION MAP	FIGURE A
Scale:	Date: 9-5-2013	File Location: P:\04546\135-04546-12001\SupportDocs\Calcs\Hydrology\9\FINAL DESIGN\Figure A - Location Map.dwg 09/09/2013 11:05

APPENDIX B:
EXISTING DRAINAGE CONDITION



MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0400F

FIRM

FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 400 OF 2350

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES COUNTY	065043	0400	F
LANCASTER, CITY OF	060672	0400	F
PALMDALE,CITY OF	060144	0400	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06037C0400F

EFFECTIVE DATE
SEPTEMBER 26, 2008

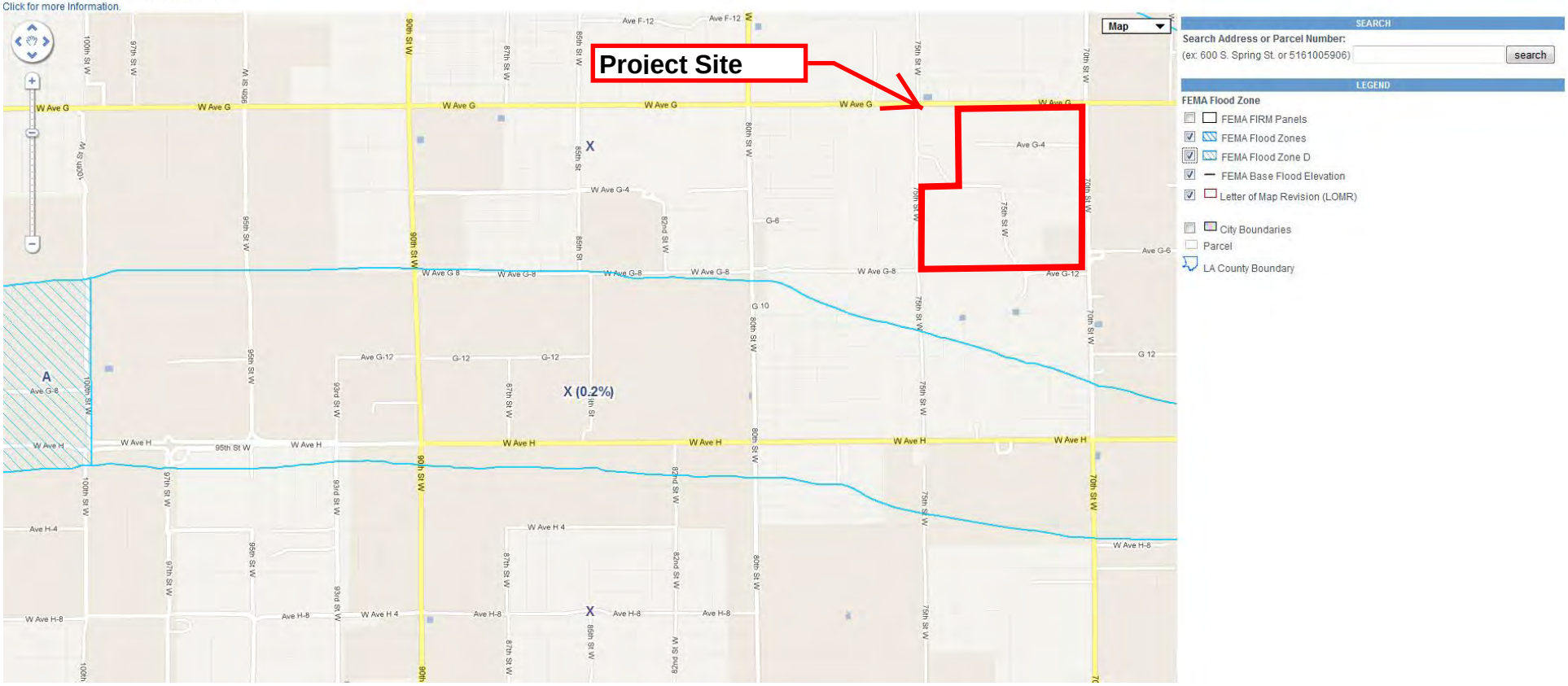
Federal Emergency Management Agency

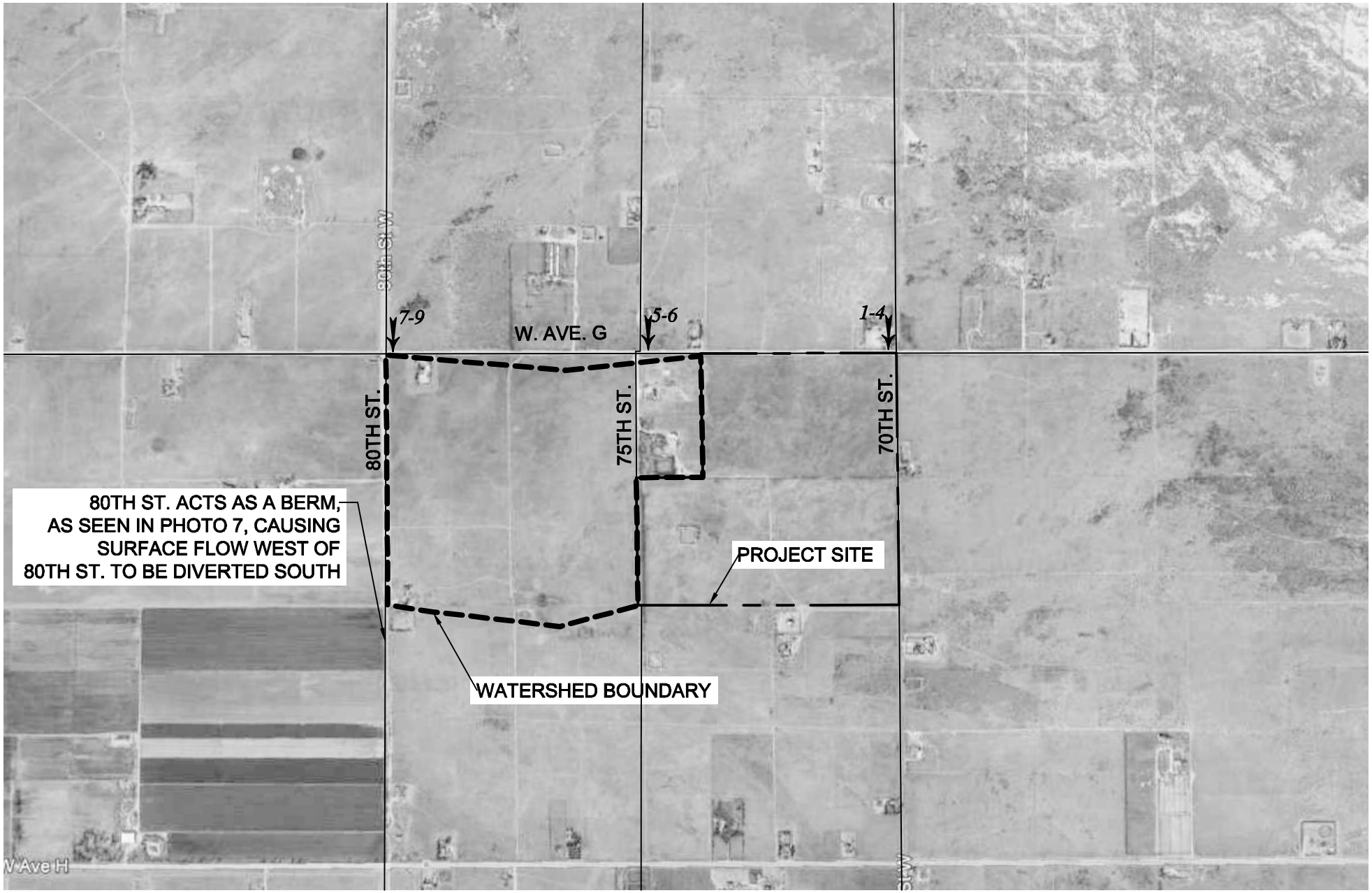
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Los Angeles County Flood Control

Flood Zone Determination Website

Click for more information.





LEGEND

PROJECT BOUNDARY

WATERSHED BOUNDARY

3,4 PHOTO ID AND LOCATION

N

TETRA TECH
17885 VON KARMAN AVE., STE. 500
IRVINE, CA 92614-6213
949-809-5000

Scale: N.T.S.

Date: 9-5-2013

LOS ANGELES COUNTY

PROJECT 3 AMERICAN SOLAR GREENWORKS
EXISTING DRAINAGE STRUCTURES
PHOTO LOCATIONS

FIGURE 1

File Location: P:\04546\135-04546-12001\SupportDocs\Calcs\Hydrology\9\FINAL DESIGN\Photo Locations.dwg 12/03/2013 13:18

Photo 1 (Westward Facing):
View of W. Ave. G Cross-Section

Photo 2 (South-Westward Facing):
View of north-east portion of the project site.

Photo 3 (Southward Facing):
View of 70th St. Cross-Section.

Photo 4 (South-Westward Facing):
View of north-east portion of the project site.

Photo 5 (Southward Facing):
View of 75th St. and W. Ave. G Cross-Section.
View of north-east portion of the watershed.
Majority of the watershed experiences a typical sheet flow condition.

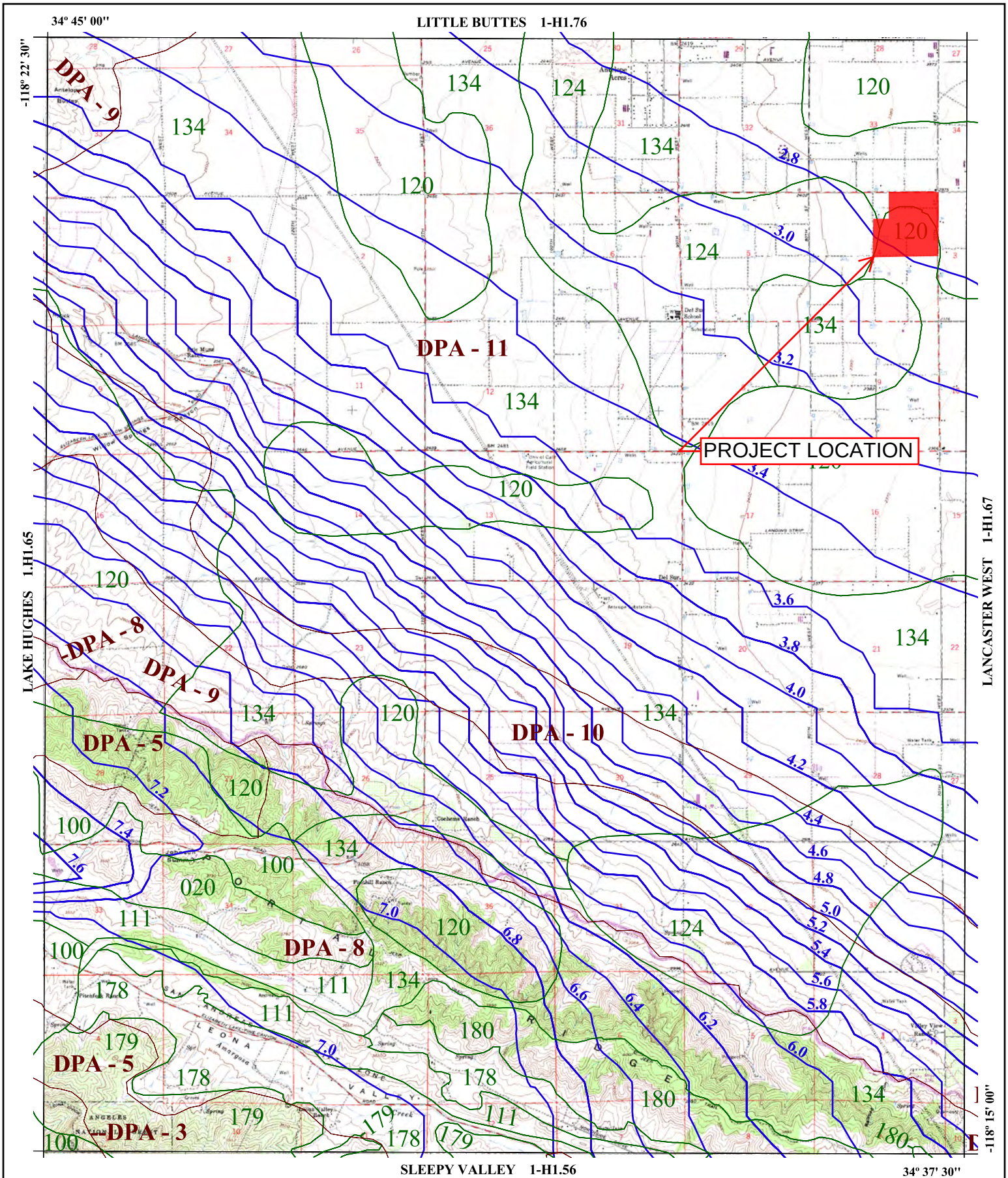
Photo 6 (South-Westward Facing):
View of north-east portion of the watershed.
Majority of the watershed experiences a typical sheet flow condition.

Photo 7 (Southward Facing):
View of 80th St. Cross-Section

Photo 8 (South-Eastward Facing):
View of north-west portion of the watershed.
Majority of the watershed experiences a typical sheet flow condition.

Photo 9 (Eastward Facing):
View W. Ave. G Cross-Section

APPENDIX C:
HYDROLOGY MANUAL REFERENCES



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878

10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

DEL SUR
50-YEAR 24-HOUR ISOHYET

1-H1.66

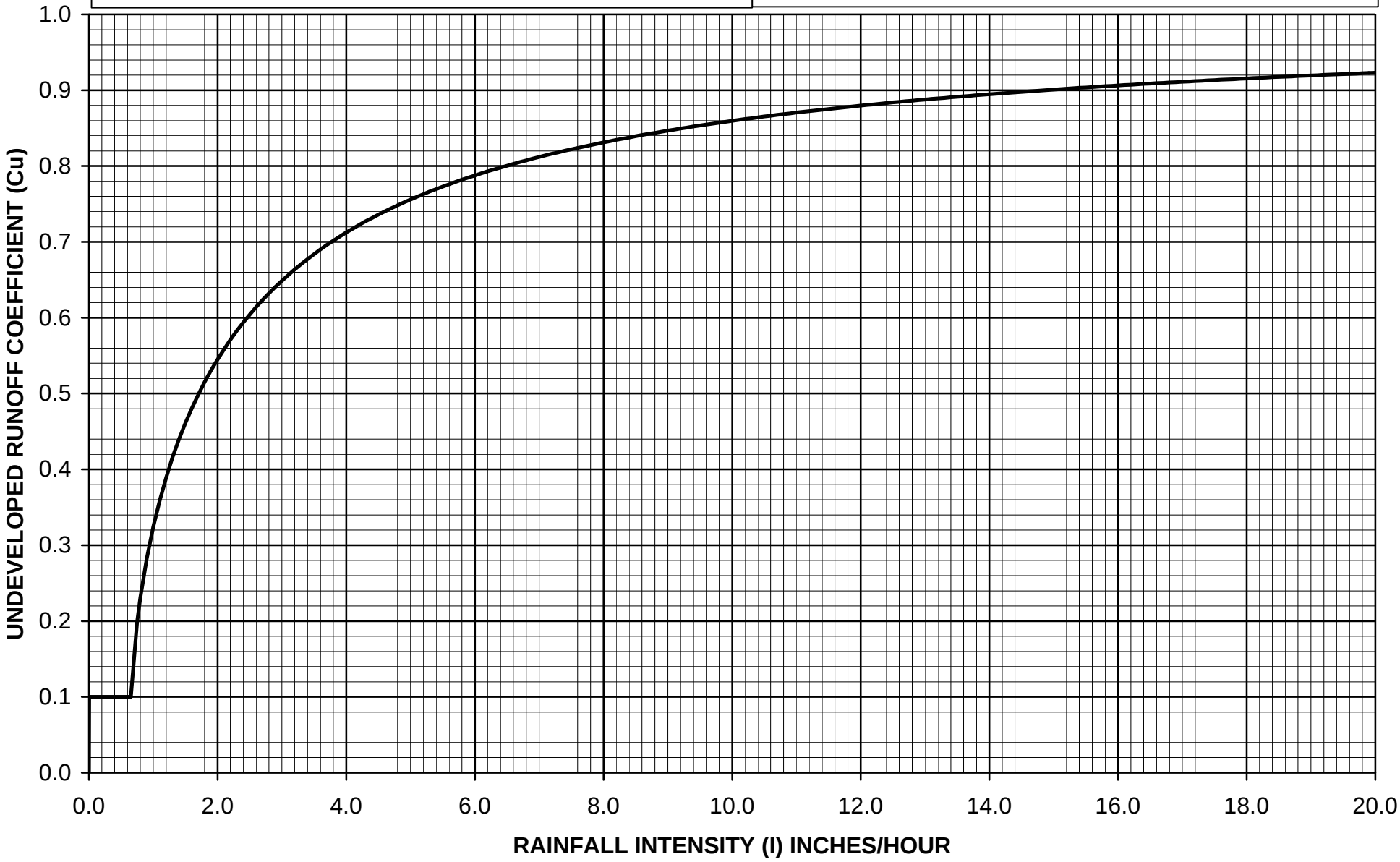
LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 120

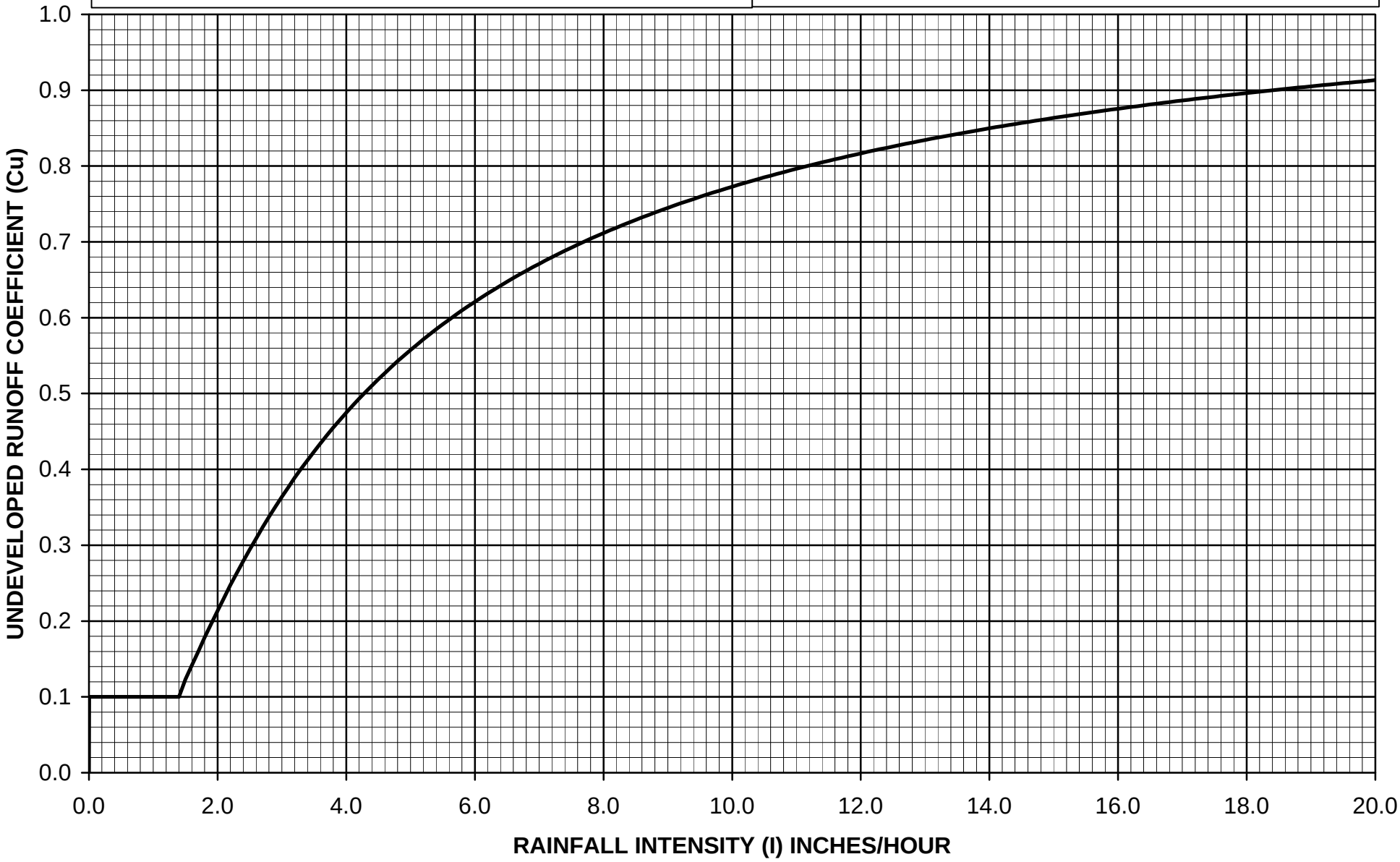


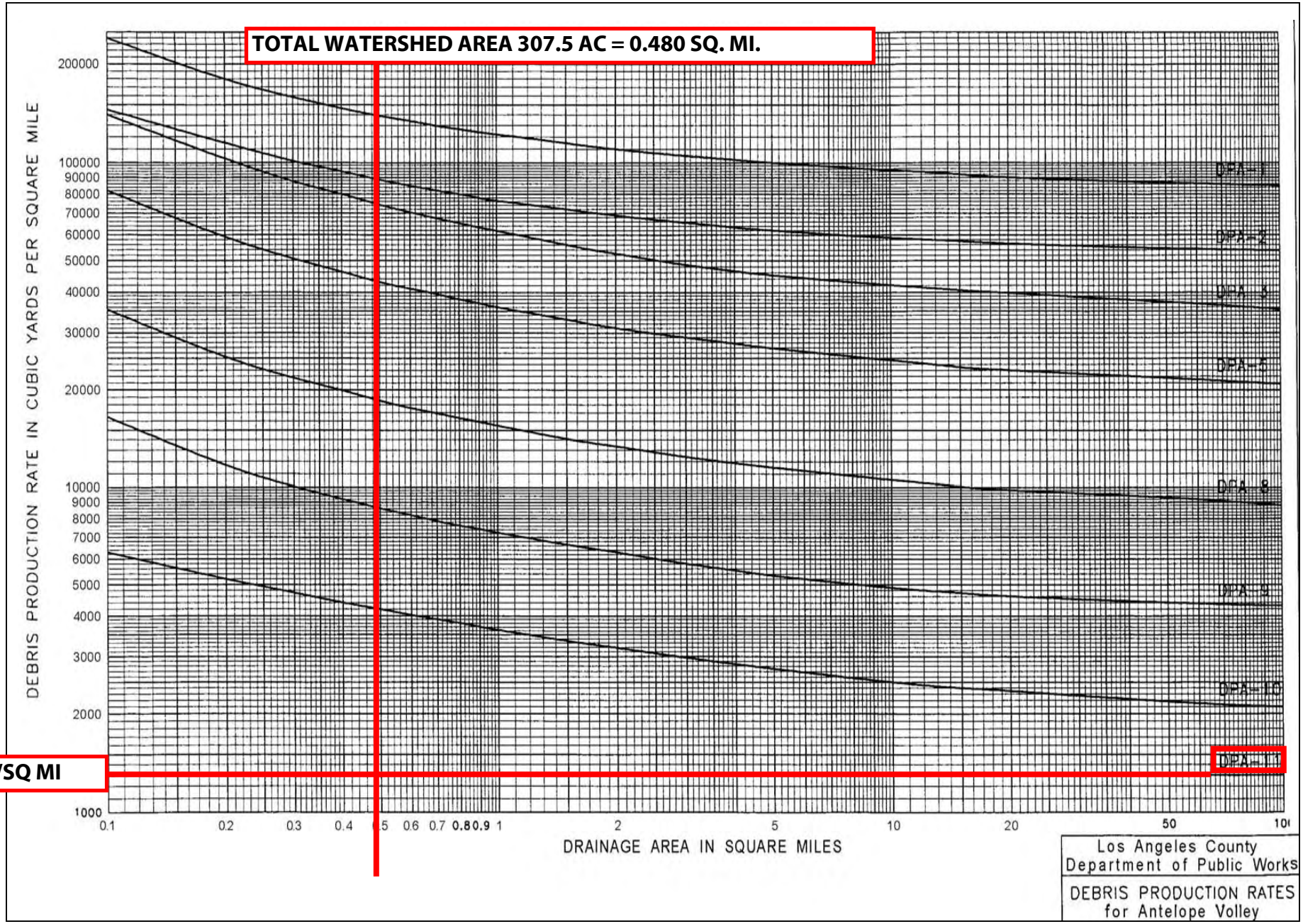
$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 124



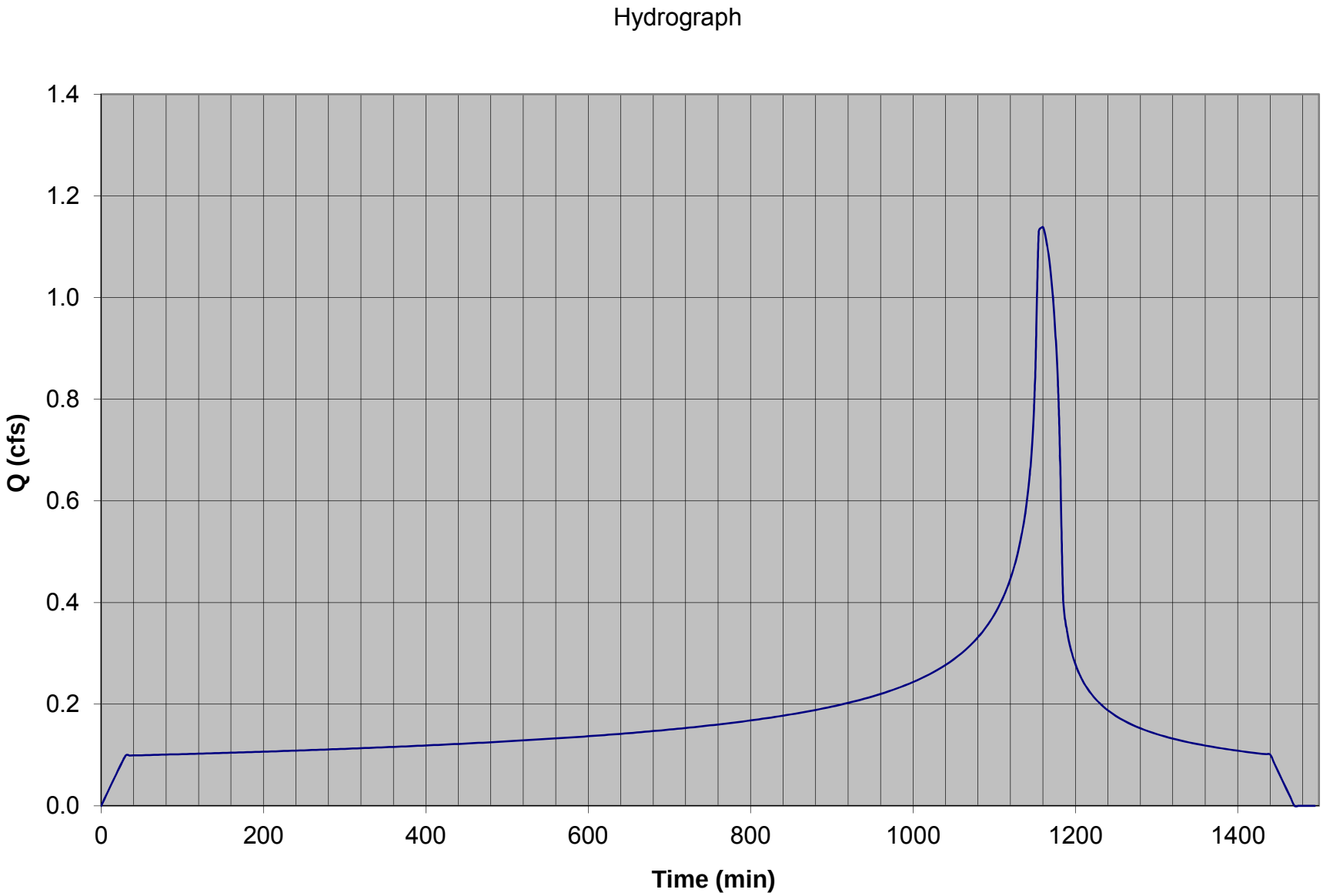

TOTAL WATERSHED AREA 307.5 AC = 0.480 SQ. MI.
1,300 CY/SQ MI
DEBRIS PRODUCTION RATE IN CUBIC YARDS PER SQUARE MILE
200000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
DPA-1
DPA-2
DPA-3
DPA-5
DPA-8
DPA-9
DPA-10
DPA-11
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
2
5
10
20
50
DRAINAGE AREA IN SQUARE MILES
Los Angeles County
Department of Public Works
DEBRIS PRODUCTION RATES
for Antelope Volley

APPENDIX D:
PRE-/POST DEVELOPMENT ON-/OFF-SITE HYDROLOGIC CALCULATIONS – 2, 5, 10, 25, 50 YEAR EVENTS

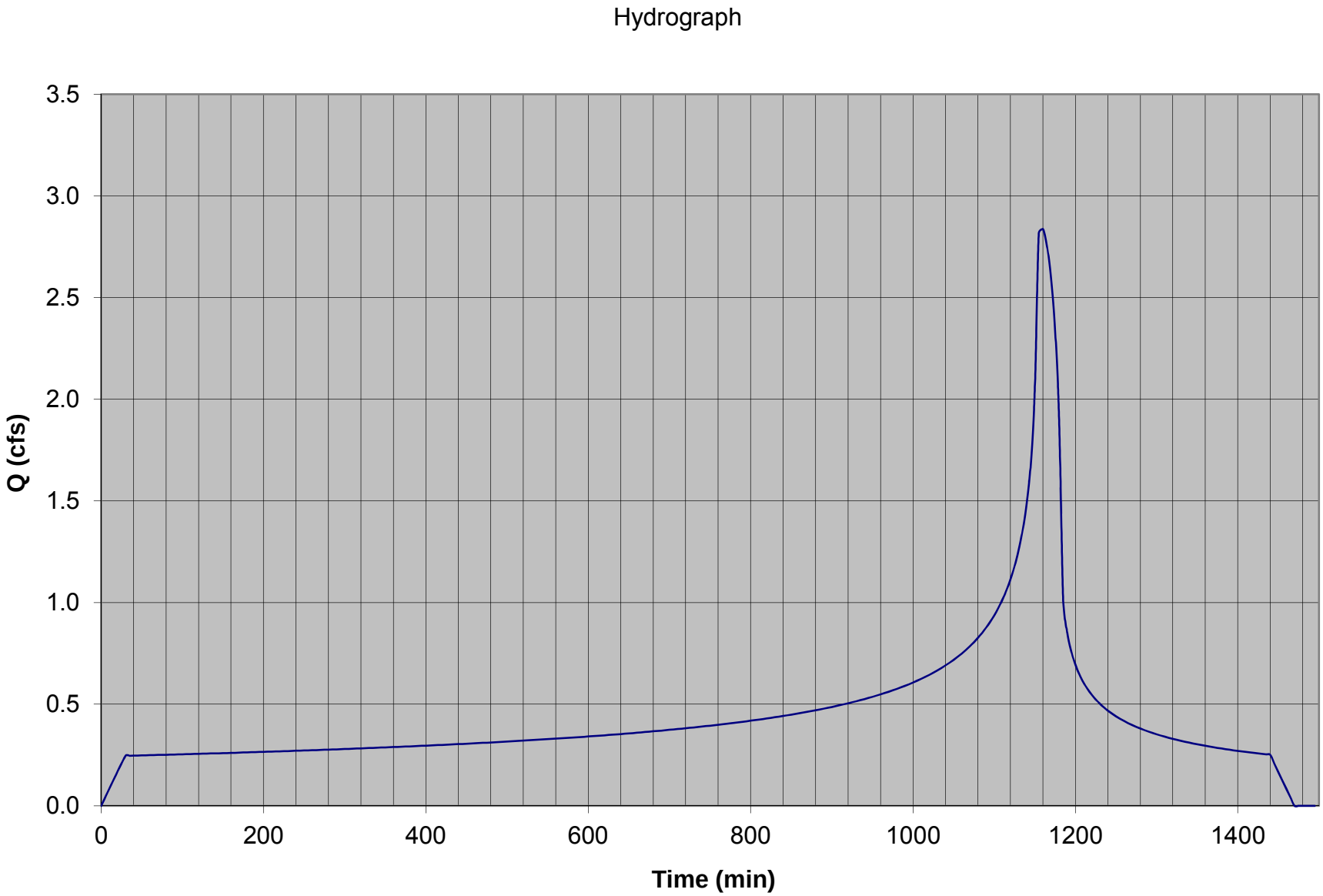
OFF-SITE PRE-/POST DEVELOPMENT HYDROLOGIC CALCULATIONS

OFF-SITE HYDROLOGY																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 3	A1	13.93	0.01	2	124	412	0.0049	1.1	30	0.29	0.1	0.11	0.44	0.34	0.73	0.14
Project 3	A2	34.71	0.01	2	124	946	0.0042	1.1	30	0.29	0.1	0.11	1.11	0.34	1.81	0.35
Project 3	A3	39.06	0.01	2	124	912	0.0055	1.1	30	0.29	0.1	0.11	1.25	0.34	2.04	0.40
Project 3	A4	36.79	0.01	2	124	350	0.0029	1.1	30	0.29	0.1	0.11	1.17	0.34	1.92	0.37
Project 3	B1	25.20	0.01	2	124	1373	0.0051	1.1	30	0.29	0.1	0.11	0.80	0.34	1.32	0.26
Project 3	B2	23.21	0.01	2	124	1307	0.0046	1.1	30	0.29	0.1	0.11	0.74	0.34	1.21	0.24
Project 3	A1	13.93	0.01	5	124	412	0.0049	1.7	30	0.43	0.1	0.11	0.66	0.34	1.13	0.21
Project 3	A2	34.71	0.01	5	124	946	0.0042	1.7	30	0.43	0.1	0.11	1.64	0.34	2.82	0.53
Project 3	A3	39.06	0.01	5	124	912	0.0055	1.7	30	0.43	0.1	0.11	1.85	0.34	3.18	0.60
Project 3	A4	36.79	0.01	5	124	350	0.0029	1.7	30	0.43	0.1	0.11	1.74	0.34	2.99	0.56
Project 3	B1	25.20	0.01	5	124	1373	0.0051	1.7	30	0.43	0.1	0.11	1.19	0.34	2.05	0.39
Project 3	B2	23.21	0.01	5	124	1307	0.0046	1.7	30	0.43	0.1	0.11	1.10	0.34	1.89	0.35
Project 3	A1	13.93	0.01	10	124	412	0.0049	2.1	30	0.53	0.1	0.11	0.81	0.34	1.43	0.26
Project 3	A2	34.71	0.01	10	124	946	0.0042	2.1	30	0.53	0.1	0.11	2.02	0.34	3.57	0.65
Project 3	A3	39.06	0.01	10	124	912	0.0055	2.1	30	0.53	0.1	0.11	2.28	0.34	4.01	0.73
Project 3	A4	36.79	0.01	10	124	350	0.0029	2.1	30	0.53	0.1	0.11	2.14	0.34	3.78	0.69
Project 3	B1	25.20	0.01	10	124	1373	0.0051	2.1	30	0.53	0.1	0.11	1.47	0.34	2.59	0.47
Project 3	B2	23.21	0.01	10	124	1307	0.0046	2.1	30	0.53	0.1	0.11	1.35	0.34	2.39	0.43
Project 3	A1	13.93	0.01	25	124	412	0.0049	2.6	30	0.66	0.1	0.11	1.01	0.34	1.83	0.32
Project 3	A2	34.71	0.01	25	124	946	0.0042	2.6	30	0.66	0.1	0.11	2.52	0.34	4.55	0.80
Project 3	A3	39.06	0.01	25	124	912	0.0055	2.6	30	0.66	0.1	0.11	2.84	0.34	5.12	0.90
Project 3	A4	36.79	0.01	25	124	350	0.0029	2.6	30	0.66	0.1	0.11	2.67	0.34	4.83	0.85
Project 3	B1	25.20	0.01	25	124	1373	0.0051	2.6	30	0.66	0.1	0.11	1.83	0.34	3.31	0.58
Project 3	B2	23.21	0.01	25	124	1307	0.0046	2.6	30	0.66	0.1	0.11	1.69	0.34	3.04	0.54
Project 3	A1	13.93	0.01	50	124	412	0.0049	2.9	30	0.75	0.1	0.11	1.15	0.34	2.11	0.37
Project 3	A2	34.71	0.01	50	124	946	0.0042	2.9	30	0.75	0.1	0.11	2.86	0.34	5.25	0.91
Project 3	A3	39.06	0.01	50	124	912	0.0055	2.9	30	0.75	0.1	0.11	3.22	0.34	5.90	1.03
Project 3	A4	36.79	0.01	50	124	350	0.0029	2.9	30	0.75	0.1	0.11	3.04	0.34	5.56	0.97
Project 3	B1	25.20	0.01	50	124	1373	0.0051	2.9	30	0.75	0.1	0.11	2.08	0.34	3.81	0.66
Project 3	B2	23.21	0.01	50	124	1307	0.0046	2.9	30	0.75	0.1	0.11	1.91	0.34	3.51	0.61

DRAINAGE AREA A1 50-YEAR STORM EVENT



DRAINAGE AREA A2 50-YEAR STORM EVENT



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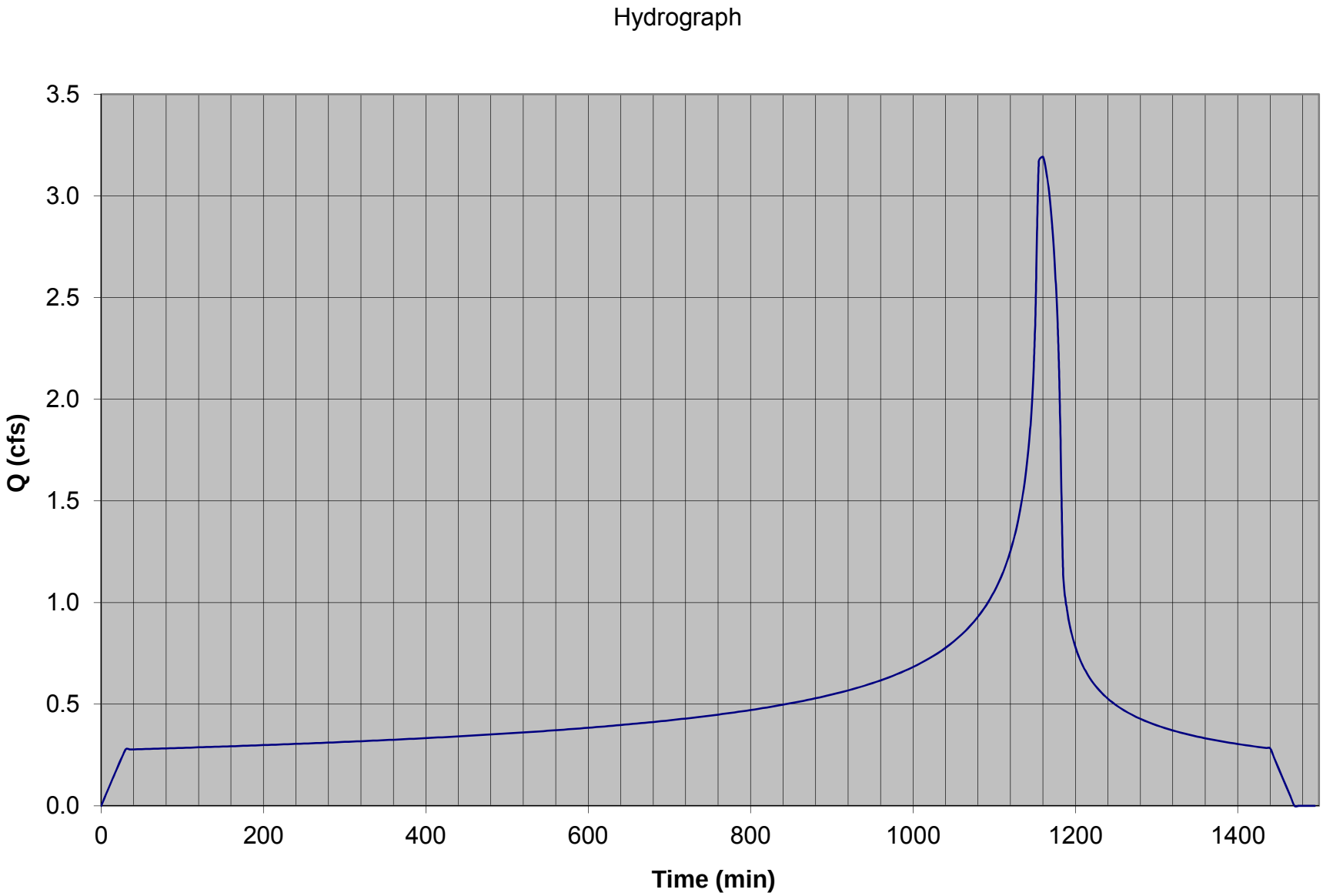

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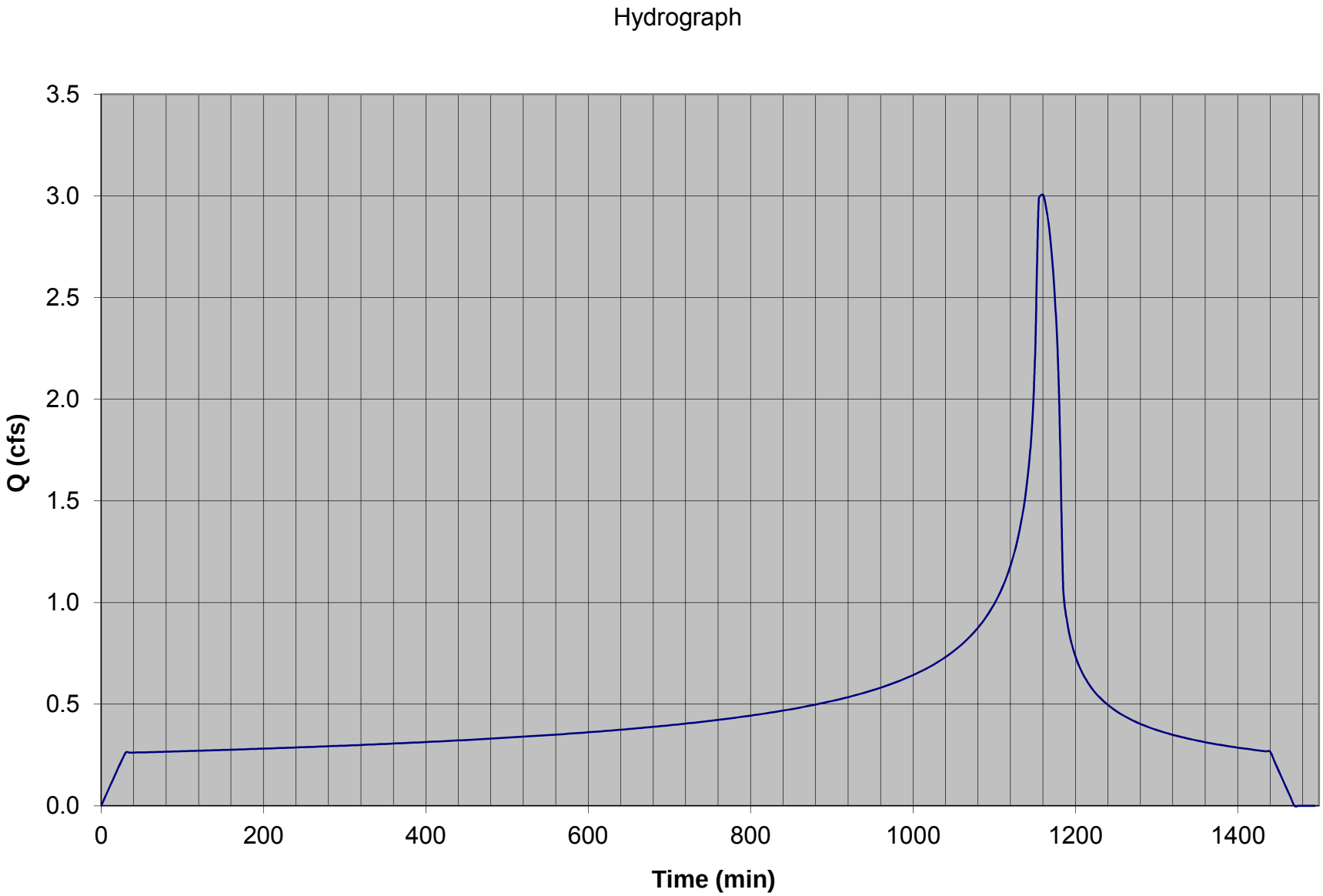

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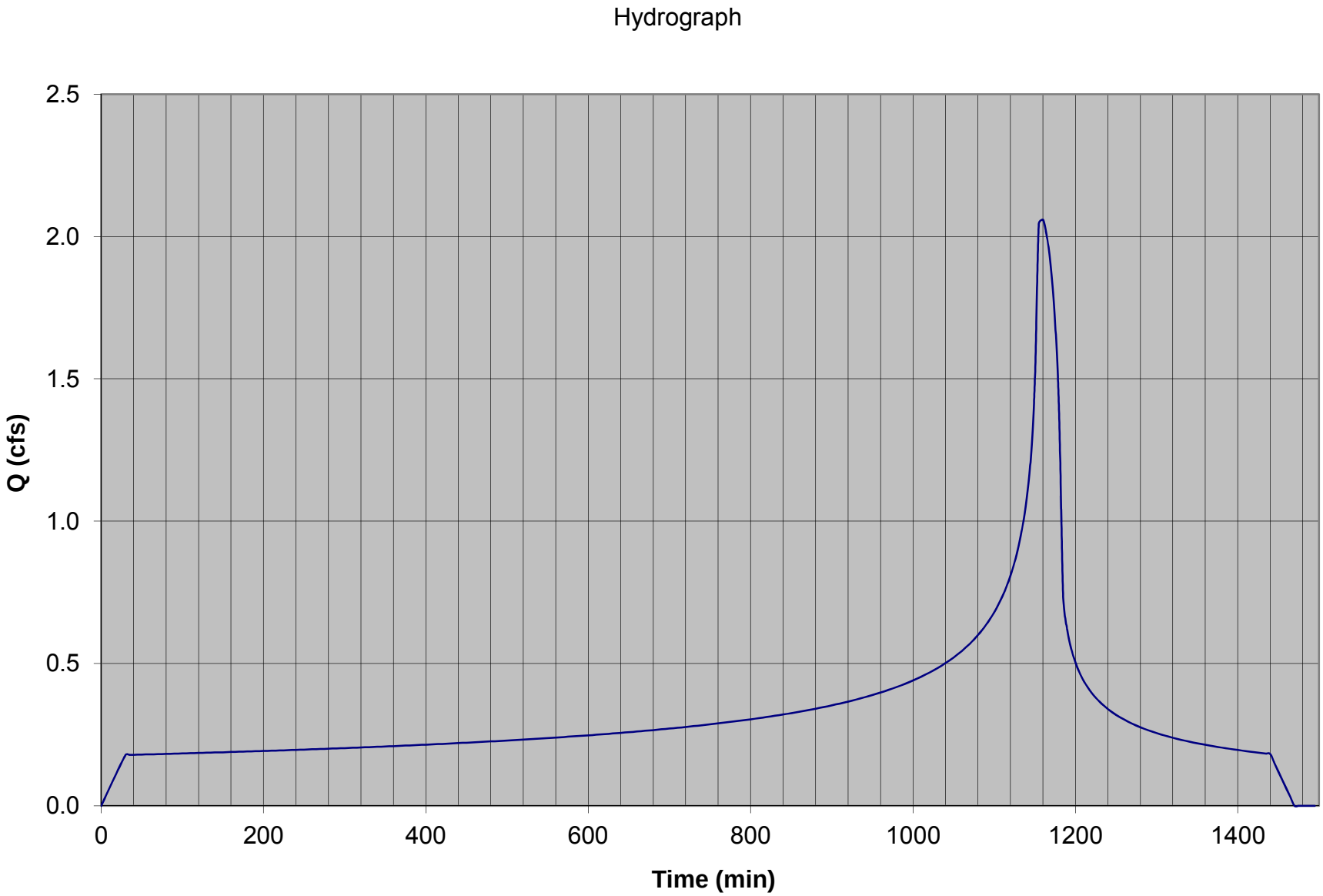

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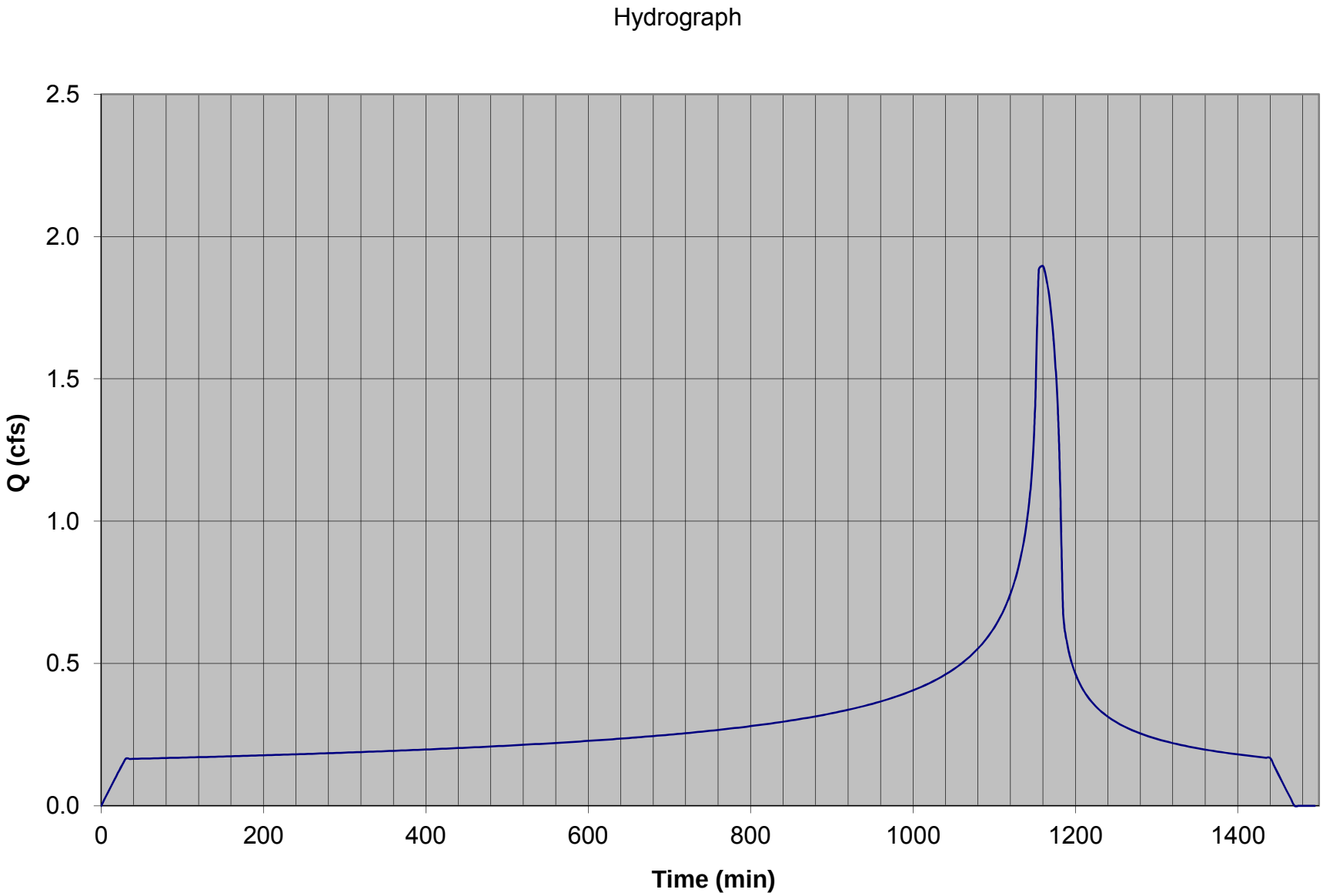
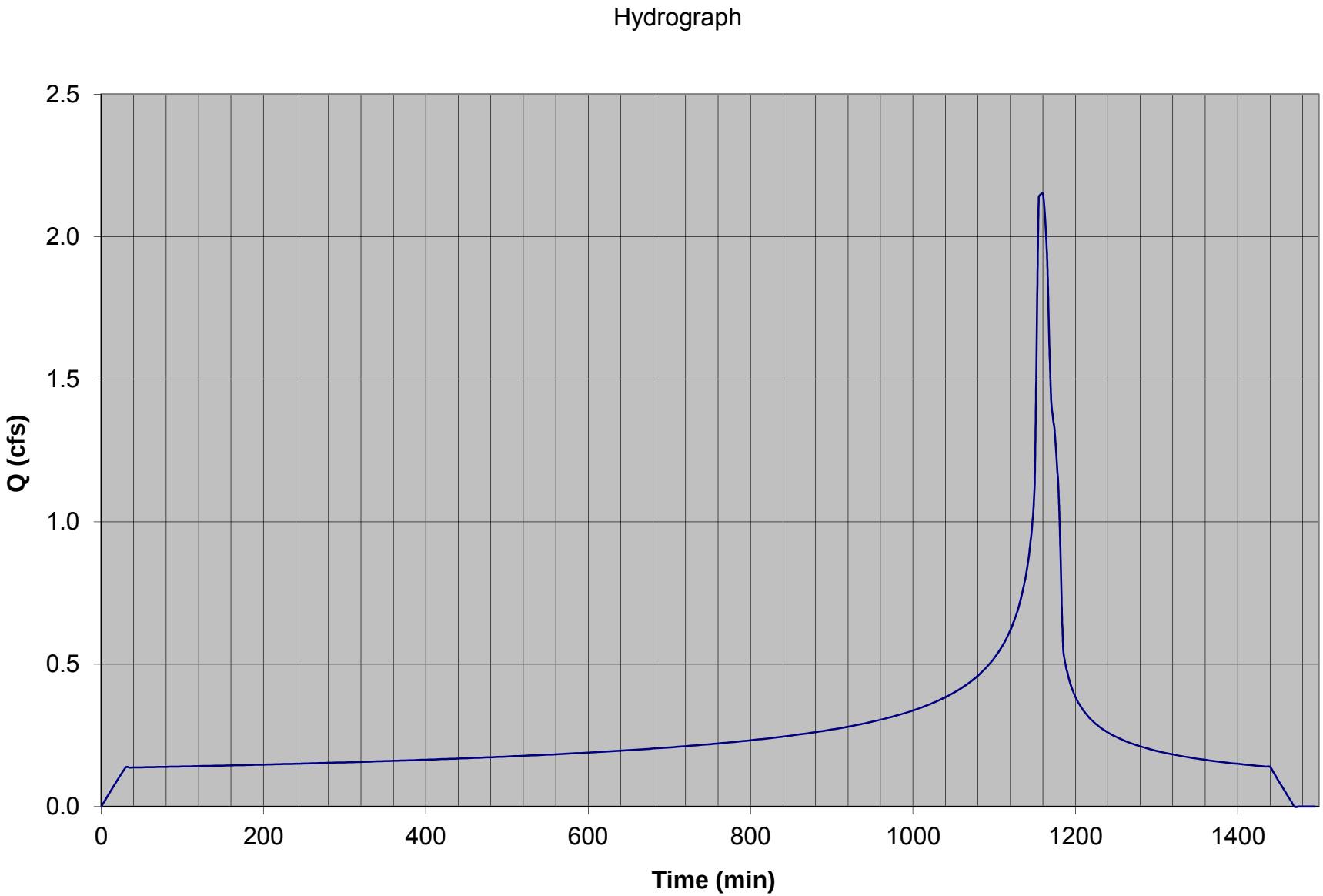


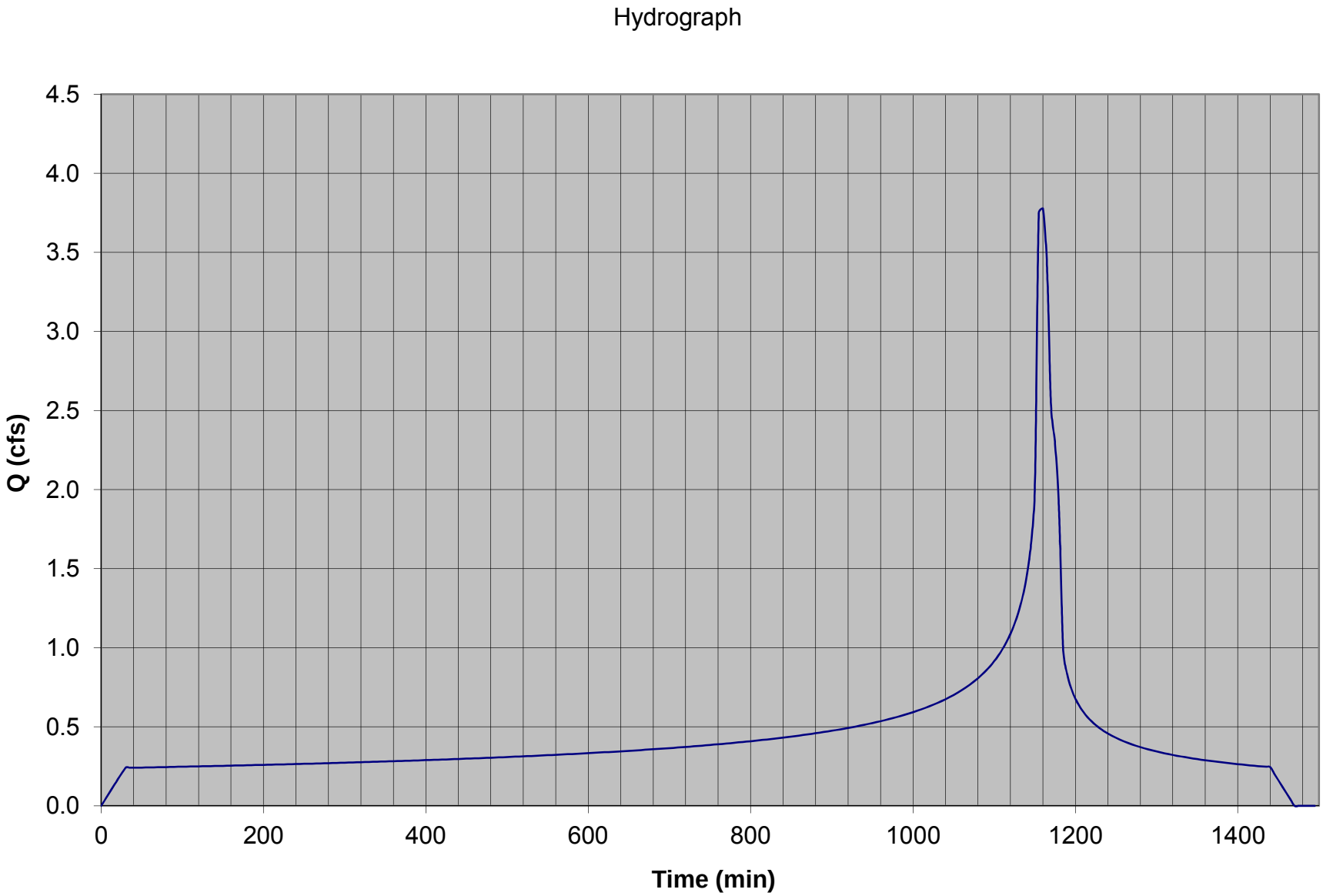
ON-SITE PRE-DEVELOPMENT HYDROLOGIC CALCULATIONS

ON-SITE HYDROLOGY (PRE DEVELOPMENT)																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 3	A	20.0	0.01	2	120	1158	0.0065	1.1	30	0.28	0.10	0.11	0.62	0.34	1.00	0.20
Project 3	B	35.1	0.01	2	120	835	0.0048	1.1	30	0.28	0.10	0.11	1.08	0.34	1.76	0.34
Project 3	C	36.9	0.01	2	120	1211	0.0037	1.1	30	0.28	0.10	0.11	1.14	0.34	1.85	0.36
Project 3	D	24.5	0.01	2	120	1240	0.0044	1.1	30	0.28	0.10	0.11	0.75	0.34	1.23	0.24
Project 3	E	18.1	0.01	2	120	1489	0.0037	1.1	30	0.28	0.10	0.11	0.56	0.34	0.91	0.18
Project 3	A	20.0	0.01	5	120	1158	0.0065	1.6	30	0.42	0.10	0.11	0.92	0.34	1.59	0.30
Project 3	B	35.1	0.01	5	120	835	0.0048	1.6	30	0.42	0.10	0.11	1.62	0.34	2.78	0.52
Project 3	C	36.9	0.01	5	120	1211	0.0037	1.6	30	0.42	0.10	0.11	1.70	0.34	2.92	0.55
Project 3	D	24.5	0.01	5	120	1240	0.0044	1.6	30	0.42	0.10	0.11	1.13	0.34	1.94	0.36
Project 3	E	18.1	0.01	5	120	1489	0.0037	1.6	30	0.42	0.10	0.11	0.84	0.34	1.43	0.27
Project 3	A	20.0	0.01	10	120	1158	0.0065	2.0	30	0.51	0.10	0.11	1.12	0.34	1.97	0.36
Project 3	B	35.1	0.01	10	120	835	0.0048	2.0	30	0.51	0.10	0.11	1.97	0.34	3.46	0.64
Project 3	C	36.9	0.01	10	120	1211	0.0037	2.0	30	0.51	0.10	0.11	2.07	0.34	3.63	0.67
Project 3	D	24.5	0.01	10	120	1240	0.0044	2.0	30	0.51	0.10	0.11	1.37	0.34	2.41	0.44
Project 3	E	18.1	0.01	10	120	1489	0.0037	2.0	30	0.51	0.10	0.11	1.02	0.34	1.78	0.33
Project 3	A	20.0	0.01	25	120	1158	0.0065	2.5	30	0.63	0.10	0.11	1.39	0.34	2.49	0.45
Project 3	B	35.1	0.01	25	120	835	0.0048	2.5	30	0.63	0.10	0.11	2.43	0.34	4.37	0.78
Project 3	C	36.9	0.01	25	120	1211	0.0037	2.5	30	0.63	0.10	0.11	2.56	0.34	4.60	0.82
Project 3	D	24.5	0.01	25	120	1240	0.0044	2.5	30	0.63	0.10	0.11	1.70	0.34	3.05	0.55
Project 3	E	18.1	0.01	25	120	1489	0.0037	2.5	30	0.63	0.10	0.11	1.25	0.34	2.26	0.40
Project 3	A	20.0	0.01	50	120	1158	0.0065	2.8	30	0.72	0.14	0.15	2.16	0.34	3.41	0.52
Project 3	B	35.1	0.01	50	120	835	0.0048	2.8	30	0.72	0.14	0.15	3.79	0.34	5.98	0.91
Project 3	C	36.9	0.01	50	120	1211	0.0037	2.8	30	0.72	0.14	0.15	3.99	0.34	6.29	0.95
Project 3	D	24.5	0.01	50	120	1240	0.0044	2.8	30	0.72	0.14	0.15	2.65	0.34	4.17	0.63
Project 3	E	18.1	0.01	50	120	1489	0.0037	2.8	30	0.72	0.14	0.15	1.95	0.34	3.08	0.47
Project 3	A	20.0	0.01	MIT.	120	1158	0.0065	0.75	30	0.19	0.10	0.11	0.42	0.34	0.65	0.14
Project 3	B	35.1	0.01	MIT.	120	835	0.0048	0.75	30	0.19	0.10	0.11	0.73	0.34	1.13	0.24
Project 3	C	36.9	0.01	MIT.	120	1211	0.0037	0.75	30	0.19	0.10	0.11	0.77	0.34	1.19	0.25
Project 3	D	24.5	0.01	MIT.	120	1240	0.0044	0.75	30	0.19	0.10	0.11	0.51	0.34	0.79	0.17
Project 3	E	18.1	0.01	MIT.	120	1489	0.0037	0.75	30	0.19	0.10	0.11	0.38	0.34	0.58	0.12

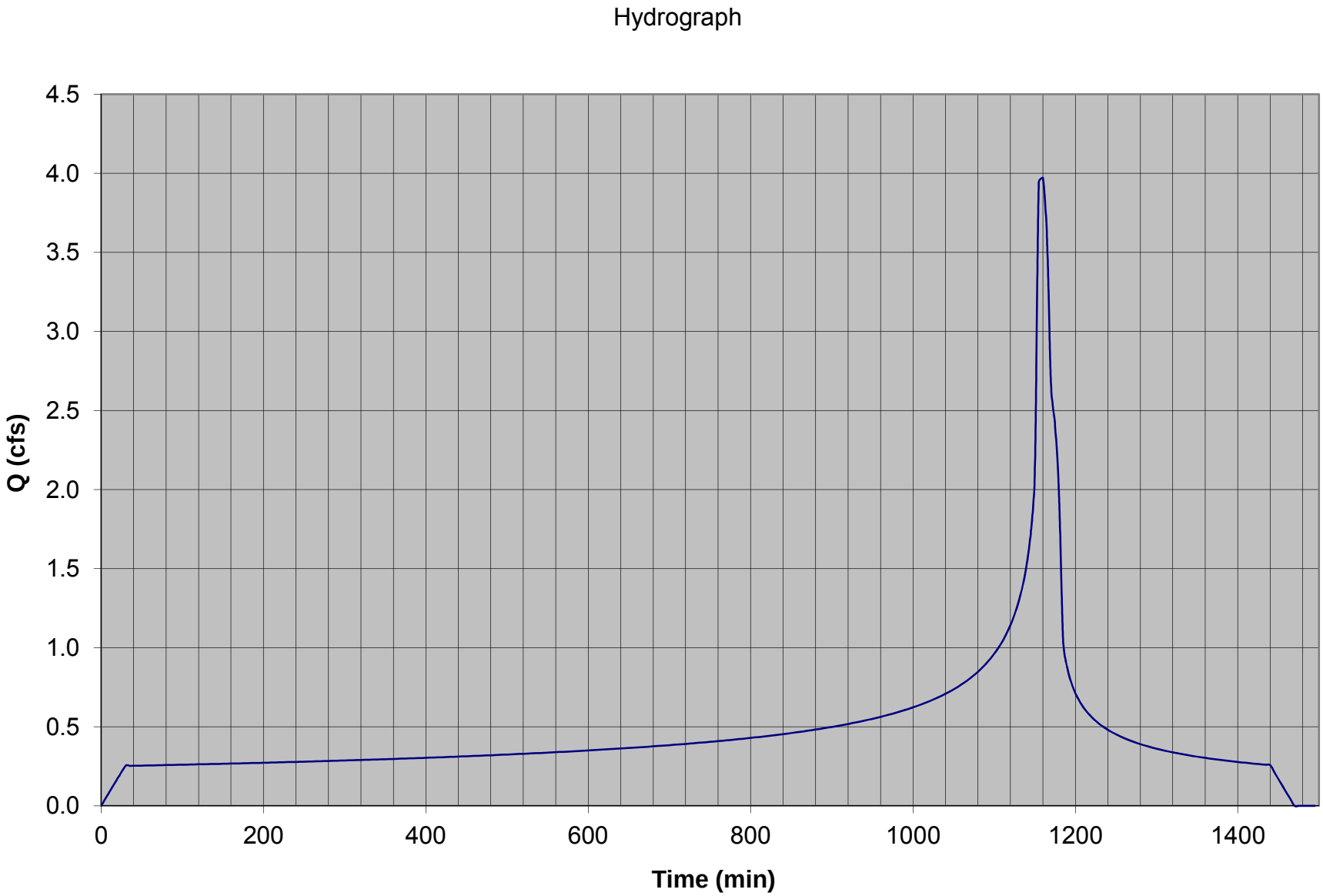
DRAINAGE AREA A 50-YEAR STORM EVENT



DRAINAGE AREA B 50-YEAR STORM EVENT



DRAINAGE AREA C 50-YEAR STORM EVENT



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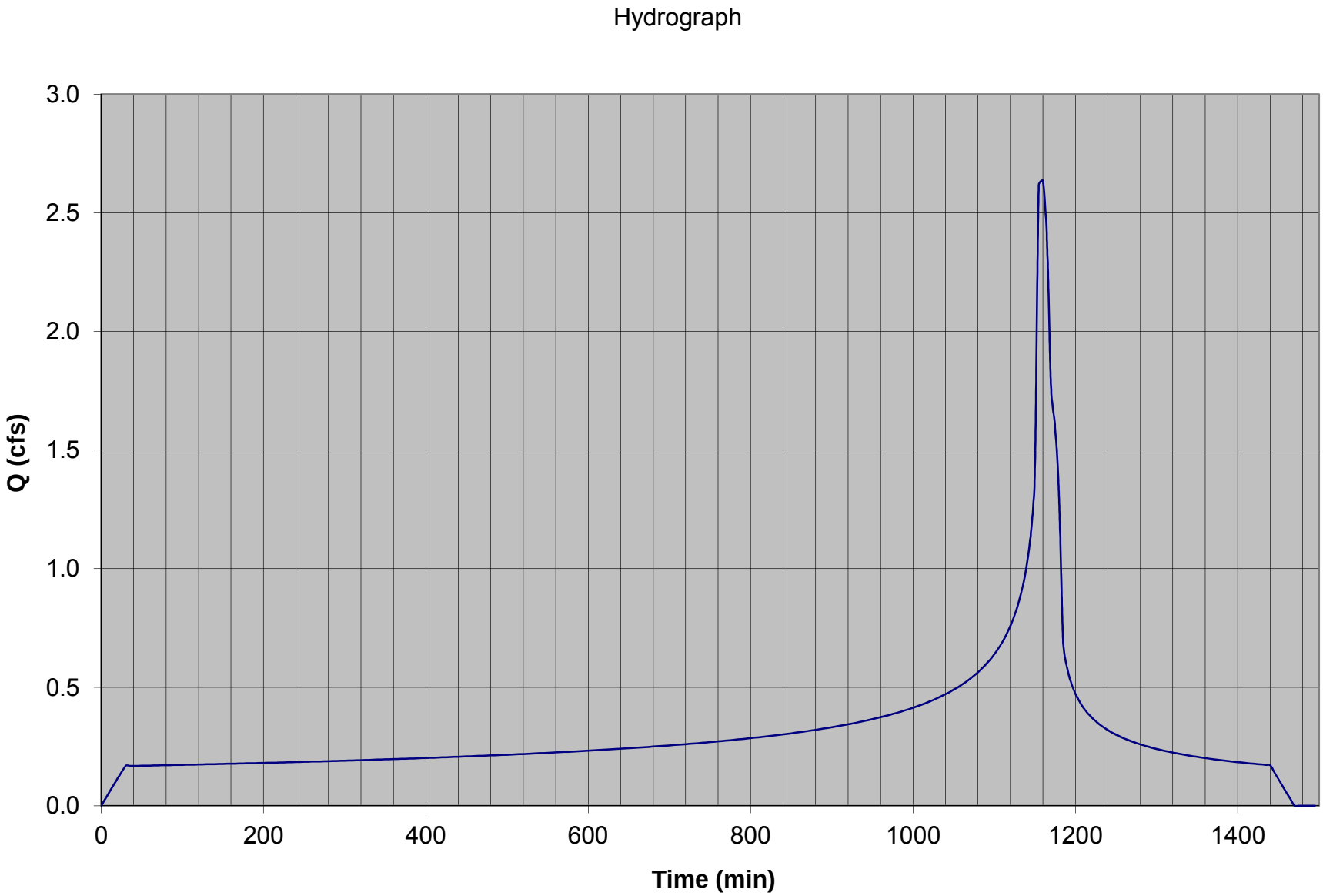
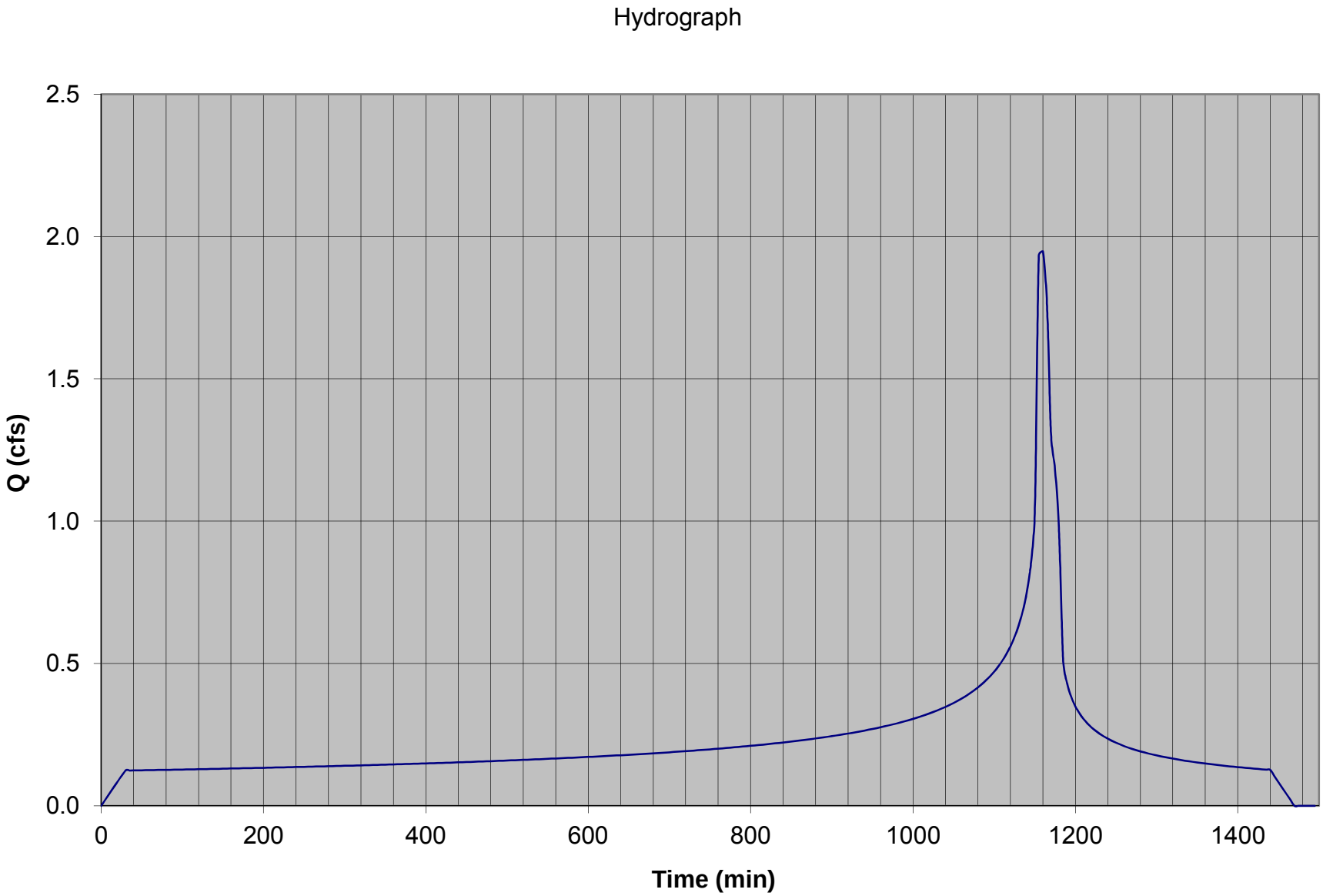


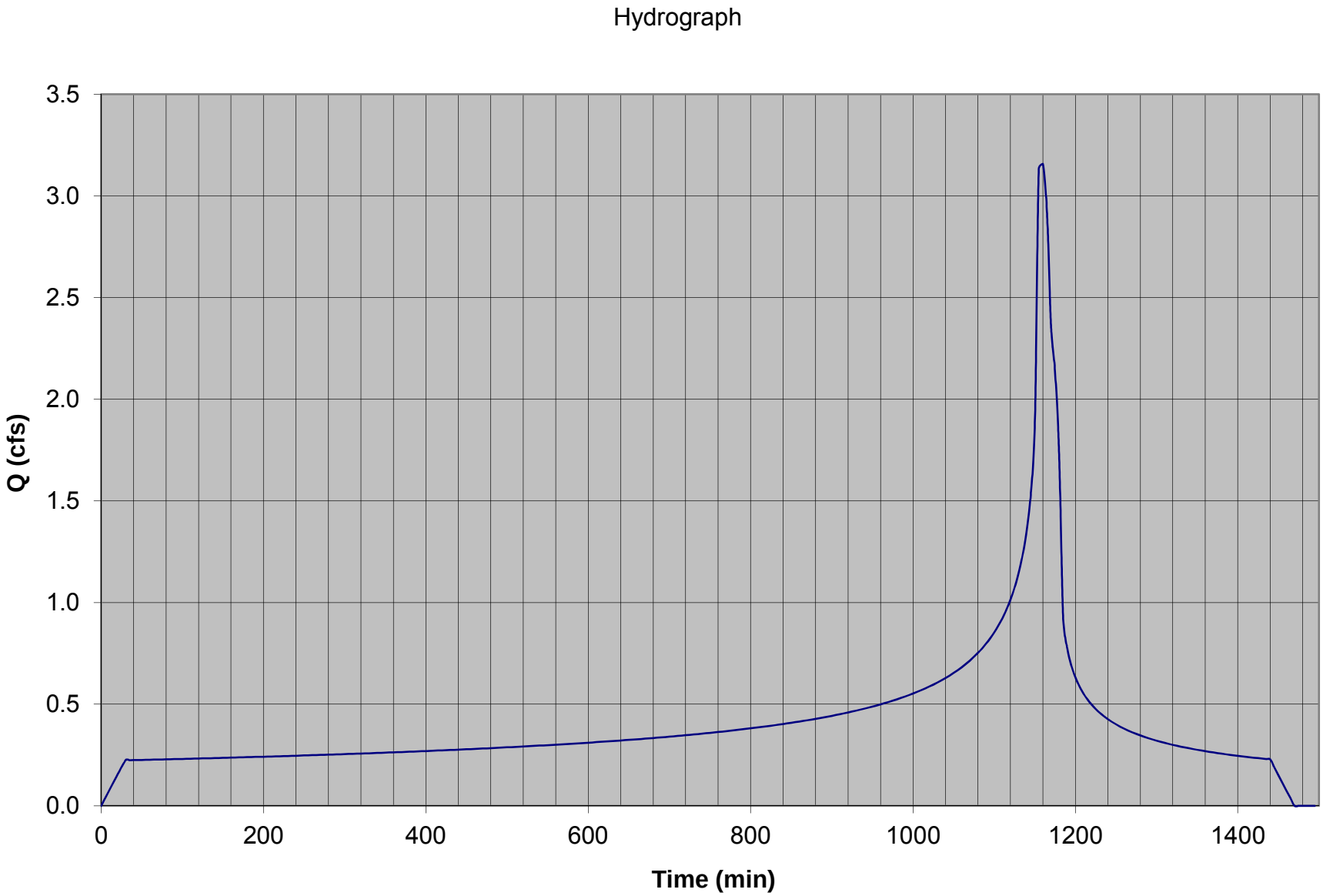
DRAINAGE AREA E 50-YEAR STORM EVENT



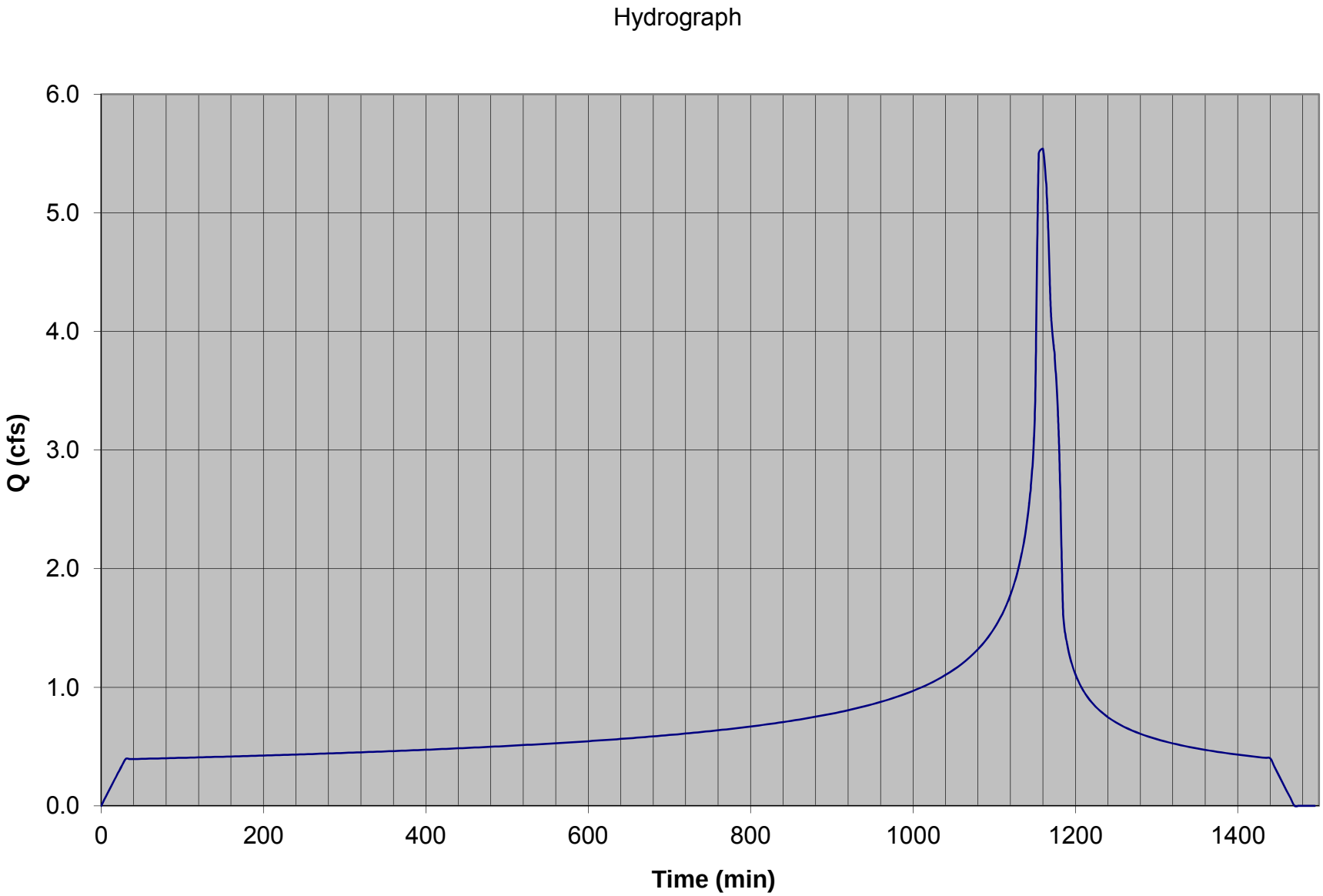
ON-SITE POST DEVELOPMENT HYDROLOGIC CALCULATIONS

ON-SITE HYDROLOGY (POST DEVELOPMENT)																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 3	A	20.0	0.1	2	120	1158	0.0065	1.1	30	0.28	0.10	0.18	1.01	0.34	1.36	0.32
Project 3	B	35.1	0.1	2	120	835	0.0048	1.1	30	0.28	0.10	0.18	1.77	0.34	2.39	0.56
Project 3	C	36.9	0.1	2	120	1211	0.0037	1.1	30	0.28	0.10	0.18	1.86	0.34	2.51	0.59
Project 3	D	24.5	0.1	2	120	1240	0.0044	1.1	30	0.28	0.10	0.18	1.23	0.34	1.67	0.39
Project 3	E	18.1	0.1	2	120	1489	0.0037	1.1	30	0.28	0.10	0.18	0.91	0.34	1.23	0.29
Project 3	A	20.0	0.1	5	120	1158	0.0065	1.6	30	0.42	0.10	0.18	1.51	0.34	2.11	0.49
Project 3	B	35.1	0.1	5	120	835	0.0048	1.6	30	0.42	0.10	0.18	2.65	0.34	3.71	0.85
Project 3	C	36.9	0.1	5	120	1211	0.0037	1.6	30	0.42	0.10	0.18	2.79	0.34	3.90	0.90
Project 3	D	24.5	0.1	5	120	1240	0.0044	1.6	30	0.42	0.10	0.18	1.85	0.34	2.59	0.59
Project 3	E	18.1	0.1	5	120	1489	0.0037	1.6	30	0.42	0.10	0.18	1.37	0.34	1.91	0.44
Project 3	A	20.0	0.1	10	120	1158	0.0065	2.0	30	0.51	0.10	0.18	1.84	0.34	2.61	0.59
Project 3	B	35.1	0.1	10	120	835	0.0048	2.0	30	0.51	0.10	0.18	3.22	0.34	4.58	1.04
Project 3	C	36.9	0.1	10	120	1211	0.0037	2.0	30	0.51	0.10	0.18	3.39	0.34	4.81	1.09
Project 3	D	24.5	0.1	10	120	1240	0.0044	2.0	30	0.51	0.10	0.18	2.25	0.34	3.19	0.73
Project 3	E	18.1	0.1	10	120	1489	0.0037	2.0	30	0.51	0.10	0.18	1.66	0.34	2.36	0.54
Project 3	A	20.0	0.1	25	120	1158	0.0065	2.5	30	0.63	0.10	0.18	2.27	0.34	3.28	0.73
Project 3	B	35.1	0.1	25	120	835	0.0048	2.5	30	0.63	0.10	0.18	3.98	0.34	5.75	1.28
Project 3	C	36.9	0.1	25	120	1211	0.0037	2.5	30	0.63	0.10	0.18	4.18	0.34	6.04	1.34
Project 3	D	24.5	0.1	25	120	1240	0.0044	2.5	30	0.63	0.10	0.18	2.78	0.34	4.01	0.89
Project 3	E	18.1	0.1	25	120	1489	0.0037	2.5	30	0.63	0.10	0.18	2.05	0.34	2.96	0.66
Project 3	A	20.0	0.1	50	120	1158	0.0065	2.8	30	0.72	0.14	0.22	3.17	0.34	4.30	0.84
Project 3	B	35.1	0.1	50	120	835	0.0048	2.8	30	0.72	0.14	0.22	5.56	0.34	7.54	1.47
Project 3	C	36.9	0.1	50	120	1211	0.0037	2.8	30	0.72	0.14	0.22	5.84	0.34	7.93	1.55
Project 3	D	24.5	0.1	50	120	1240	0.0044	2.8	30	0.72	0.14	0.22	3.88	0.34	5.27	1.03
Project 3	E	18.1	0.1	50	120	1489	0.0037	2.8	30	0.72	0.14	0.22	2.87	0.34	3.89	0.76
Project 3	A	20.0	0.1	MIT.	120	1158	0.0065	0.75	30	0.19	0.10	0.18	0.68	0.34	0.89	0.22
Project 3	B	35.1	0.1	MIT.	120	835	0.0048	0.75	30	0.19	0.10	0.18	1.20	0.34	1.56	0.39
Project 3	C	36.9	0.1	MIT.	120	1211	0.0037	0.75	30	0.19	0.10	0.18	1.26	0.34	1.64	0.41
Project 3	D	24.5	0.1	MIT.	120	1240	0.0044	0.75	30	0.19	0.10	0.18	0.84	0.34	1.09	0.27
Project 3	E	18.1	0.1	MIT.	120	1489	0.0037	0.75	30	0.19	0.10	0.18	0.62	0.34	0.81	0.20

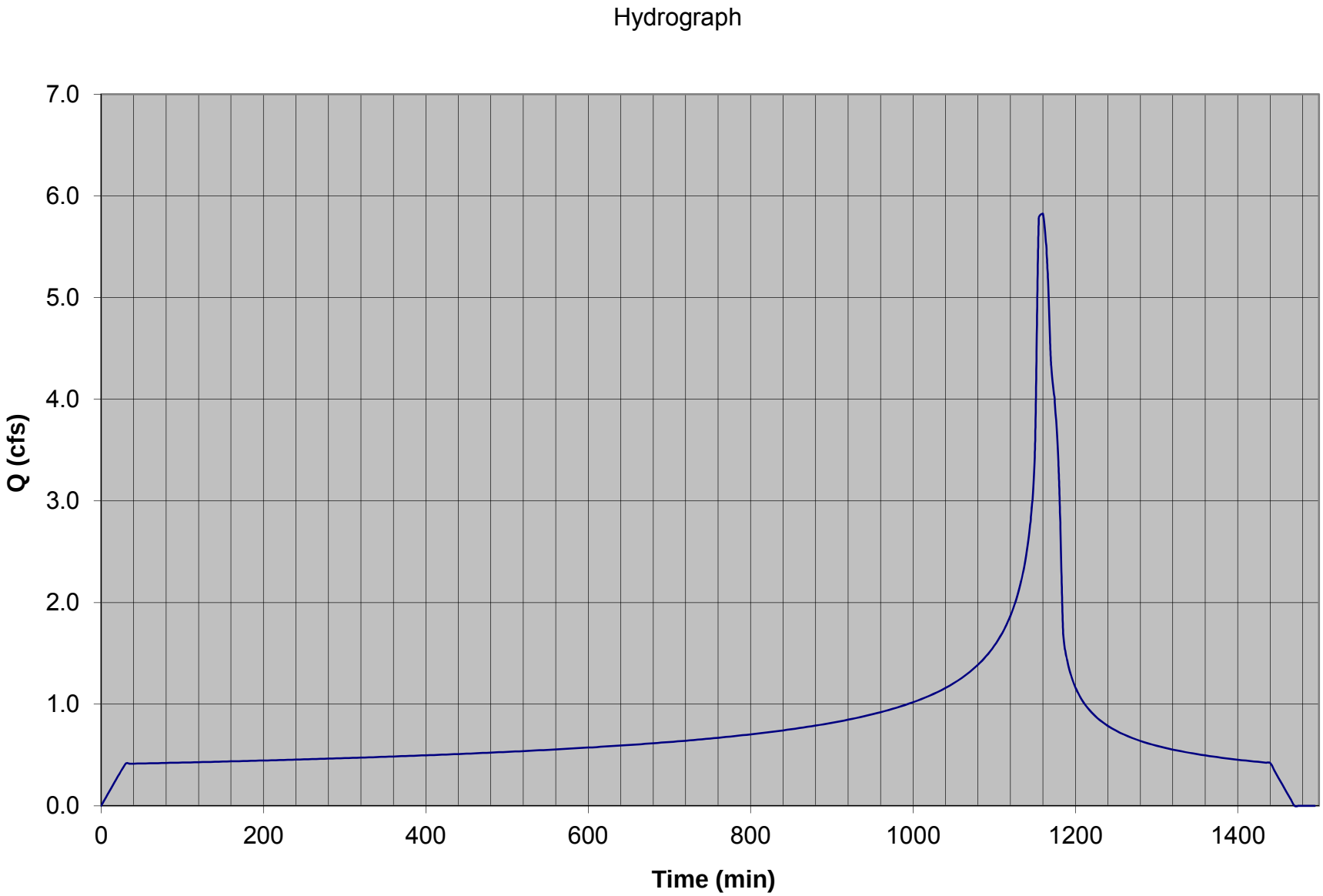
DRAINAGE AREA A 50-YEAR STORM EVENT



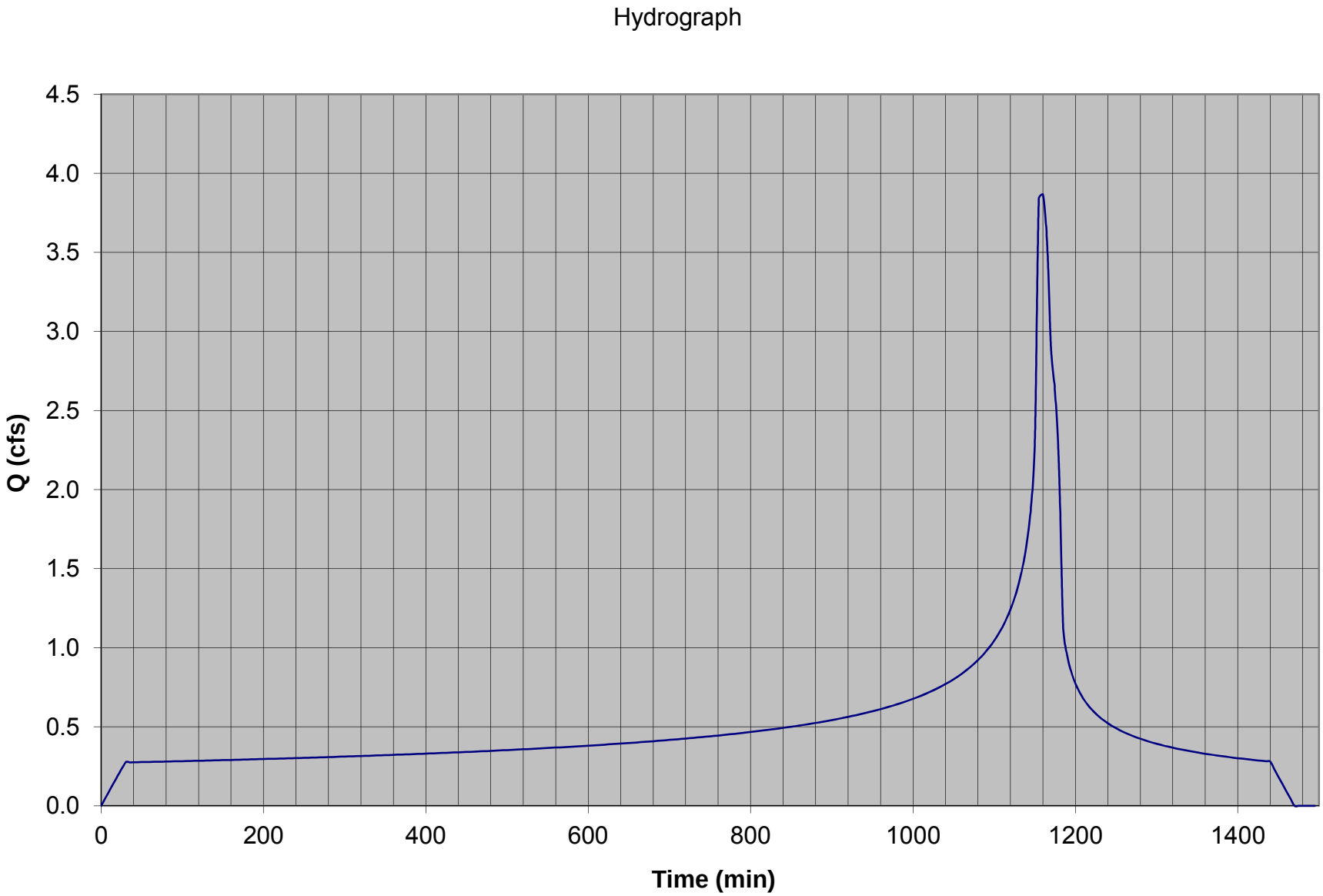
DRAINAGE AREA B 50-YEAR STORM EVENT



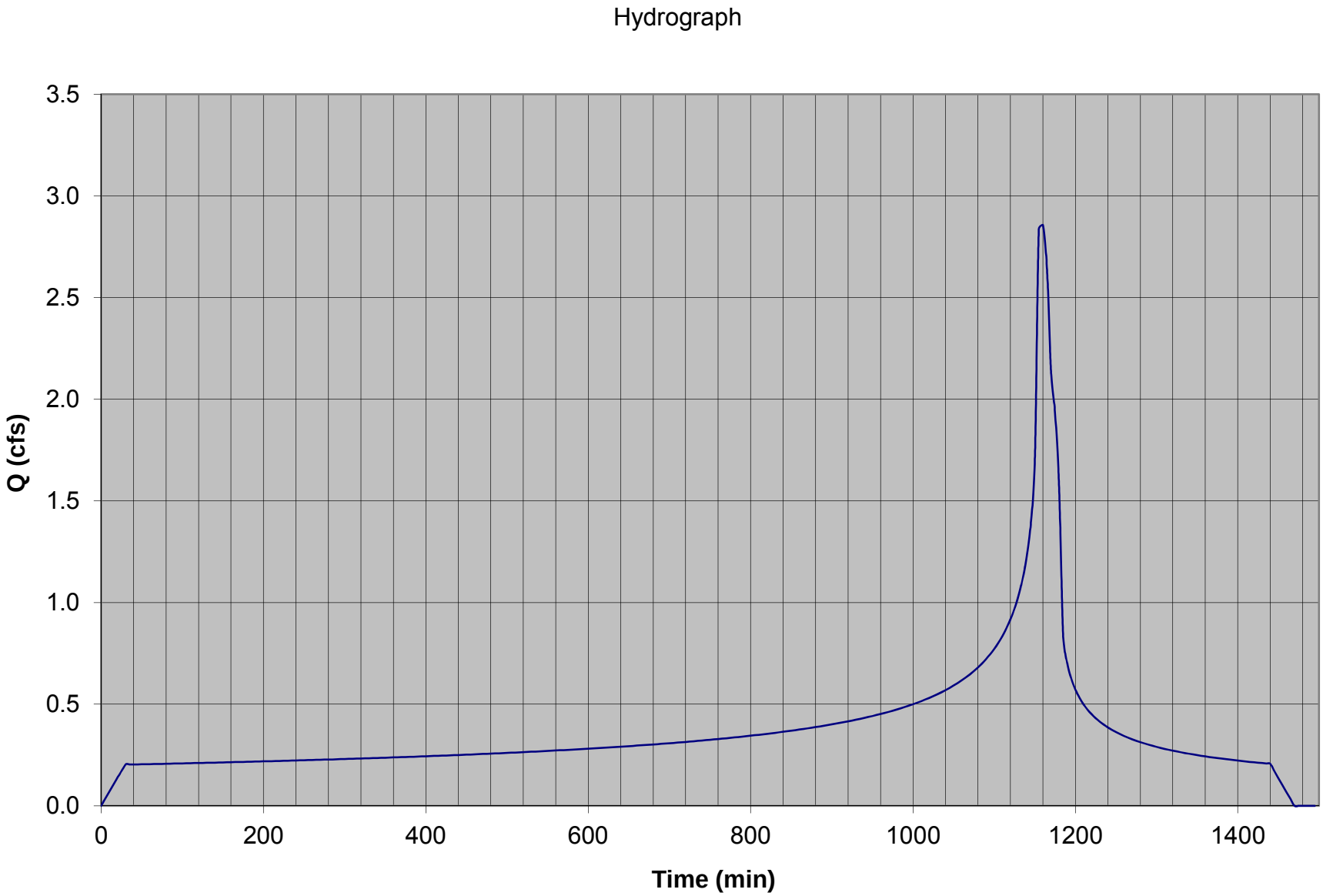
DRAINAGE AREA C 50-YEAR STORM EVENT



DRAINAGE AREA D 50-YEAR STORM EVENT



DRAINAGE AREA E 50-YEAR STORM EVENT



APPENDIX E:
IMPACT ANALYSIS CALCULATIONS

TETRA TECH, INC.

CLIENT SILVERADO POWER JOB NO. 135-04546-12001 PAGE 1 OF 10

PROJECT PROJECT 3 DATE CHECKED DATE DECEMBER 2013

DETAIL BASIN ROUTING CHECKED BY JD COMPUTED BY JS

Length (L)	1275 ft	C	3
Depth (D)	0.75 ft	Δt	40 mins.
Slope (Sl)	0.005	Infil. (I)	0.24 ft/40mins

Storage and Outflow Relationships			
Water El. (H) (Ft)	Storage (S) (ft^3)	Weir Outflow (O) (cfs)	2S/Δt + O (cfs)
0.000	0.00	0.00	0.00
0.750	117618.75	0.00	98.02
0.751	117871.33	0.12	98.35
0.752	118124.16	0.34	98.78
0.753	118377.25	0.63	99.28
0.754	118630.59	0.97	99.83
0.755	118884.19	1.35	100.42
0.756	119138.04	1.78	101.06
0.757	119392.15	2.24	101.73
0.758	119646.51	2.74	102.44
0.759	119901.13	3.27	103.18
0.760	120156.00	3.83	103.96
0.761	120411.13	4.41	104.76
0.762	120666.51	5.03	105.58
0.763	120922.15	5.67	106.44
0.764	121178.04	6.34	107.32
0.765	121434.19	7.03	108.22
0.766	121690.59	7.74	109.15
0.767	121947.25	8.48	110.10
0.768	122204.16	9.24	111.07
0.769	122461.33	10.02	112.07
0.770	122718.75	10.82	113.08
0.771	122976.43	11.64	114.12
0.772	123234.36	12.48	115.18
0.773	123492.55	13.34	116.25
0.774	123750.99	14.22	117.35
0.775	124009.69	15.12	118.46
0.776	124268.64	16.04	119.59
0.777	124527.85	16.97	120.74
0.778	124787.31	17.92	121.91
0.779	125047.03	18.89	123.10
0.780	125307.00	19.88	124.30
0.781	125567.23	20.88	125.52
0.782	125827.71	21.90	126.75
0.783	126088.45	22.93	128.00
0.784	126349.44	23.98	129.27
0.785	126610.69	25.05	130.55
0.786	126872.19	26.13	131.85
0.787	127133.95	27.22	133.17
0.788	127395.96	28.33	134.50
0.789	127658.23	29.46	135.84
0.790	127920.75	30.60	137.20
0.791	128183.53	31.75	138.57
0.792	128446.56	32.92	139.96
0.793	128709.85	34.11	141.36
0.794	128973.39	35.30	142.78

S = (1/2)*H*(H/Sl)*L + I*L*(H/Sl)

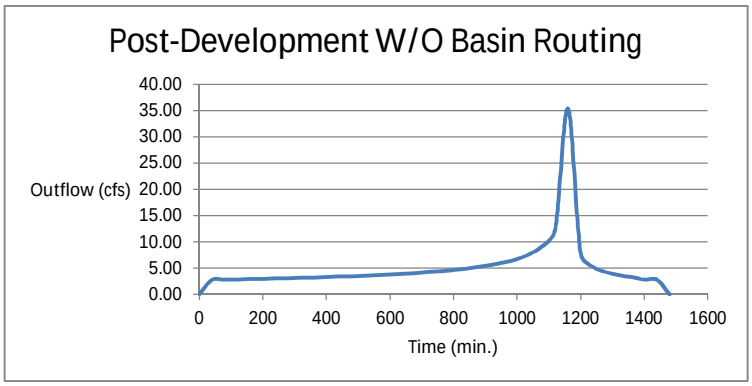
$$O = C * L * (H - D)\text{^}1.5$$

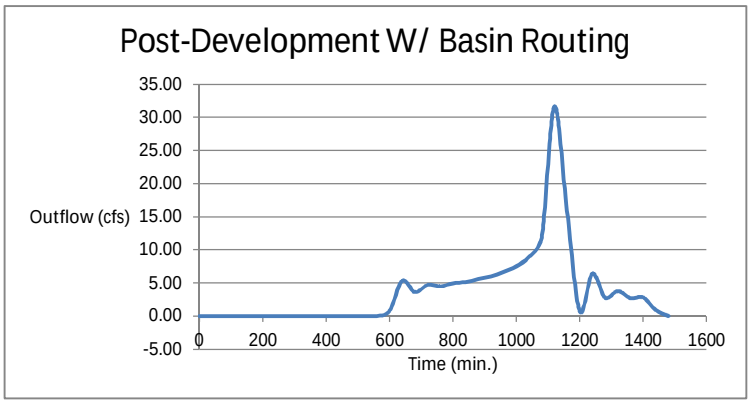
*I(n) + I(n+1) + ((2*S(n)/**Δ**t) - O(n)) =*
*((2*S(n+1)/**Δ**t) + O(n+1))*

*((2*S(n+1)/**Δ**t) - O(n+1)) =*
*((2*S(n+1)/**Δ**t) + O(n+1)) - 2* O(n+1)*

O(n+1) = See Storage and Outflow Relationships

Infiltration Basin #1 of 1						
Step (n)	Time (min.)	I(n) (cfs)	I(n)+I(n+1) (cfs)	2S(n)/Δt-O(n) (cfs)	2S(n+1)/Δt + O(n+1) (cfs)	O(n+1) (cfs)
1	0	0.00	2.74	0.00	2.74	0.00
2	40	2.74	5.54	2.74	8.28	0.00
3	80	2.79	5.63	8.28	13.91	0.00
4	120	2.84	5.73	13.91	19.65	0.00
5	160	2.89	5.84	19.65	25.49	0.00
6	200	2.95	5.96	25.49	31.45	0.00
7	240	3.01	6.08	31.45	37.53	0.00
8	280	3.07	6.21	37.53	43.74	0.00
9	320	3.14	6.35	43.74	50.09	0.00
10	360	3.21	6.50	50.09	56.58	0.00
11	400	3.29	6.66	56.58	63.25	0.00
12	440	3.37	6.84	63.25	70.08	0.00
13	480	3.46	7.03	70.08	77.11	0.00
14	520	3.56	7.23	77.11	84.34	0.00
15	560	3.67	7.46	84.34	91.80	0.00
16	600	3.79	7.71	91.80	99.51	0.78
17	640	3.92	7.99	97.96	105.96	5.31
18	680	4.07	8.31	95.34	103.65	3.60
19	720	4.24	8.67	96.44	105.11	4.68
20	760	4.43	9.08	95.76	104.84	4.47
21	800	4.65	9.56	95.89	105.45	4.93
22	840	4.91	10.13	95.59	105.72	5.13
23	880	5.22	10.82	95.46	106.28	5.55
24	920	5.60	11.69	95.18	106.87	6.00
25	960	6.09	12.83	94.88	107.70	6.63
26	1000	6.74	14.41	94.44	108.85	7.51
27	1040	7.67	16.85	93.83	110.68	8.93
28	1080	9.18	21.54	92.82	114.37	11.84
29	1120	12.37	47.74	90.69	138.44	31.64
30	1160	35.38	43.09	75.16	118.25	15.85
31	1200	7.72	12.92	86.55	99.47	0.74
32	1240	5.20	9.43	97.99	107.42	6.42
33	1280	4.22	7.89	94.59	102.48	2.76
34	1320	3.66	6.94	96.95	103.90	3.78
35	1360	3.28	6.07	96.33	102.40	2.71
36	1400	2.79	5.57	96.99	102.56	2.82
37	1440	2.79	2.79	96.92	99.71	0.89
38	1480	0.00	0.00	97.92	97.92	0.00


Post-Development W/O Basin Routing
Outflow (cfs)
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0
200
400
600
800
1000
1200
1400
1600
Time (min.)


Post-Development W/ Basin Routing
Outflow (cfs)
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-5.00
0
200
400
600
800
1000
1200
1400
1600
Time (min.)

Project 3 (Pre-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Discharge	28.80	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2379.00
12+00	2378.72
14+00	2378.49
16+00	2378.83
18+00	2378.68
19+24	2378.89

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2379.00)	(12+00, 2378.72)	0.020
(12+00, 2378.72)	(14+00, 2378.49)	0.020
(14+00, 2378.49)	(16+00, 2378.83)	0.020
(16+00, 2378.83)	(18+00, 2378.68)	0.020
(18+00, 2378.68)	(19+24, 2378.89)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.21	ft
Elevation Range	2378.49 to 2379.00 ft	
Flow Area	34.05	ft²

Project 3 (Pre-Development)

Results

Wetted Perimeter		359.20	ft
Hydraulic Radius		0.09	ft
Top Width		359.20	ft
Normal Depth		0.21	ft
Critical Depth		0.16	ft
Critical Slope		0.01360	ft/ft
Velocity		0.85	ft/s
Velocity Head		0.01	ft
Specific Energy		0.23	ft
Froude Number		0.48	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.21	ft
Critical Depth	0.16	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.01360	ft/ft

Cross Section for Project 3 (Pre-Development)

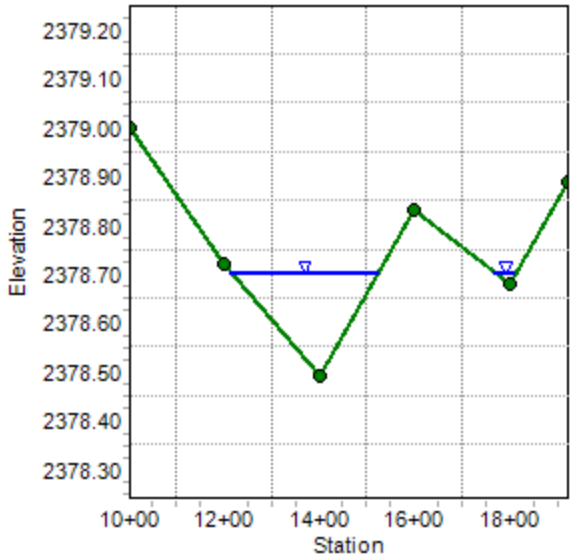
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Normal Depth	0.21	ft
Discharge	28.80	ft³/s

Cross Section Image



Project 3 (Post-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Discharge	31.64	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2379.00
12+00	2378.72
14+00	2378.49
16+00	2378.83
18+00	2378.68
19+24	2378.89

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2379.00)	(12+00, 2378.72)	0.020
(12+00, 2378.72)	(14+00, 2378.49)	0.020
(14+00, 2378.49)	(16+00, 2378.83)	0.020
(16+00, 2378.83)	(18+00, 2378.68)	0.020
(18+00, 2378.68)	(19+24, 2378.89)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.22	ft
Elevation Range	2378.49 to 2379.00 ft	
Flow Area	37.02	ft²

Project 3 (Post-Development)

Results

Wetted Perimeter		386.15	ft
Hydraulic Radius		0.10	ft
Top Width		386.15	ft
Normal Depth		0.22	ft
Critical Depth		0.16	ft
Critical Slope		0.01343	ft/ft
Velocity		0.85	ft/s
Velocity Head		0.01	ft
Specific Energy		0.23	ft
Froude Number		0.49	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.22	ft
Critical Depth	0.16	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.01343	ft/ft

Cross Section for Project 3 (Post-Development)

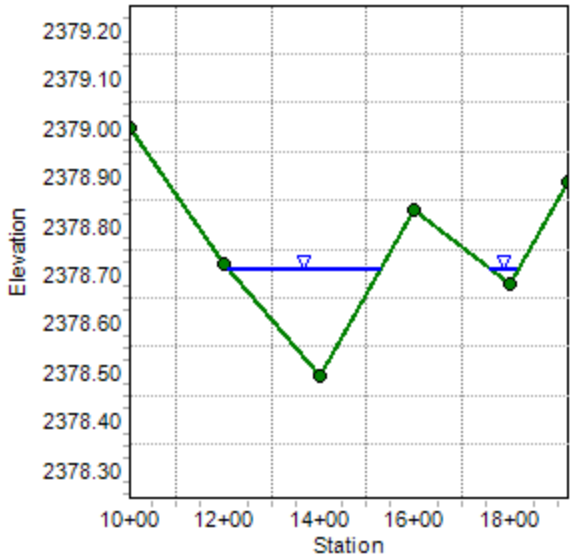
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Normal Depth	0.22	ft
Discharge	31.64	ft³/s

Cross Section Image



TETRATECH

Sheet No. 10 of 16 Date:
Checked By: Office:
Telephone:
Engineer: Job No.:
Subject: % INCREASE PRE- TO POST-DEVELOPMENT

PROJECT 3:

PRE-DEVELOPMENT: Q_{50} = 28.8 CFS

V_{50} = 8.03 AC·FT

POST-DEVELOPMENT: Q_{50} = 31.64 CFS (BASIN ROUTING)

V_{50} = 10.2 AC·FT − 1.90 AC·FT = 8.3 AC·FT
↘ BASIN STORAGE Δ_{25}

% INC: Q_{50} ⇒ $\frac{31.64\,CFS - 28.8\,CFS}{28.8\,CFS}$ = 9.9% < 10% OK

* CONSERVATIVE SINCE NEW BASIN IS LARGER

V_{50} ⇒ $\frac{8.3\,AC\cdot FT - 8.03\,AC\cdot FT}{8.03\,AC\cdot FT}$ = 3.4% < 10% OK

CHECK DEPTH & VELOCITY PER FLOWMASTER

PRE-DEVELOPMENT: MAX DEPTH = 0.21 FT

VELOCITY = 0.85 FT/S

POST-DEVELOPMENT: MAX DEPTH = 0.22 FT

VELOCITY = 0.85 FT/S

% INC: DEPTH ⇒ $\frac{0.22\,FT - 0.21\,FT}{0.21\,FT}$ = 4.8% < 10% OK

VELOCITY ⇒ $\frac{0.85\,FT/S - 0.85\,FT/S}{0.85\,FT/S}$ = 0% < 10% OK

APPENDIX F:
WATER QUALITY CALCULATIONS

OWNER'S CERTIFICATION

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID

for

PROJECT 3 AMERICAN SOLAR GREENWORKS

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID for AMERICAN SOLAR GREENWORKS has been prepared for Applicant, by Tetra Tech, Inc. This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is intended to comply with the requirements of the County of Los Angeles, requiring the preparation of a project specific HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.

I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for the gathered information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Los Angeles County Stormwater Quality Management Plan (SQMP), and the intent of the stormwater and urban runoff NPDES Permit and Waste Discharge Requirements for the County of Los Angeles, Los Angeles County Flood Control District and the incorporated Cities of Los Angeles County under the jurisdiction of the Los Angeles Regional Water Quality Control Board. A copy of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID will be maintained at the project site/office.

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party having responsibility for implementing portions of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID. At least one copy of the approved and certified copy of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID shall be available on the subject property in perpetuity. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.

OWNER:	Silverado Power
BY: (Garret Bean)	
Title:	
Address:	2 Embarcadero Center, Ste. 410
	San Francisco, California 94111
Telephone:	(415) 692 - 7740
Date:	

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II. Discretionary Permit(s) and Water Quality Conditions

III. Project Description

IV. Site Description

V. Best Management Practices

VI. Implementation, Maintenance and Inspection Responsibility for BMPs

VII. Appendices

Appendix A: Operations and Maintenance Plan

Appendix B: Treatment BMPs Calculations

SUSMP Background

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is prepared by the developer's engineer. These are documents required by the Stormwater Quality Management Program (SQMP). It requires run-off, from all new development or significant re-development, to be managed during a project's planning phase, implemented during construction and ultimately maintained for the life of the project.
The HYDROLOGY STUDY/DRAINAGE CONCEPT/LID deals with the long-term post-construction of a project and describes the commitment to installation and maintenance of appropriate structural and non-structural Best Management Practices (BMPs).

BMPs are intended to provide measures that minimize or eliminate the introduction of pollutants into the storm water system. Non-Structural and Structural BMPs include education, clean up, and facility maintenance to prevent pollutants from entering the storm water system.

Compliance is MANDATORY and severe penalties may be levied for any violations. It is the duty of the owner or his designated representative to ensure that all BMPs are followed.

Discretionary Permit(s) and Water Quality Conditions

This Standard Urban Storm Water Mitigation Program (SUSMP) is intended to comply with the requirements of the County of Los Angeles.

Project Description

The name of the project is AMERICAN SOLAR GREENWORKS. The applicant is the owner of the property. The project is located between 75th St. to the west, 70th St. to the east, and between W Ave. H to the south, W Ave. G to the north (see Location Map, Appendix A). The property is currently a dirt lot with scarce native vegetation. Site soils consist of silty fine to medium sand with coarse sand. The site experiences infiltration rates of 3 min/in, which equates to 20.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 4.39 in/hr (see Geotechnical Report, Appendix H). The property is predominantly flat (average 0.5% slopes) and therefore will only be minimally graded to avoid ponding. The property will accommodate 9 foot wide arrays of solar panels spaced at approximately 11 feet (see On-Site Drainage Map, Appendix G). The post-development project area is approximately 134.6 acres with 90% of the site being pervious. Construction of the solar panel arrays and other miscellaneous development accounts for the Los Angeles County approved 10% impervious surface. This combined impervious foot print equates to approximately 13.5 acres.

In the post-development condition, the majority of the runoff sheet flows off the site from west to east, therefore mimicking pre-development conditions. As calculated later in this report, the ΔQ_{25} and $\Delta V_{25,}$ which are greater than the peak mitigation flow rate (Q_{PM}) and the mitigation volume (V_M), will be collected onsite with the help of 1 reinforced elevated road section that runs north to south near the center of the site (see On-Site Drainage Map, Appendix G). The required treatment runoff (Q_{PM} & V_M) consists of the initial 0.75 inches of rain, which will infiltrate in the existing soil and also be treated by the existing soil due to being less than the delta runoff.

The project will have a substation for utility interconnection on the site. The majority of the area within the substation fence will be soil, covered with a layer of gravel. The majority of the substation equipment will be supported on steel or concrete piers or footings, with the exception of the main step-up transformer. The transformer will be located on a reinforced concrete slab and subsurface foundation, and enclosed in a secondary containment structure. The impervious area from the transformer footprint will be covered with the secondary containment structure, and any rain falling on the transformer area will be collected and held in the containment basin until the rainstorm has passed and the water can be inspected. If the collected water shows any oil sheen it will be pumped out and disposed at a permitted, offsite treatment facility by a licensed hazardous waste contractor. If the rainwater does not exhibit any sheen it will either be allowed to evaporate, or will be manually pumped out onto the ground and allowed to infiltrate. Any transformer oil that is released into the containment will be vacuumed out and disposed at a permitted, offsite treatment facility by a licensed hazardous waste contractor.

The applicant, the property owner, is responsible for all on-site maintenance activities.

Per the U.S. Census Bureau, the 2007 Standard Industrial Classification (SIC) Code is 221119 – "Other Electric Power Generation" for solar power sites.

The Anticipated and Potential Pollutants Generated by the proposed facility may be: TSS, nutrients, heavy metals, bacteria/virus, pesticides, organic compounds, trash and debris (litter), oxygen-demanding substances, and oil and grease.

The storage of outdoor materials is not a planned activity. Car washing, auto repair and/or vehicle fueling are also not a part of this facility.

The 85th % BMP peak mitigation flow rate (Q_{PM})is 4.60 cfs, while ΔQ_{25} is 5.93 cfs.

The mitigation volume (V_M) for the on-site watershed area of 134.6 acres is 1.49 ac-ft and ΔV_{25} is 1.90 ac-ft. The ΔV_{25} will be split among 1 infiltration basin, resulting in a mitigation volume of 1.90 ac-ft or 82,764 cf.

Site Description

The site is approximately 134.6 acres and is located between 75th St. to the west, 70th St. to the east, and between W Ave. H to the south, W Ave. G to the north, within an unincorporated region of Los Angeles County (see Location Map, Appendix A). The site is predominantly flat (average 0.5% slopes).

The site is located within the Antelope Valley Watershed.

The site has previously been graded, but is mostly reverted to a naturally vegetated state. No pre–existing watershed problems seem to be present.

Per the Geotechnical Report (see Appendix H) and per LA County Hydrology Manual, the project soil type consists of the following:

- Silty Fine to Medium Sand with Coarse Sand

Soil Types 120 and 124 were used in the hydrology calculations.

Drainage and Permeability: Well-drained; slow runoff, fair soil permeability. Infiltration rates of 3 min/in, which is equivalent to 20.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 4.39 in/hr.

The Total Maximum Daily Loads (TMDLs) have been established as “not applicable” for the Antelope Valley Watershed. The 303(d) List has no pollutants of concern for the Antelope Valley Watershed.

The Project site is not within the immediate vicinity of any known Environmentally Sensitive Areas (ESAs) and Areas of Special Biological Significance (ASBSs).

Best Management Practices

The following indicates the source control BMPs (routine non-structural and routine structural) included in this project and those that were not included.

Routine Non-Structural BMPs

Education for Property Owners, Tenants, Occupants and Employees. Best Management Practices (BMP) Fact Sheets for preventing stormwater pollution from the California Stormwater Best Management Practice Handbooks can be found at www.cabmphandbooks.com.

Activity Restrictions. The list of restrictions and guidelines for implementation and maintenance of all Best Management Practices specified herein include, but will not be limited to:

- TRASH: No rubbish, trash or other material shall be kept on site or on any street abutting the properties, except in sanitary containers located in an appropriate trash containment area.
- DRAINAGE: There shall be no interference or alteration of the established drainage pattern unless an alternative is approved by the regulatory agency.
- DUMPSTER LIDS: Dumpster lids shall be closed at all times.
- DEBRIS: No blowing or sweeping of litter anywhere at the site.

BMP Maintenance. Appendix A indicates the person(s) responsible for the implementation and maintenance of the non-structural and structural BMPs.

Title 22 CCR Compliance. Not applicable, per Title 22., Division 4.5., Chapter 11. of the California Code of Regulations definition of hazardous wastes. No Hazardous Materials are anticipated to be onsite.

Local Industrial Permit Compliance. Not applicable, there are no fuel dispensing areas and/or other areas of concern to the public proposed.

Spill Contingency Plan. A spill contingency plan will be prepared by the owner/building operator. As a minimum the Spill Contingency Plan will "mandate the stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials and documentation."

Hazardous Materials Disclosure Compliance. No hazardous materials are anticipated to be stored on-site. If deemed otherwise, a designated representative of the owner shall provide information to the Fire Authority in accordance with requirements of the Health & Safety Code.

Uniform Fire Code Implementation. A designated representative of the owner shall provide information to the Fire Authority in compliance with Article 80 of the UNIFORM FIRE CODE (UFC).

Common Area Litter Control. Site litter shall be strictly controlled by onsite maintenance personnel (not yet determined).

Employee Training. A representative of the owner will provide information available from the City/County on education regarding good housekeeping practices that contribute to the protection of storm water quality. Practical information material will be provided to employees on general good housekeeping practices. These materials will describe, but are not limited to, spill prevention and control and the use of chemicals, petroleum products, pesticides and fertilizers that should be limited to the property, with no discharge of wastes directly or indirectly to gutters, catch basins or the storm drain system. Information will be distributed directly to the employees as well as being posted in public areas. In addition to the attachments, the following resource can be contacted to obtain updated educational materials at no cost: American Oceans – www.americanoceans.org/runoff/epa-bro.htm

Routine Non-Structural BMPs

Properly Design Trash Storage Areas. Site waste receptacles shall be emptied on a weekly basis or more often if containers are overflowing. Upon inspection any debris or rubbish will be picked up and the site cleaned. The trash area/room is NOT to be cleaned by hosing down. The type of materials used to clean the area and storage of said materials will be determined by the Contractor. Signage will be posted that lids shall be kept closed at all times. The trash room(s) will be located inside the parking structures.

Protect Slopes and Channels. The protection of slopes and irrigation shall be implemented as indicated on the County of Los Angeles' approved Landscape Plans and shall be consistent with the County Water Conservation Resolution or County equivalent. Slope protection will be achieved through landscaping of the slopes. Runoff from irrigation shall be kept to a minimum. A designated representative of the owner will be responsible for continual maintenance of landscaped areas.

Site Design BMPs

The following table shows the site design BMPs that are included in this project. A description of each BMPs follows:

Technique	Included		Brief Description of Method
	Yes	No	
Minimize Impervious Area/Maximize Permeability (C-Factor Reduction)		√	
Minimize Directly Connected Impervious Areas (DCIAs) (C-Factor Reduction)		√	
Create Reduced or "Zero Discharge" Areas (Runoff Volume Reduction)	√		Infiltration basins
Conserve Natural Areas (C-Factor Reduction)		√	

The site design BMPs that were used extensively in this design were to create "Runoff Volume Reduction" by utilizing the infiltration basin system design concept. The mitigation volume is captured behind the reinforced elevated roads and is allowed to infiltrate in the ground.

Treatment BMPs

The following table shows the treatment BMPs that are included in this project. A description of each BMPs follows:

Name	Included		If not applicable, state brief description
	Yes	No	
Vegetated (Grass) Strips		√	Not proposed.
Vegetated (Grass) Swales		√	Not proposed.
Proprietary Control Measures		√	Not proposed.
Dry Detention Basin		√	Not proposed.
Wet Detention Basin		√	Not proposed.
Constructed Wetland		√	Not proposed.
Detention Basin/Sand Filter		√	Not proposed.
Porous Pavement Detention		√	Not proposed.
Porous Landscape Detention		√	Not proposed.
Infiltration Basin	√		
Infiltration Trench		√	Not proposed.
Media Filter		√	Not proposed.
Proprietary Control Measures		√	Not proposed.

This Project is considered a Priority Project. This section of the HYDROLOGY STUDY/DRAINAGE CONCEPT/LID addresses Treatment Control BMPs. The primary control strategy for design Treatment Control BMPs is to treat the frequent, low-flow storm events. The selected treatment controls for this project is the Infiltration Basins. Appendix B – Verification Calculations for Treatment BMPs has the Calculations and Detail Drawings for these Treatment BMPs.

Implementation, Maintenance and Inspection Responsibility for BMPs

A schedule will be established for all maintenance and a log for all cleanups shall be recorded (see Appendix A – Operations and Maintenance Plan). All documents relating to site maintenance and Best Management Practices (BMP) will be kept for a minimum of 5 years and be made available to Federal, State, County, or City Inspectors upon request.

The party responsible for all structural and non-structural BMPs and contact information for site maintenance records is as follows:

SILVERADO POWER

2 Embarcadero Center, STE. 410
SAN FRANCISCO, CA 94111
(415) 692 - 7740

Contact Person: Garret Bean

Appendices

APPENDIX A

Operations and Maintenance Plan

OPERATIONS AND MAINTENANCE PLAN

BMP Applicable? Yes/No	BMP Name and Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	Non-Structural Source Control BMPs		
Yes	Education for Property Owners, Tenants and Occupants Applicant will educate all onsite occupants. Education shall be given using the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.	New onsite employees to be educated within 2 weeks of hire. Each onsite employee shall receive an annual review	Applicant is responsible for educating all onsite occupants.
Yes	Activity Restrictions Ensure all users are adhering to activity restrictions as outlined in the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID and the County of Los Angeles' zoning ordinance and standards.	If a user is observed engaging in activity that may adverse impacts on stormwater, the authorized representative shall take corrective actions as necessary. Ongoing basis.	Applicant is responsible for educating all onsite employees.
Yes	Spill Containment Plan A spill contingency plan is not available. As a minimum the spill contingency plan will "mandate the stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials and documentation."	When spill occurs.	Through a maintenance firm that will be contracted with applicant.
Yes	Common Area Litter Control Perform parking lot/common area maintenance that will include the removal of litter from around the trash storage receptacles, drive aisles, parking lot and outdoor areas. All litter shall be placed in appropriate trash receptacles.	Weekly	Through a maintenance firm that will be contracted with applicant.
Yes	Employee Training Applicant will educate all onsite employees. Education shall be given using the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.	New onsite employees to be educated within 2 weeks of hire. Each onsite employee shall receive an annual review	Applicant is responsible for educating all onsite employees.
Yes	Design and Construct Trash and Waste Storage Areas to Reduce Pollution Introduction Site waste receptacles shall be emptied on a weekly basis or more often if overflowing. Signage will be posted that lids shall be kept closed at all times. Inspect the waste receptacles area for any loose trash on the ground. Inspect for damage to the structural elements of the waste receptacles.	Daily and weekly basis. Replace/Repair structural elements as needed.	Applicant through a maintenance firm.

BMP Applicable? Yes/No	BMP Name and Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	Non-Structural Source Control BMPs		
Yes	Protect Slopes and Channels The protection of slopes shall be implemented as indicated on the County of Los Angeles' approved Landscape Plans and shall be consistent with the County Water Conservation Resolution or County equivalent.	After each major storm event	Applicant through a maintenance firm.
	Treatment BMPs		
Yes	Infiltration Basin Infiltration basins shall be constructed concurrently with the solar arrays and shall be inspected of and cleaned from heavy silt deposits.	After each major storm event	Applicant through a maintenance firm.

APPENDIX B
Verification Calculations for Treatment BMPs

1.0 HYDROLOGIC ANALYSIS

The project size is 134.6 acres. Utilizing Appendix A of the Los Angeles County Department of Public Works- Hydrology Manual and a Geotechnical Report for the site (see Appendix H), predominating soil types of 120 and 124 and an infiltration rate of 3 min/in were found, which is equivalent to 20.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 4.39 in/hr. A small portion of the site, amounting to the Los Angeles County approved value of 10%, is impervious with the remaining balance being pervious.

On-Site Hydrology Maps showing the drainage area, BMP and Drainage Structures are found in Appendix G. The peak mitigation flow rate (Q_{PM}) and the mitigation volume (V_M) found in Appendix B of this report are based on 0.75-inches of rainfall.

2.0 BMP SIZING

Infiltration Basins

Using the LA County Modified Rational Method TC Calculator, the Peak Mitigation Flow Rate (Q_{PM}) based on 0.75-inches of rainfall is 4.60 cfs and the total Mitigation Volume (V_M) is 1.49 ac-ft (see Post-Development On-Site Hydrologic Calculation, Appendix D). Since ΔV_{25} exceeds the mitigation volume (see Appendix D), it will be captured in 1 infiltration basin designed per the 2009 Los Angeles County LID Manual and Los Angeles County Stormwater BMP Design and Maintenance Manual; therefore the required individual basin capacity is 1.90 ac-ft or 82,764 cf. By infiltrating the ΔV_{25}, the V_M will also infiltrate and be treated by the existing soils.

The proposed LID infiltration basin spans north to south near the center of the site. The basin routing minimum road height of 9 inches governs the design, since it is greater than the minimum road height required to infiltrate the ΔV_{25} (see Water Quality Calculations, Appendix E) Therefore, the basin will be created by constructing a 9 inch high reinforced road section which spans approximately 1,275 feet north to south. The flood width is approximately 150 feet. The infiltration area created is 191,250 square feet which will allow the volume of 4.86 ac*ft to infiltrate in about 3.0 hours with the Los Angeles County approved rate of 4.39 in/hr.

Treatment BMPs Calculations

TETRA TECH, INC.

CLIENT SILVERADO POWER JOB NO. 135-04546-12001 PAGE 1 OF 2

PROJECT PROJECT 3 DATE CHECKED DATE DECEMBER 2013

DETAIL INFILTRATION BASIN CHECKED BY JD COMPUTED BY JS

LINE ID	DESCRIPTION	VALUE	COMMENTS:
A	MITIGATION VOLUME (AC-FT)	1.49	PER POST DEVELOPMENT ON-SITE HYDROLOGIC CALCS, APPENDIX D
B	ΔV25 (AC*FT)	1.9	PER PRE/POST DEVELOPMENT ON-SITE HYDROLOGIC CALCS, APPENDIX D
C	NUMBER OF BASINS	1	PER ON-SITE DRAINAGE MAP, APPENDIX F

SINCE ΔV25>MITIGATION VOLUME, ΔV25 TO BE MITIGATED BY 1 INFILTRATION BASIN CREATED BY 1 N-S REINFORCED ELEVATED ROAD

D	INFILTRATION RATE (IN/HR)	4.39	PER GEOTECHNICAL REPORT, APPENDIX H (3 MIN/IN = 20.0 IN/HR) * FACTORS
E	BASIN LENGTH (FT)	1275	PER ON-SITE DRAINAGE MAP, APPENDIX F
F	VOLUME PER BASIN (CF)	82764	(F) = (B) * 43,560 / (C)

BASIN SIZED ACCORDING TO THE LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL

G	REQUIRED DRAIN TIME (HR)	72	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
H	MAX. PONDING DEPTH (FT)	26.34	PER EQUATION 6-3, (H) = (D) / 12 * (G)
I	BASIN PONDING DEPTH (IN)	2.14	INITIAL ASSUMED AVERAGE PONDING DEPTH CREATED BY RAISED ROAD SECTION

SINCE THE BASIN HAS A TRIANGULAR CROSS-SECTION, THE AVERAGE PONDING DEPTH OF THE BASIN WILL BE USED TO FIND THE INFILTRATING SURFACE AREA. IN ORDER TO USE THE AVERAGE PONDING DEPTH OF 2.14 IN., THE REINFORCED ROAD SECTION WILL NEED TO BE RAISED BY 4.3 IN.

J	MAX. BASIN FILL TIME (HR)	2	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
K	BASIN SURFACE AREA (SF)	90949.5	PER EQUATION 6-6, (K) = (F) / ((J) * (D) / 12 + (I) / 12)
L	FLOOD WIDTH (FT)	71.3	(L) = (K) / (E)

CHECK TO SEE IF INFILTRATION BASIN SLOPE MATCHES EXISTING AVERAGE SLOPE OF SITE.

M	AVERAGE SITE SLOPE (%)	0.50	PER ON-SITE DRAINAGE MAP, APPENDIX F
N	INFIL. BASIN SLOPE (%)	0.50	(N) = ((I) * 2 / (L) * 12) * 100

COMPARE RESULTS WITH MIN. ROAD HEIGHT FROM IMPACT ANALYSIS, APPENDIX E.

O	MIN. ROAD HEIGHT (IN)	9	IMPACT ANALYSIS, APPENDIX E

IMPACT ANALYSIS GOVERNS. CALCULATE FLOOD WIDTH AND INFILTRATION VOLUME.

P	FLOOD WIDTH (FT)	150	(P) = ((O) / 12) / ((M) / 100)
Q	INFIL. VOLUME (CF)	211650	PER EQUATION 6-6, (P) * (E) = (Q) / ((J) * ((D) / 12) + ((O) / 2) / 12)
R	INFIL. VOLUME (AC*FT)	4.86	(R) = (Q) / 43560

Conclusion:

ΔV25 INFILTRATED BY 1 INFILTRATION BASIN WITH A LENTH OF 1275 FT AND A FLOOD WIDTH OF 150 FT CREATED BY 1 REINFORCED ELEVATED ROAD SECTION RAISED 9 IN .

TOTAL DRAINAGE TIME (HR) = (Q) / ((P) *(E)) * (D) / 12) = 3.0 < 72 HRS

TETRATECH

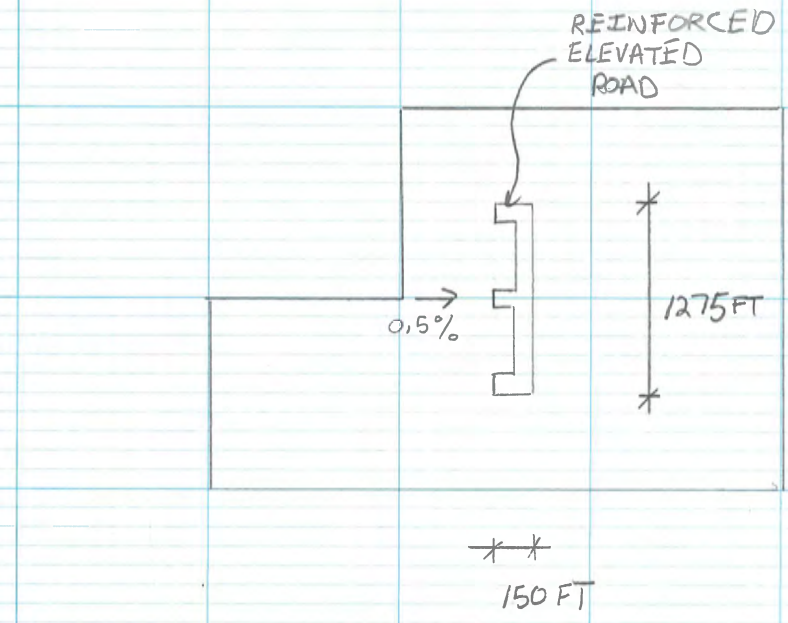
Sheet No. 2 of 2 Date:

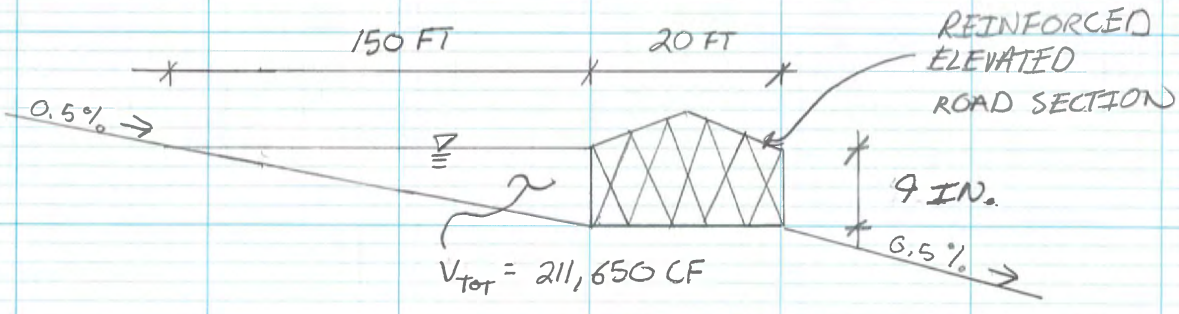
Checked By: Office:

Telephone:

Engineer: Job No.:

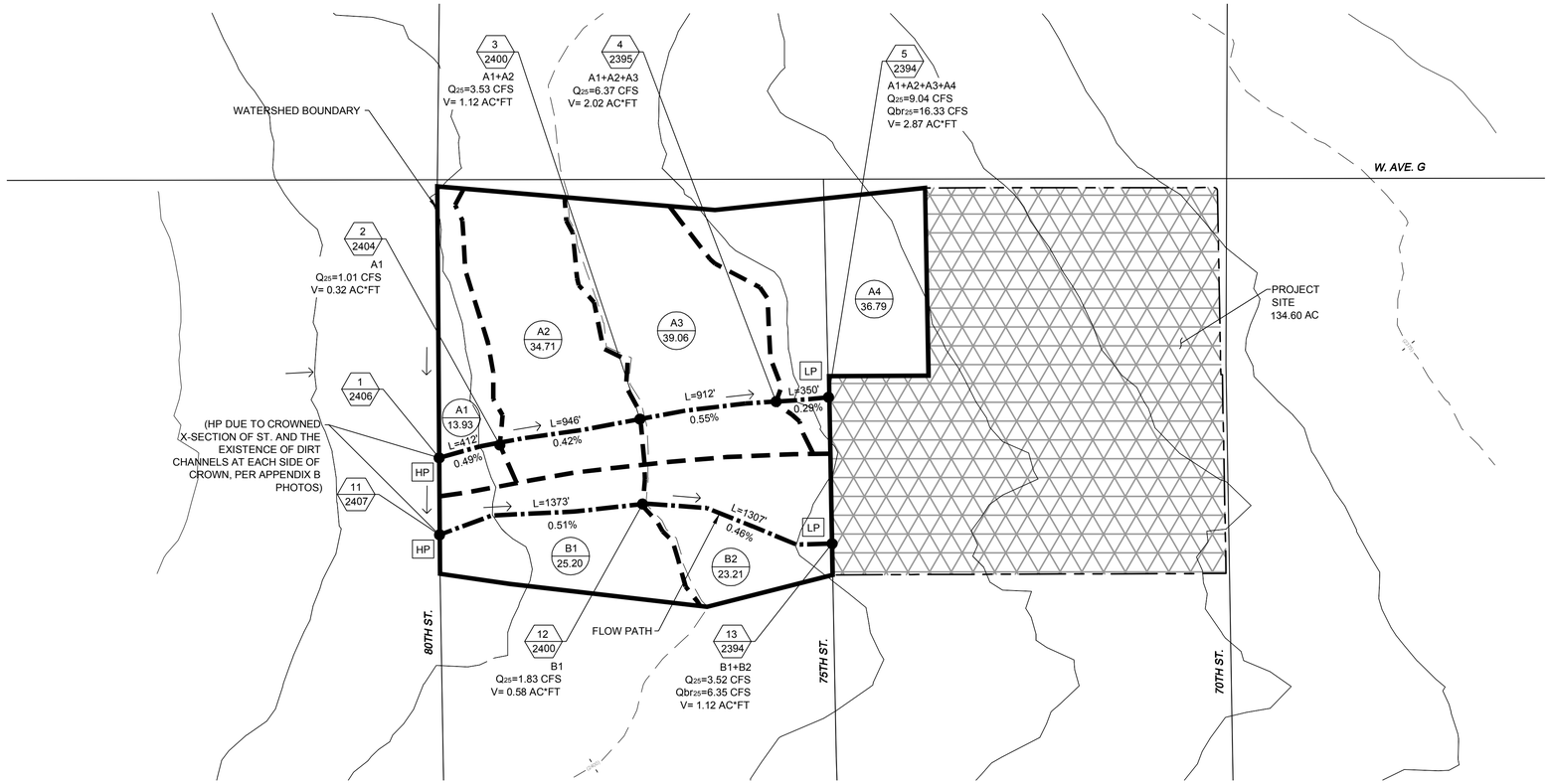
Subject: AMERICAN SOLAR GREENWORKS ELEVATED ROAD SECTION AND INFILTRATION BASIN

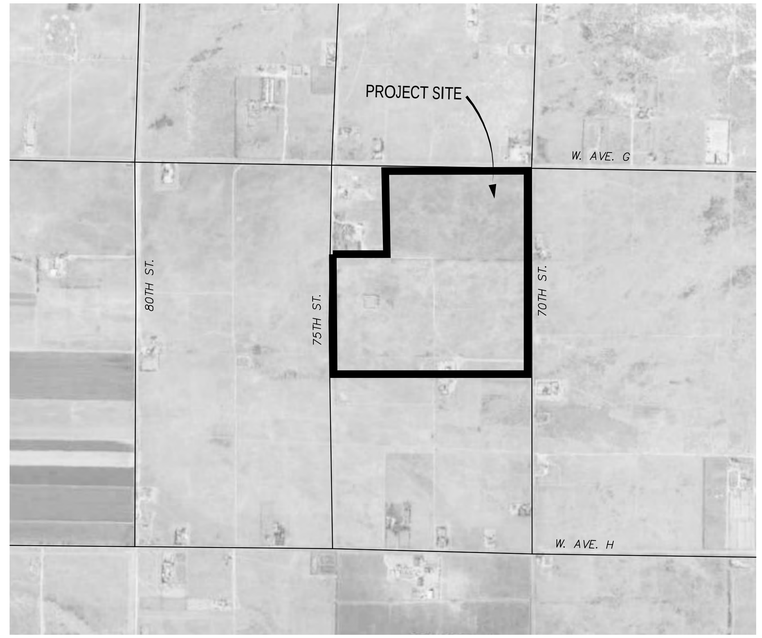




APPENDIX G:
DRAINAGE MAPS (ON-/OFF-SITE)

OFF-SITE DRAINAGE MAP





LOCATION MAP
NOT TO SCALE
(THOMAS GUIDE PAGE 4014, GRID C-1, C-2, D-1, & D-2)

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

OFF-SITE HYDROLOGY

Project	Subarea	Area (acres)	%Imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 3	A1	13.93	0.01	2	124	412	0.0049	1.1	30	0.29	0.1	0.11	0.44	0.34	0.73	0.14
Project 3	A2	34.71	0.01	2	124	946	0.0042	1.1	30	0.29	0.1	0.11	1.11	0.34	1.81	0.35
Project 3	A3	39.06	0.01	2	124	912	0.0055	1.1	30	0.29	0.1	0.11	1.25	0.34	2.04	0.40
Project 3	A4	36.79	0.01	2	124	350	0.0029	1.1	30	0.29	0.1	0.11	1.17	0.34	1.92	0.37
Project 3	B1	25.20	0.01	2	124	1373	0.0051	1.1	30	0.29	0.1	0.11	0.80	0.34	1.32	0.26
Project 3	B2	23.21	0.01	2	124	1307	0.0046	1.1	30	0.29	0.1	0.11	0.74	0.34	1.21	0.24
Project 3	A1	13.93	0.01	5	124	412	0.0049	1.7	30	0.43	0.1	0.11	0.66	0.34	1.13	0.21
Project 3	A2	34.71	0.01	5	124	946	0.0042	1.7	30	0.43	0.1	0.11	1.64	0.34	2.82	0.53
Project 3	A3	39.06	0.01	5	124	912	0.0055	1.7	30	0.43	0.1	0.11	1.85	0.34	3.18	0.60
Project 3	A4	36.79	0.01	5	124	350	0.0029	1.7	30	0.43	0.1	0.11	1.74	0.34	2.99	0.56
Project 3	B1	25.20	0.01	5	124	1373	0.0051	1.7	30	0.43	0.1	0.11	1.19	0.34	2.05	0.39
Project 3	B2	23.21	0.01	5	124	1307	0.0046	1.7	30	0.43	0.1	0.11	1.10	0.34	1.89	0.35
Project 3	A1	13.93	0.01	10	124	412	0.0049	2.1	30	0.53	0.1	0.11	0.81	0.34	1.43	0.26
Project 3	A2	34.71	0.01	10	124	946	0.0042	2.1	30	0.53	0.1	0.11	2.02	0.34	3.57	0.65
Project 3	A3	39.06	0.01	10	124	912	0.0055	2.1	30	0.53	0.1	0.11	2.28	0.34	4.01	0.73
Project 3	A4	36.79	0.01	10	124	350	0.0029	2.1	30	0.53	0.1	0.11	2.14	0.34	3.78	0.69
Project 3	B1	25.20	0.01	10	124	1373	0.0051	2.1	30	0.53	0.1	0.11	1.47	0.34	2.59	0.47
Project 3	B2	23.21	0.01	10	124	1307	0.0046	2.1	30	0.53	0.1	0.11	1.35	0.34	2.39	0.43
Project 3	A1	13.93	0.01	25	124	412	0.0049	2.6	30	0.66	0.1	0.11	1.01	0.34	1.83	0.32
Project 3	A2	34.71	0.01	25	124	946	0.0042	2.6	30	0.66	0.1	0.11	2.52	0.34	4.55	0.80
Project 3	A3	39.06	0.01	25	124	912	0.0055	2.6	30	0.66	0.1	0.11	2.84	0.34	5.12	0.90
Project 3	A4	36.79	0.01	25	124	350	0.0029	2.6	30	0.66	0.1	0.11	2.67	0.34	4.83	0.85
Project 3	B1	25.20	0.01	25	124	1373	0.0051	2.6	30	0.66	0.1	0.11	1.83	0.34	3.31	0.58
Project 3	B2	23.21	0.01	25	124	1307	0.0046	2.6	30	0.66	0.1	0.11	1.69	0.34	3.04	0.54
Project 3	A1	13.93	0.01	50	124	412	0.0049	2.9	30	0.75	0.1	0.11	1.15	0.34	2.11	0.37
Project 3	A2	34.71	0.01	50	124	946	0.0042	2.9	30	0.75	0.1	0.11	2.86	0.34	5.25	0.91
Project 3	A3	39.06	0.01	50	124	912	0.0055	2.9	30	0.75	0.1	0.11	3.22	0.34	5.90	1.03
Project 3	A4	36.79	0.01	50	124	350	0.0029	2.9	30	0.75	0.1	0.11	3.04	0.34	5.56	0.97
Project 3	B1	25.20	0.01	50	124	1373	0.0051	2.9	30	0.75	0.1	0.11	2.08	0.34	3.81	0.66
Project 3	B2	23.21	0.01	50	124	1307	0.0046	2.9	30	0.75	0.1	0.11	1.91	0.34	3.51	0.61

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- SUB-AREA BOUNDARY
- PROJECT BOUNDARY
- FLOW LINE

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{Br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.480 SQ. MI.) = 624 CY

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N
0 250' 500' 1000'
SCALE: 1" = 500'

R2011-00799 (RCUP201100071) | H-1

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

35MW AC Solar Photovoltaic Generation System
APNs 3268-018-002
3268-018-035
SCH # 2012061068

Project Name:
Project 3 American Solar Greenworks
Project Address:
W Ave. G & 70th St. W
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100071
OFF-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power
PROJECT 3
AMERICAN SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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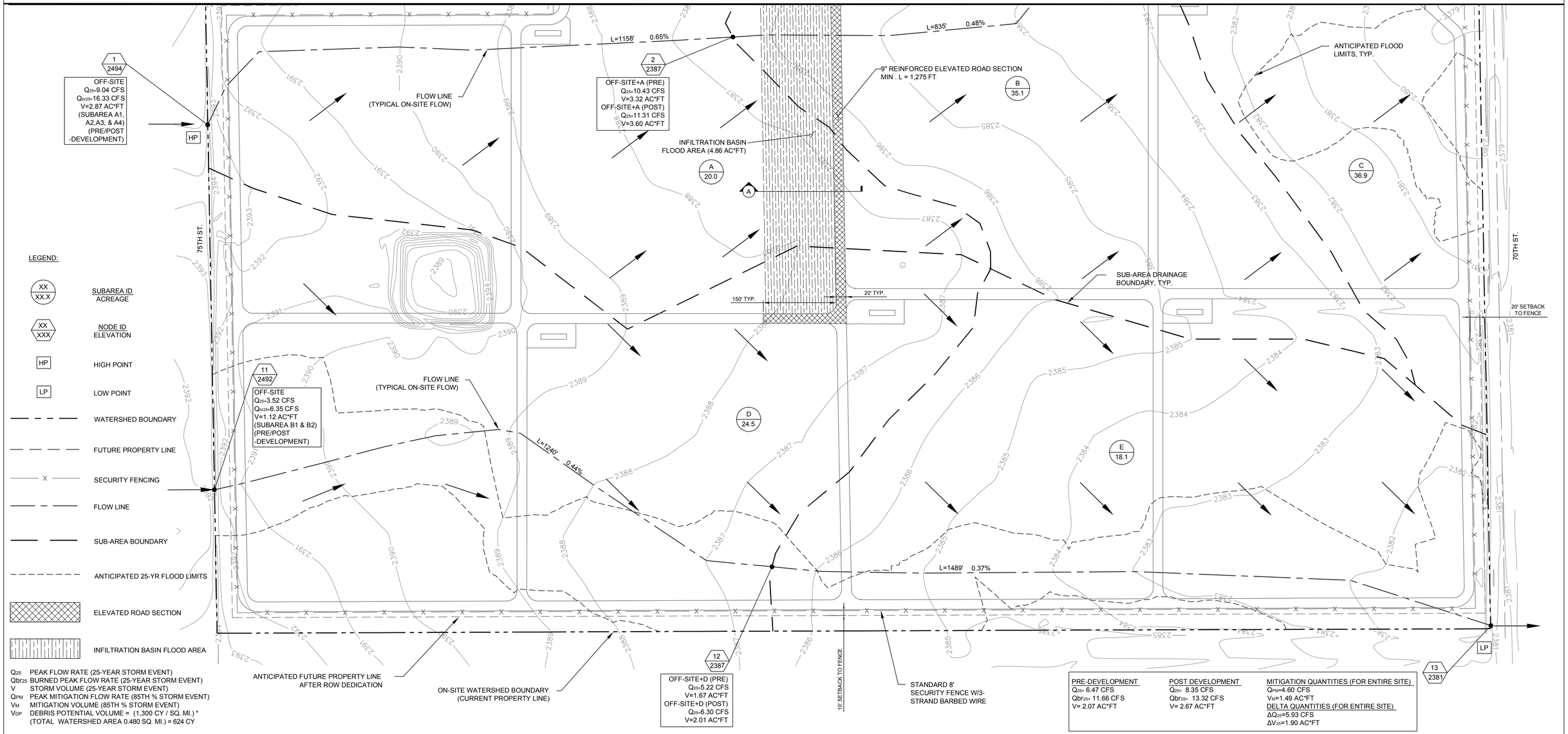
ON-SITE DRAINAGE MAP

MATCHLINE: SEE SHEET C-04



LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- X — SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.480 SQ. MI.) = 624 CY

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION QUANTITIES (FOR ENTIRE SITE)
Q_{25}= 6.47 CFS	Q_{25}= 8.35 CFS	Q_{PM}=4.60 CFS
Q_{br25}= 11.66 CFS	Q_{br25}= 13.32 CFS	V_M=1.49 AC*FT
V= 2.07 AC*FT	V= 2.67 AC*FT	DELTA QUANTITIES (FOR ENTIRE SITE)
		ΔQ_{25}=5.93 CFS
		ΔV_{25}=1.90 AC*FT

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
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5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATE (Q_{50}) INCREASED BY 9.9%, THE VOLUME (V_{50}) INCREASED BY 3.4%, THE DEPTH INCREASED BY 4.8%, AND THE VELOCITY INCREASED BY 0.0%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N

0 50' 100' 200'
SCALE: 1" = 100'

R2011-00799 (RCUP201100071) C-03

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
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17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

35MW AC Solar Photovoltaic Generation System
APNs 3268-018-002
3268-018-035
SCH # 2012061068

Project Name:
Project 3 American Solar Greenworks

Project Address:
W Ave. G & 70th St. W
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100071
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 3
AMERICAN SOLAR
GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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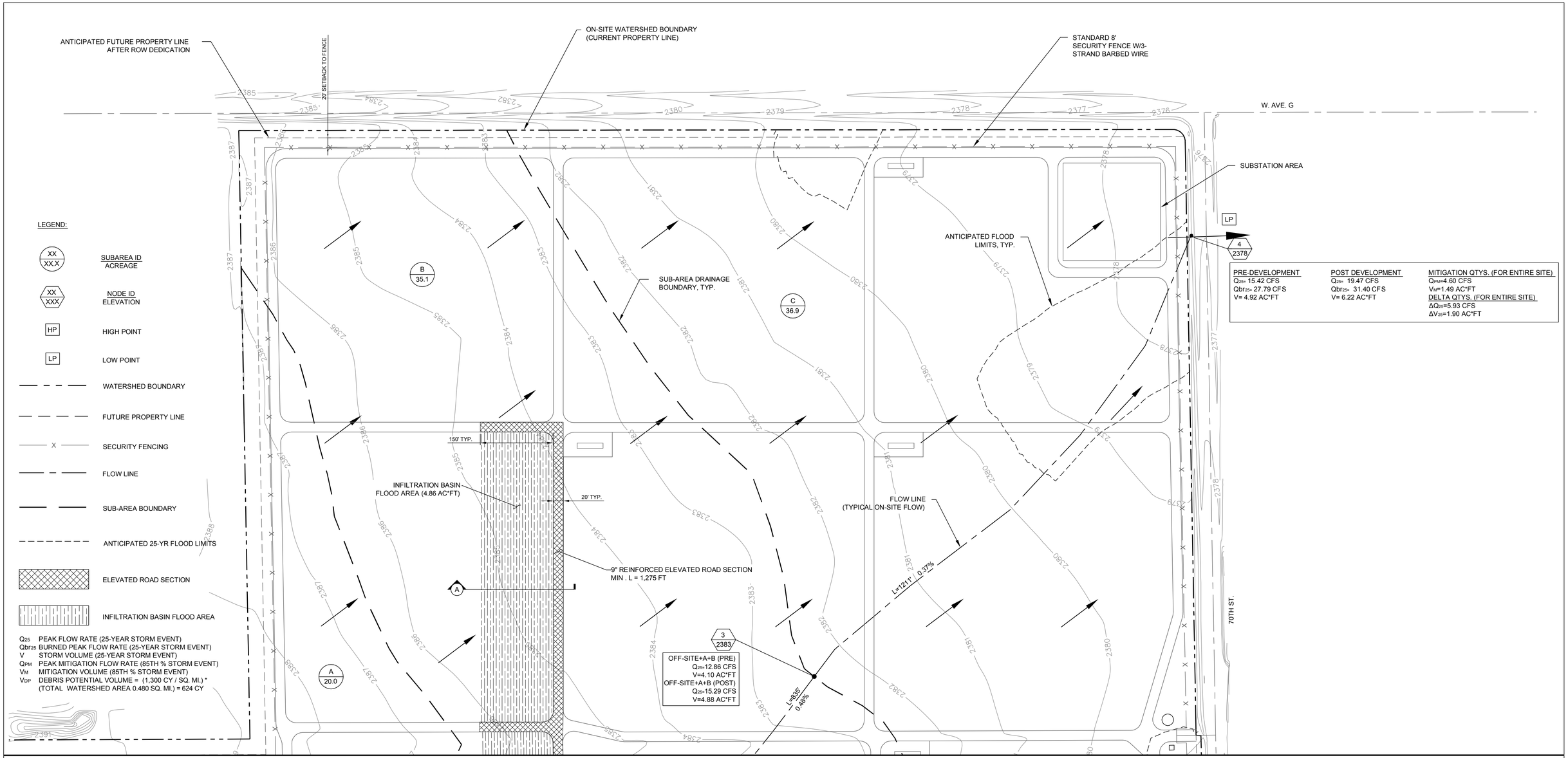

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION QTYS. (FOR ENTIRE SITE)
Q_{25}= 15.42 CFS	Q_{25}= 19.47 CFS	Q_{PM}=4.60 CFS
Qbr_{25}= 27.79 CFS	Qbr_{25}= 31.40 CFS	V_M=1.49 AC*FT
V= 4.92 AC*FT	V= 6.22 AC*FT	DELTA QTYS. (FOR ENTIRE SITE)
		ΔQ_{25}=5.93 CFS
		ΔV_{25}=1.90 AC*FT

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATE (Q_{50}) INCREASED BY 9.9%, THE VOLUME (V_{50}) INCREASED BY 3.4%, THE DEPTH INCREASED BY 4.8%, AND THE VELOCITY INCREASED BY 0.0%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

MATCHLINE: SEE SHEET C-03

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY: _____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N
0 50' 100' 200'
SCALE: 1"=100'

R2011-00799 (RCUP201100071) C-04

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

35MW AC Solar Photovoltaic Generation System
APNs 3268-018-002
3268-018-035
SCH # 2012061068

Project Name:
Project 3 American Solar Greenworks

Project Address:
W Ave. G & 70th St. W
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100071 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 3
AMERICAN SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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PLOT/UPDATE: Dec. 6, 2013 11:46:44 AM

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

ON-SITE HYDROLOGY (PRE DEVELOPMENT)

Project	Subarea	Area (acres)	%Imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 3	A	20.0	0.01	2	120	1158	0.0065	1.1	30	0.28	0.10	0.11	0.62	0.34	1.00	0.20
Project 3	B	35.1	0.01	2	120	835	0.0048	1.1	30	0.28	0.10	0.11	1.08	0.34	1.76	0.34
Project 3	C	36.9	0.01	2	120	1211	0.0037	1.1	30	0.28	0.10	0.11	1.14	0.34	1.85	0.36
Project 3	D	24.5	0.01	2	120	1240	0.0044	1.1	30	0.28	0.10	0.11	0.75	0.34	1.23	0.24
Project 3	E	18.1	0.01	2	120	1489	0.0037	1.1	30	0.28	0.10	0.11	0.56	0.34	0.91	0.18
Project 3	A	20.0	0.01	5	120	1158	0.0065	1.6	30	0.42	0.10	0.11	0.92	0.34	1.59	0.30
Project 3	B	35.1	0.01	5	120	835	0.0048	1.6	30	0.42	0.10	0.11	1.62	0.34	2.78	0.52
Project 3	C	36.9	0.01	5	120	1211	0.0037	1.6	30	0.42	0.10	0.11	1.70	0.34	2.92	0.55
Project 3	D	24.5	0.01	5	120	1240	0.0044	1.6	30	0.42	0.10	0.11	1.13	0.34	1.94	0.36
Project 3	E	18.1	0.01	5	120	1489	0.0037	1.6	30	0.42	0.10	0.11	0.84	0.34	1.43	0.27
Project 3	A	20.0	0.01	10	120	1158	0.0065	2.0	30	0.51	0.10	0.11	1.12	0.34	1.97	0.36
Project 3	B	35.1	0.01	10	120	835	0.0048	2.0	30	0.51	0.10	0.11	1.97	0.34	3.46	0.64
Project 3	C	36.9	0.01	10	120	1211	0.0037	2.0	30	0.51	0.10	0.11	2.07	0.34	3.63	0.67
Project 3	D	24.5	0.01	10	120	1240	0.0044	2.0	30	0.51	0.10	0.11	1.37	0.34	2.41	0.44
Project 3	E	18.1	0.01	10	120	1489	0.0037	2.0	30	0.51	0.10	0.11	1.02	0.34	1.78	0.33
Project 3	A	20.0	0.01	25	120	1158	0.0065	2.5	30	0.63	0.10	0.11	1.39	0.34	2.49	0.45
Project 3	B	35.1	0.01	25	120	835	0.0048	2.5	30	0.63	0.10	0.11	2.43	0.34	4.37	0.78
Project 3	C	36.9	0.01	25	120	1211	0.0037	2.5	30	0.63	0.10	0.11	2.56	0.34	4.60	0.82
Project 3	D	24.5	0.01	25	120	1240	0.0044	2.5	30	0.63	0.10	0.11	1.70	0.34	3.05	0.55
Project 3	E	18.1	0.01	25	120	1489	0.0037	2.5	30	0.63	0.10	0.11	1.25	0.34	2.26	0.40
Project 3	A	20.0	0.01	50	120	1158	0.0065	2.8	30	0.72	0.14	0.15	2.16	0.34	3.41	0.52
Project 3	B	35.1	0.01	50	120	835	0.0048	2.8	30	0.72	0.14	0.15	3.79	0.34	5.98	0.91
Project 3	C	36.9	0.01	50	120	1211	0.0037	2.8	30	0.72	0.14	0.15	3.99	0.34	6.29	0.95
Project 3	D	24.5	0.01	50	120	1240	0.0044	2.8	30	0.72	0.14	0.15	2.65	0.34	4.17	0.63
Project 3	E	18.1	0.01	50	120	1489	0.0037	2.8	30	0.72	0.14	0.15	1.95	0.34	3.08	0.47
Project 3	A	20.0	0.01	MIT.	120	1158	0.0065	0.75	30	0.19	0.10	0.11	0.42	0.34	0.65	0.14
Project 3	B	35.1	0.01	MIT.	120	835	0.0048	0.75	30	0.19	0.10	0.11	0.73	0.34	1.13	0.24
Project 3	C	36.9	0.01	MIT.	120	1211	0.0037	0.75	30	0.19	0.10	0.11	0.77	0.34	1.19	0.25
Project 3	D	24.5	0.01	MIT.	120	1240	0.0044	0.75	30	0.19	0.10	0.11	0.51	0.34	0.79	0.17
Project 3	E	18.1	0.01	MIT.	120	1489	0.0037	0.75	30	0.19	0.10	0.11	0.38	0.34	0.58	0.12

ON-SITE HYDROLOGY (POST DEVELOPMENT)

Project	Subarea	Area (acres)	%Imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 3	A	20.0	0.1	2	120	1158	0.0065	1.1	30	0.28	0.10	0.18	1.01	0.34	1.36	0.32
Project 3	B	35.1	0.1	2	120	835	0.0048	1.1	30	0.28	0.10	0.18	1.77	0.34	2.39	0.56
Project 3	C	36.9	0.1	2	120	1211	0.0037	1.1	30	0.28	0.10	0.18	1.86	0.34	2.51	0.59
Project 3	D	24.5	0.1	2	120	1240	0.0044	1.1	30	0.28	0.10	0.18	1.23	0.34	1.67	0.39
Project 3	E	18.1	0.1	2	120	1489	0.0037	1.1	30	0.28	0.10	0.18	0.91	0.34	1.23	0.29
Project 3	A	20.0	0.1	5	120	1158	0.0065	1.6	30	0.42	0.10	0.18	1.51	0.34	2.11	0.49
Project 3	B	35.1	0.1	5	120	835	0.0048	1.6	30	0.42	0.10	0.18	2.65	0.34	3.71	0.85
Project 3	C	36.9	0.1	5	120	1211	0.0037	1.6	30	0.42	0.10	0.18	2.79	0.34	3.90	0.90
Project 3	D	24.5	0.1	5	120	1240	0.0044	1.6	30	0.42	0.10	0.18	1.85	0.34	2.59	0.59
Project 3	E	18.1	0.1	5	120	1489	0.0037	1.6	30	0.42	0.10	0.18	1.37	0.34	1.91	0.44
Project 3	A	20.0	0.1	10	120	1158	0.0065	2.0	30	0.51	0.10	0.18	1.84	0.34	2.61	0.59
Project 3	B	35.1	0.1	10	120	835	0.0048	2.0	30	0.51	0.10	0.18	3.22	0.34	4.58	1.04
Project 3	C	36.9	0.1	10	120	1211	0.0037	2.0	30	0.51	0.10	0.18	3.39	0.34	4.81	1.09
Project 3	D	24.5	0.1	10	120	1240	0.0044	2.0	30	0.51	0.10	0.18	2.25	0.34	3.19	0.73
Project 3	E	18.1	0.1	10	120	1489	0.0037	2.0	30	0.51	0.10	0.18	1.66	0.34	2.36	0.54
Project 3	A	20.0	0.1	25	120	1158	0.0065	2.5	30	0.63	0.10	0.18	2.27	0.34	3.28	0.73
Project 3	B	35.1	0.1	25	120	835	0.0048	2.5	30	0.63	0.10	0.18	3.98	0.34	5.75	1.28
Project 3	C	36.9	0.1	25	120	1211	0.0037	2.5	30	0.63	0.10	0.18	4.18	0.34	6.04	1.34
Project 3	D	24.5	0.1	25	120	1240	0.0044	2.5	30	0.63	0.10	0.18	2.78	0.34	4.01	0.89
Project 3	E	18.1	0.1	25	120	1489	0.0037	2.5	30	0.63	0.10	0.18	2.05	0.34	2.96	0.66
Project 3	A	20.0	0.1	50	120	1158	0.0065	2.8	30	0.72	0.14	0.22	3.17	0.34	4.30	0.84
Project 3	B	35.1	0.1	50	120	835	0.0048	2.8	30	0.72	0.14	0.22	5.56	0.34	7.54	1.47
Project 3	C	36.9	0.1	50	120	1211	0.0037	2.8	30	0.72	0.14	0.22	5.84	0.34	7.93	1.55
Project 3	D	24.5	0.1	50	120	1240	0.0044	2.8	30	0.72	0.14	0.22	3.88	0.34	5.27	1.03
Project 3	E	18.1	0.1	50	120	1489	0.0037	2.8	30	0.72	0.14	0.22	2.87	0.34	3.89	0.76
Project 3	A	20.0	0.1	MIT.	120	1158	0.0065	0.75	30	0.19	0.10	0.18	0.68	0.34	0.89	0.22
Project 3	B	35.1	0.1	MIT.	120	835	0.0048	0.75	30	0.19	0.10	0.18	1.20	0.34	1.56	0.39
Project 3	C	36.9	0.1	MIT.	120	1211	0.0037	0.75	30	0.19	0.10	0.18	1.26	0.34	1.64	0.41
Project 3	D	24.5	0.1	MIT.	120	1240	0.0044	0.75	30	0.19	0.10	0.18	0.84	0.34	1.09	0.27
Project 3	E	18.1	0.1	MIT.	120	1489	0.0037	0.75	30	0.19	0.10	0.18	0.62	0.34	0.81	0.20

Incremental Flow and Volume Increase for Various Storm Events

Storm Event	Pre-Q (cfs)	Post-Q (cfs)	Delta-Q (cfs)	Pre-V (acre-ft)	Post-V (acre-ft	Delta-V (acre-ft)
2.00	4.15	6.78	2.63	1.32	2.15	0.83
5.00	6.21	10.17	3.96	2.00	3.27	1.27
10.00	7.55	12.36	4.81	2.44	3.99	1.55
25.00	9.33	15.26	5.93	3.00	4.90	1.90
50.00	14.54	21.32	6.78	3.48	5.65	2.17

NOTE: FOR INFILTRATION BASIN MITIGATION VOLUME, SUM MIT. FREQUENCY VOLUMES UNDER POST-DEVELOPMENT TABLE. V_{PM}=1.49 AC*FT.

DELTA QUANTITIES FOR DRAINAGE AREA A:
ΔQ25 = 2.27 - 1.39 = 0.88 CFS
ΔV25 = 0.73 - 0.45 = 0.28 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA B:
ΔQ25 = 3.98 - 2.43 = 1.55 CFS
ΔV25 = 1.28 - 0.78 = 0.50 AC*FT

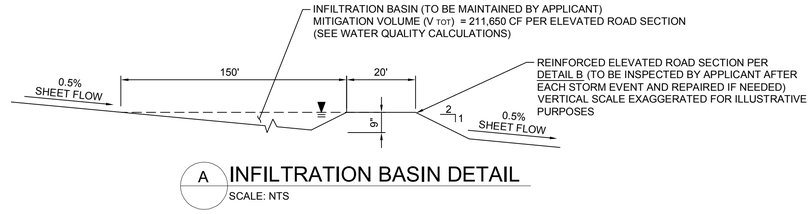
DELTA QUANTITIES FOR DRAINAGE AREA C
ΔQ25 = 4.18 - 2.56 = 1.62 CFS
ΔV25 = 1.34 - 0.82 = 0.52 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA D
ΔQ25 = 2.78 - 1.70 = 1.08 CFS
ΔV25 = 0.89 - 0.55 = 0.34 AC*FT

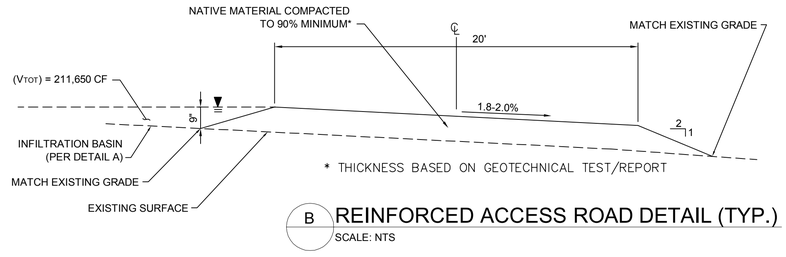
DELTA QUANTITIES FOR DRAINAGE AREA E
ΔQ25 = 2.05 - 1.25 = 0.80 CFS
ΔV25 = 0.66 - 0.40 = 0.26 AC*FT

TOTAL DELTA QUANTITIES
ΔQ25 = 5.93 CFS
ΔV25 = 1.90 AC*FT

NOTE: DUE TO THE LID Δ QUANTITIES ABOVE BEING GREATER THAN THE MITIGATION QUANTITIES (Q_{PM} AND V_{PM}) THEY REPRESENT THE WORST CASE SCENARIO BETWEEN THE PRE-/POST DEVELOPMENT CONDITIONS AND THEREFORE SHALL BE USED FOR SIZING THE INFILTRATION BASINS.



A INFILTRATION BASIN DETAIL
SCALE: NTS



B REINFORCED ACCESS ROAD DETAIL (TYP.)
SCALE: NTS

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY: _____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00799 (RCUP201100071) C-05

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

35MW AC Solar Photovoltaic Generation System
APNs 3268-018-002
3268-018-035
SCH # 2012061068

Project Name:
Project 3 American Solar Greenworks
Project Address:
W Ave. G & 70th St. W
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100071
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 3
AMERICAN SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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PLOT/UPDATE: Dec 2, 2013 8:58:41 AM

APPENDIX H:
GEOTECHNICAL REPORT

TETRA TECH

August 7, 2013

Brian Smith
County of Los Angeles
Department of Public Works
900 South Fremont Ave
Alhambra, CA 91803

Reference: **Infiltration Rates for Silverado Solar Project Sites, Antelope Valley, CA**

Dear Brian:

The purpose of this letter is to establish a basis for the infiltration rates to be used for various Low Impact Development facilities to treat and infiltrate storm water to meet the Standard Urban Stormwater Mitigation Plan requirements. Currently, LA County Public Works has provided guidance to use an infiltration rate equal to .25 in/hr. We feel this value is extremely conservative based on our experience in the area, and in other high desert areas in the region. Bruin GSI performed preliminary percolation testing at each of the six solar project sites based on the Excavation Percolation Testing Procedure or Ryon Method as outlined in LA County Administrative Manual GS200.1. The results of these preliminary tests show percolation rates much higher than the LA County provided rate of .25 in/hr. The table below shows the preliminary percolation rates recorded by Bruin GSI, the corresponding Reduction Factor, Factor of Safety and requested site specific Infiltration Rate:

Project Site	Absorption Rate (minutes/inch)[1]	Preadjusted Percolation Rate (in/hr)	Reduction Factor[2]	Factor of Safety[3]	Infiltration Rate[4] (in/hr)
North Lancaster Ranch (RCUP201100079)	7	8.57	1.52	3	**1.88**
Western Antelope Blue Sky Ranch (RCUP201100070)	3	20.0	1.52	3	**4.39**
American Solar Greenworks (RCUP201100071)	3	20.0	1.52	3	**4.39**
Antelope Solar Greenworks (RCUP201100076)	4	15.0	1.52	3	**3.29**
Silver Sun Greenworks (RCUP201100072)	5	12.0	1.52	3	**2.63**
Lancaster WAD (RCUP201100074)	3	20.0	1.52	3	**4.39**

[1] Absorption rate was measured between the drop from 6" to 5" above bottom of the percolation pit

[2] Reduction factor is based on Rf=(2di-�d)/13.5 + 1 per GS200.1

[3] Factor of Safety accounts for variations across the site and for silt accumulation over time.

[4] Infiltration rate = Preadjusted Percolation Rate/(Reduction Factor x Factor of Safety)

Tetra Tech, Inc.
17885 Von Karman Avenue, Suite 500, Irvine, CA 92614
Tel 949.809.5000 Fax 949.809.5004 www.tetratech.com

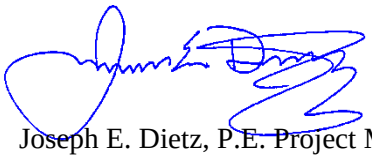
The Low Impact Development, LID, features on each project site will consist of a road that will create a berm to allow for the retention area. The road, which provides a berm of approximately 4 to 8 inches, enables run-off water to be captured and treated on-site at original grade level. Any flow in excess of retention capability of these berms will continue and normalize before it leaves the project boundaries thereby maintaining existing project conditions.

The excavations that Bruin GSI performed support our request to utilize these infiltration rates with the findings that the soil to a depth of 10 feet had no impermeable layers and the materials that were found were uniform. The density of the alluvial material, silty sand (SM) and sandy silt (ML) was generally loose to medium density with dry to moist conditions. The conditions of these materials further leads us to our conclusion that the above reference infiltration rates would be suitable to design the retention features on the respective project sites.

Groundwater conditions in the area, based on Bruin GSI review and Tetra Tech research, are at least 100 feet below ground surface elevation in the subject project areas.

As shown in the table above, the site specific infiltration rates based on preliminary testing are much higher than the .25 in/hr currently allowed. We request the use of the infiltration rates above for the design of the, LID, features at each site.

Sincerely,



Joseph E. Dietz, P.E. Project Manager

jd
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Attachments:
Bruin GSI Preliminary Percolation Feasibility Study dated August 1, 2013

BRUIN GSI PRELIMINARY PERCOLATION FEASIBILITY STUDY DATED AUGUST 1, 2013

REVISED PRELIMINARY PERCOLATION FEASIBILITY STUDY FOR SURFACE INFILTRATION DATA FOR SILVERADO POWER ON PROPOSED SOLAR SITES

NORTH LANCASTER RANCH
WESTERN ANTELOPE BLUE SKY RANCH
AMERICAN SOLAR GREENWORKS
ANTELOPE SOLAR GREENWORKS
SILVER SUN GREENWORKS
LANCASTER WAD

LANCASTER, LOS ANGELES COUNTY
CALIFORNIA

Prepared by:
Bruin Geotechnical Services, Inc.
1817 East Avenue Q, Unit A1
Palmdale, California 93550

August 1, 2013
J.N. 12-59

BRUIN GSI

SOIL AND MATERIAL
TESTING AND INSPECTIONS

August 1, 2013 J.N. 12-59

Mr. Ryan Galeria
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

Project: Proposed Solar Sites, Lancaster, California

Sites:

1- North Lancaster Ranch

2- Western Antelope Blue Sky Ranch

3- American Solar Greenworks

4- Antelope Solar Greenworks

5- Silver Sun Greenworks

6- Lancaster WAD

Subject: Revised Preliminary Percolation Feasibility Study for Surface Infiltration Data via Los Angeles County Ryon Method

Presented herewith, per your request, are the results of the percolation testing program for the referenced project. The purpose of this report is to provide preliminary surficial percolation rates for the referenced sites for use by the client to determine the infiltration rates of the existing native soils at existing grade for the proposed water run-off of impermeable areas, such as drive access roadways and small equipment pad areas. This report concludes the scope of our services per our contract.

Site Description

The subject sites are located in the southwest portion of the Antelope Valley, in the Lancaster area of Los Angeles County. The subject sites vary in size and topography. However the sites are relatively flat and level with general slopes of approximately 1-3 percent, with drainage occurring by sheetflow, except site 2, Western Antelope Blue Sky Ranch, which sloped up to the southwest with minor rolling hills.

At the time of our investigation, the sites were vacant of structures. Vegetation consisted of native desert flora, with varying amounts of shrubs, annual grass and weeds. Oak trees were not observed at the sites. The site locations and site plan are presented in Appendix A. The approximate percolation test locations for each site are also indicated on the site plan.

Proposed Development and Drainage

Based on our review of the preliminary site plan, it is our understanding that a solar farm is proposed. The impermeable areas that create water run-off consist of raised access roadways on the perimeter of the site with access roadways, which locations vary by site, dissecting the sites. In addition, concrete equipment pads at various locations on each site will create small impermeable areas. The impermeable surface areas on each site range from 7.5% to 15% of the entire site areas. It is intended that the raised access roads serve as a berm and capture the run-off water and allow it to infiltrate at existing ground elevation. The height of the roadway will range from four to eight inches in height and will create the retention basins on each site and to allow infiltration into native soil at exiting grade elevation. Any additional flow will continue over the roads, therefore maintaining existing sheet flow patterns.

Percolation Testing Protocol

Testing for percolation rates was performed in accordance with the Los Angeles County Ryon Method. This method was performed by excavating a cubic foot test hole at existing ground surface which is the anticipated elevation of the infiltration basins. The test hole is pre-soaked by filling with clean water to existing grade (12 inches). Once all the water has been absorbed, the test hole is cleaned of loose material and filled again with clean water. The percolation rate is determined by monitoring the time of drop for each inch from 0 to 6 inches. The time of absorption between the 5th to 6th inch is the percolation rate in minutes per inch.

On December 1, 2012, the field-testing program was instigated. A minimum of one (1) cubic foot percolation test hole was excavated at each site. The test holes were excavated at the existing ground elevation to a depth of one (1) foot below existing ground elevation with hand equipment. The soil types were logged by our representative. Soil profile information and classifications are presented in Appendix B.

The same day, the cubic foot hole prepared was filled to the initial fill level of existing ground elevation with clean water for pre-soaking. Pre-soaking time varied with each test hole, however all the water percolated within ten to fifteen minutes of the addition of the water. The test hole was then cleaned and re-filled with water to the initial fill level (existing ground). The drop was monitored and documented to determine the absorption rate (drop from the 5th to 5th inch). The percolation rates are provided in Appendix B. Our representative David Michel performed the tests.

Subsurface Investigation

On July 31, 2013, seven (7) additional excavations were performed utilizing a tractor-mounted backhoe to a depth of ten (10) feet below existing ground surface at the locations of each test hole. The purpose of the excavations was to log the soil types, determine the soil classifications and if any impermeable material was present below the test holes. Our representative observed the excavations and prepared field logs of the material encountered. The final logs of the excavations are presented in Appendix C.

Groundwater Conditions

A review of various website databases regarding water well data and groundwater for the Antelope Valley area was performed. The sites included the United States Geological Survey, Los Angeles County Department of Public Works, State of California Department of Conservation, and published State of California Seismic Zone Hazard Maps (Del Sur Quadrangle and West Lancaster Quadrangle), with associated reports regarding liquefaction which is relative to groundwater levels. Based on our review, groundwater in the areas of the subject sites is a minimum of 100 feet below ground surface elevation.

Conclusions

Based on the excavations performed at the subject sites, the material encountered was uniform and no impermeable layers were observed within the total depth of the excavations (10 feet bgs). The areas observed consist of alluvial material, silty sand (SM) and sandy silt (ML). This material was observed to be generally loose to medium dense and dry to moist. Some cementation was observed. The soils appeared porous and permeable.

Groundwater is over 100 feet below ground surface elevation in the subject site areas.

The percolation rates, indicated as minutes per inch, may be utilized to determine the infiltration rate of the soil at existing grade to design the specific area required for the amount of water run-off based on the size of the impermeable areas. The design should include a minimum safety factor of 2.0.

The proposed use of the project site as a solar farm is not expected to significantly change the imperviousness of the sites, with the exception of road construction, which is anticipated to cover 7-15%, depending on the site. It is our professional opinion, provided the drainage and infiltration basins are properly designed, the use of these raised roadway areas as berms to capture run-off water to allow infiltration at existing ground elevation is feasible.

Limitations

The percolation test data provided is based on Los Angeles County Health Department Guidelines (Ryon Method) typically required for septic system design to determine

in minutes per inch at the location on the site as indicated in this report only. Other areas of the each site may vary. The purpose of the testing is to provide the client with preliminary soil absorption rates for their use in preparing information in regards to water run-off and minor surficial detention of water for infiltration in order to comply with the Limited Impact Development standards. Los Angeles County may require additional testing or methodology for final approval.

If there are any changes in the proposed construction or additional testing is necessary, this office should be notified immediately. If soils encountered are different than indicated in this report, contact this office. No warranty is expressed or implied. Test results indicate the rates at the locations indicated. This report does not guarantee issuance of a permit. This report is subject to approval from the governing agency.

Closure

Information and procedures described in the report were performed in accordance with general standards of practice. We trust this reports meets your needs. If you have any questions or require additional information, Please contact our office.

Sincerely,

Bruin Geotechnical Services Inc.

Dennis J. Sloan, P.E.

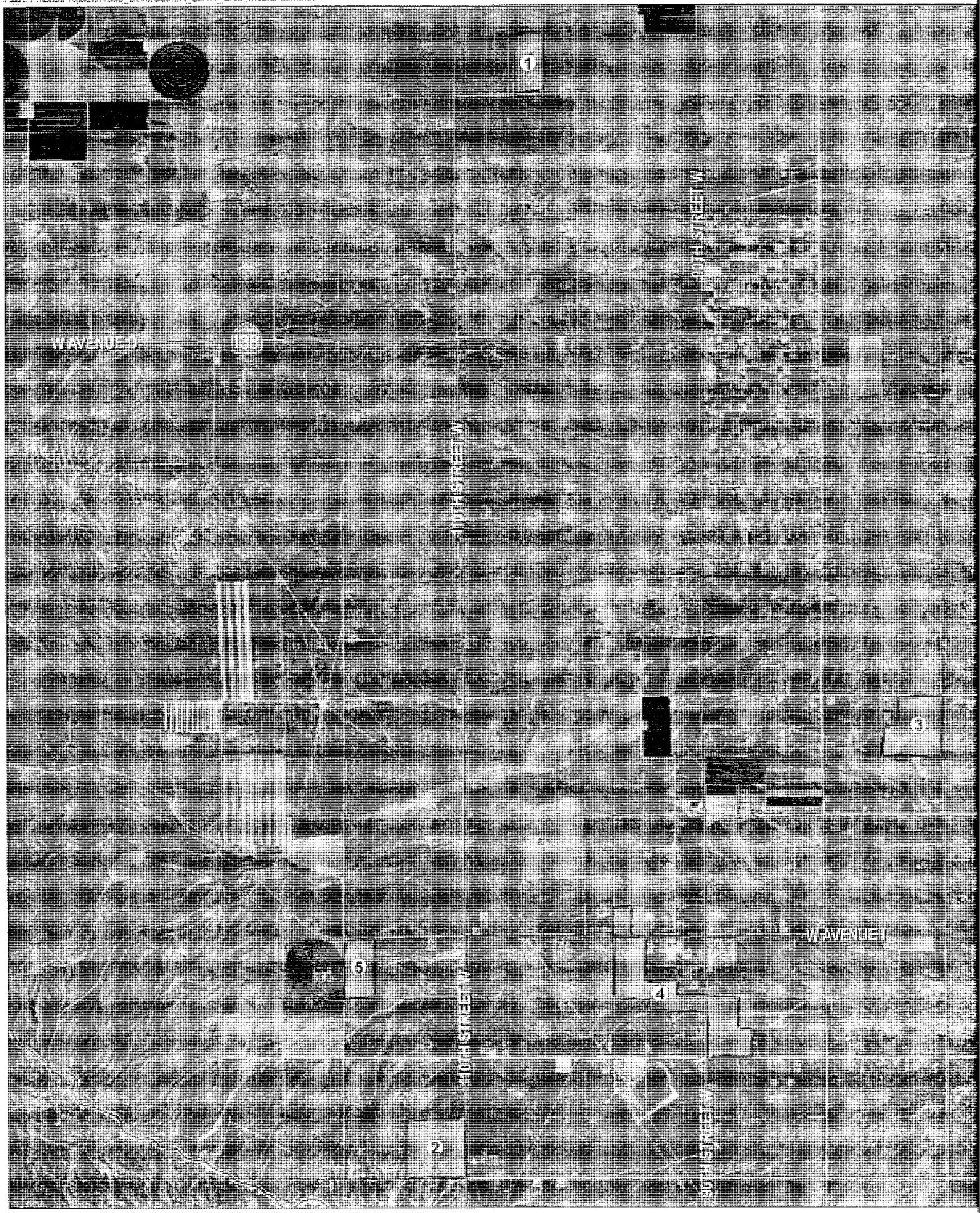
REGISTERED PROFESSIONAL ENGINEER
DENNIS J. SLOAN
No. 29704
Expires 03/31/15
CIVIL
STATE OF CALIFORNIA

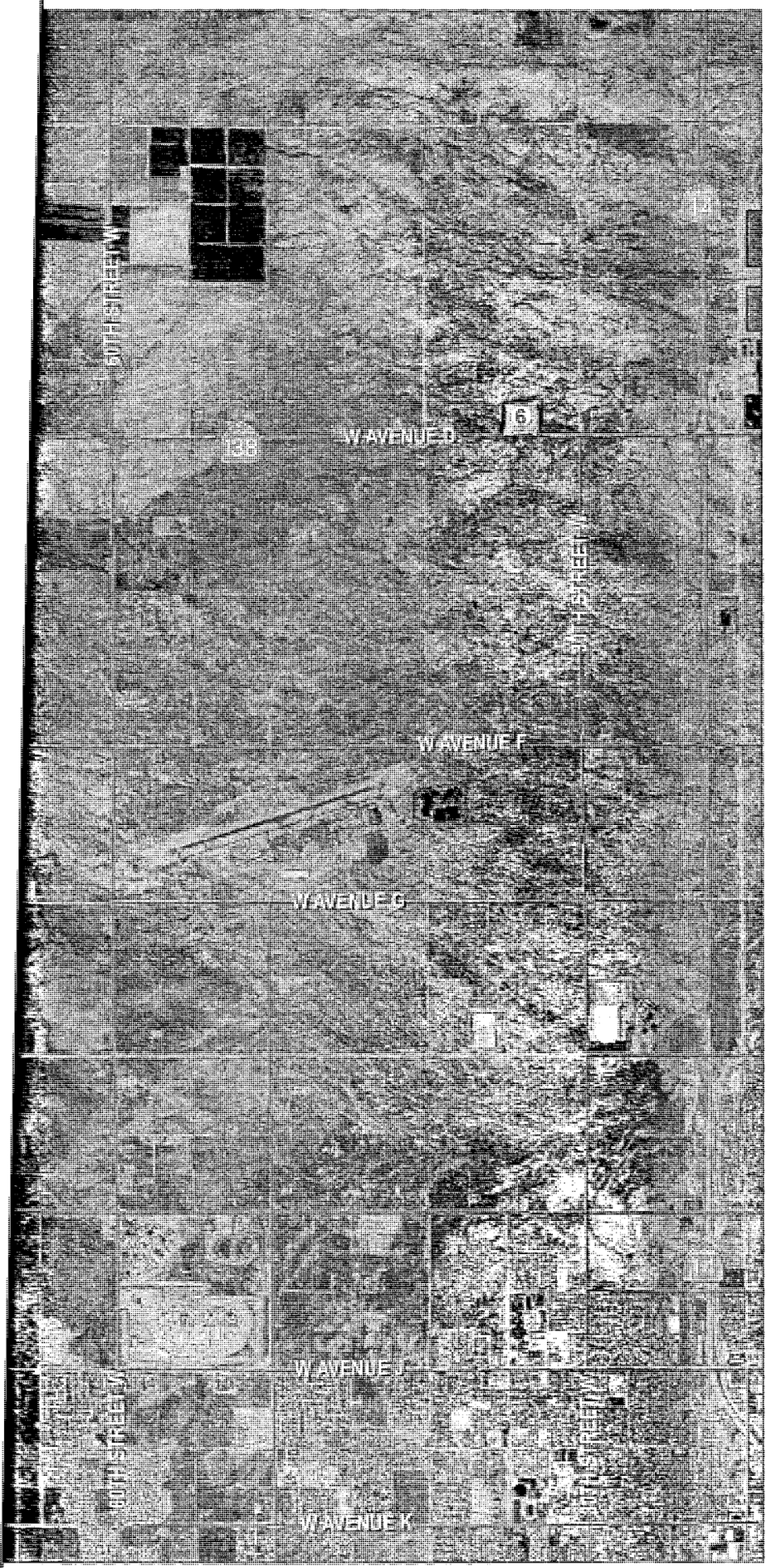
DJS/mes

APPENDIX A

Site Location Map
Site Plans with Approximate Test Locations

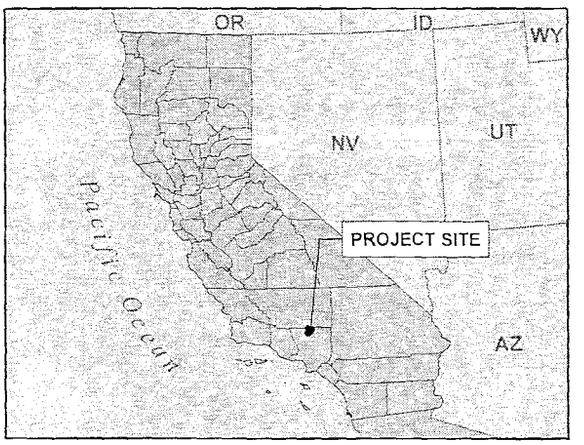
Plotting Date: 6/27/2012 4:18:17 PM
Path: P:\GIS\Projects\4335_Shirrado\LA_EIR\1_LAC_MasterEIR.mxd





SILVERADO power

SILVERADO POWER WEST
LOS ANGELES COUNTY



LEGEND

PROJECT 1 - NORTH LANCASTER RANCH

PROJECT 2 - WESTERN ANTELOPE BLUE SKY RANCH

PROJECT 3 - AMERICAN SOLAR GREENWORKS

PROJECT 4 - ANTELOPE SOLAR GREENWORKS

PROJECT 5 - SILVER SUN GREENWORKS

PROJECT 6 - LANCASTER WAD

NOTE:
(a) State Plane, Zone V (NAD83), US Survey Feet.
(b) Source Data: ESRI, TTEC.

FIGURE 1
SILVERADO POWER WEST
LOS ANGELES COUNTY
PROJECTS

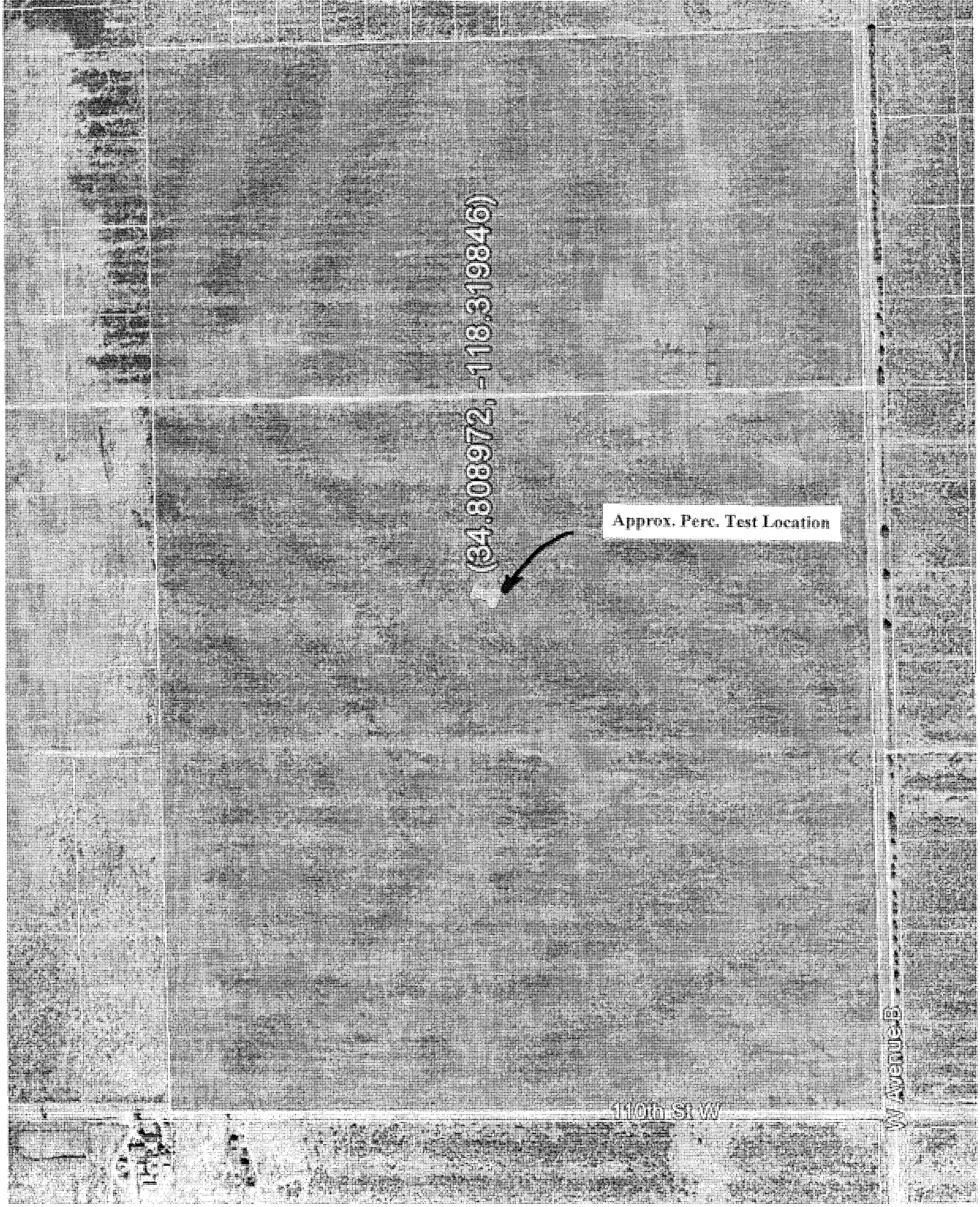
0 0.5 1 2

Miles

TETRA TECH EC, INC.

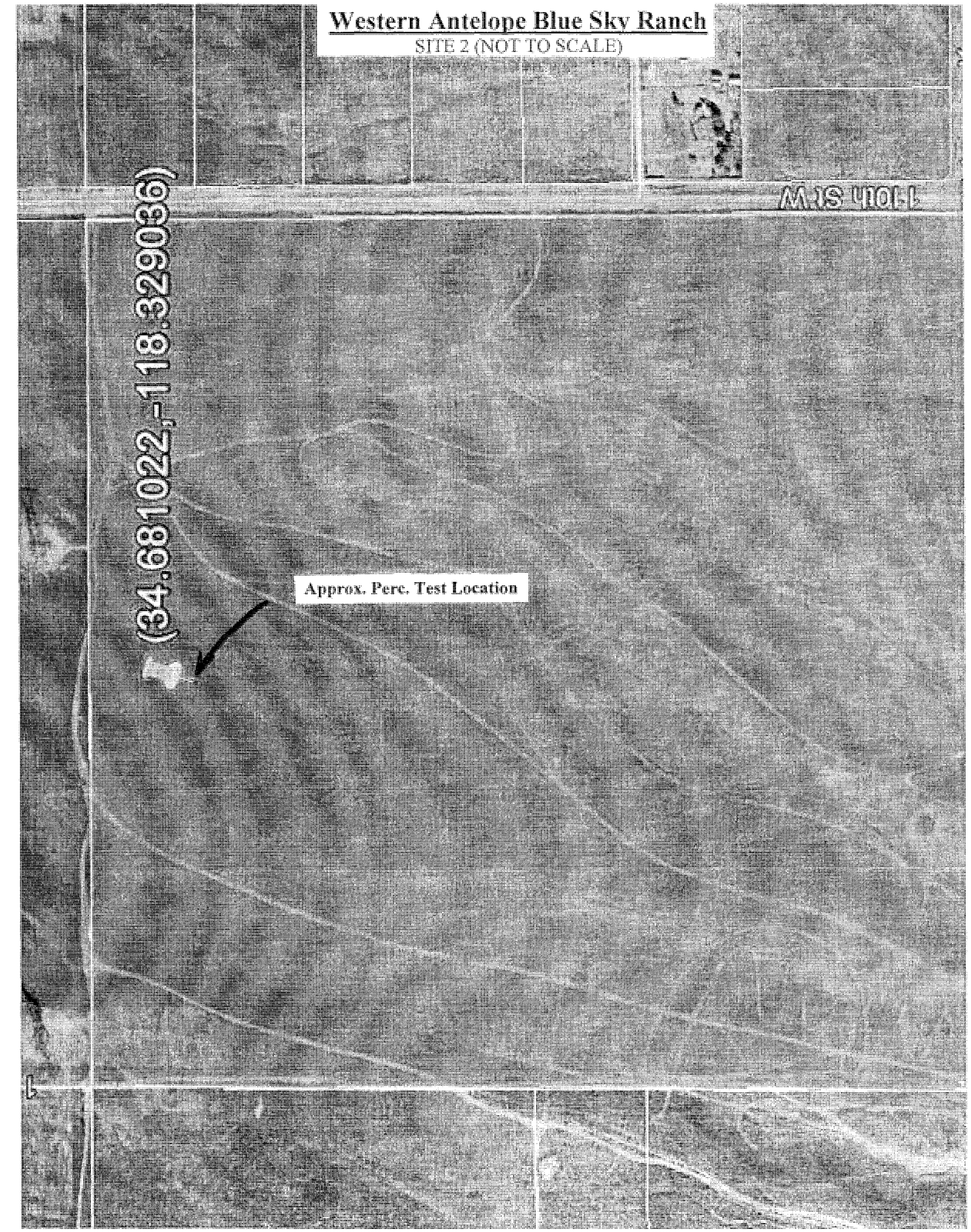
North Lancaster Ranch

SITE 1 (NOT TO SCALE)



Western Antelope Blue Sky Ranch

SITE 2 (NOT TO SCALE)

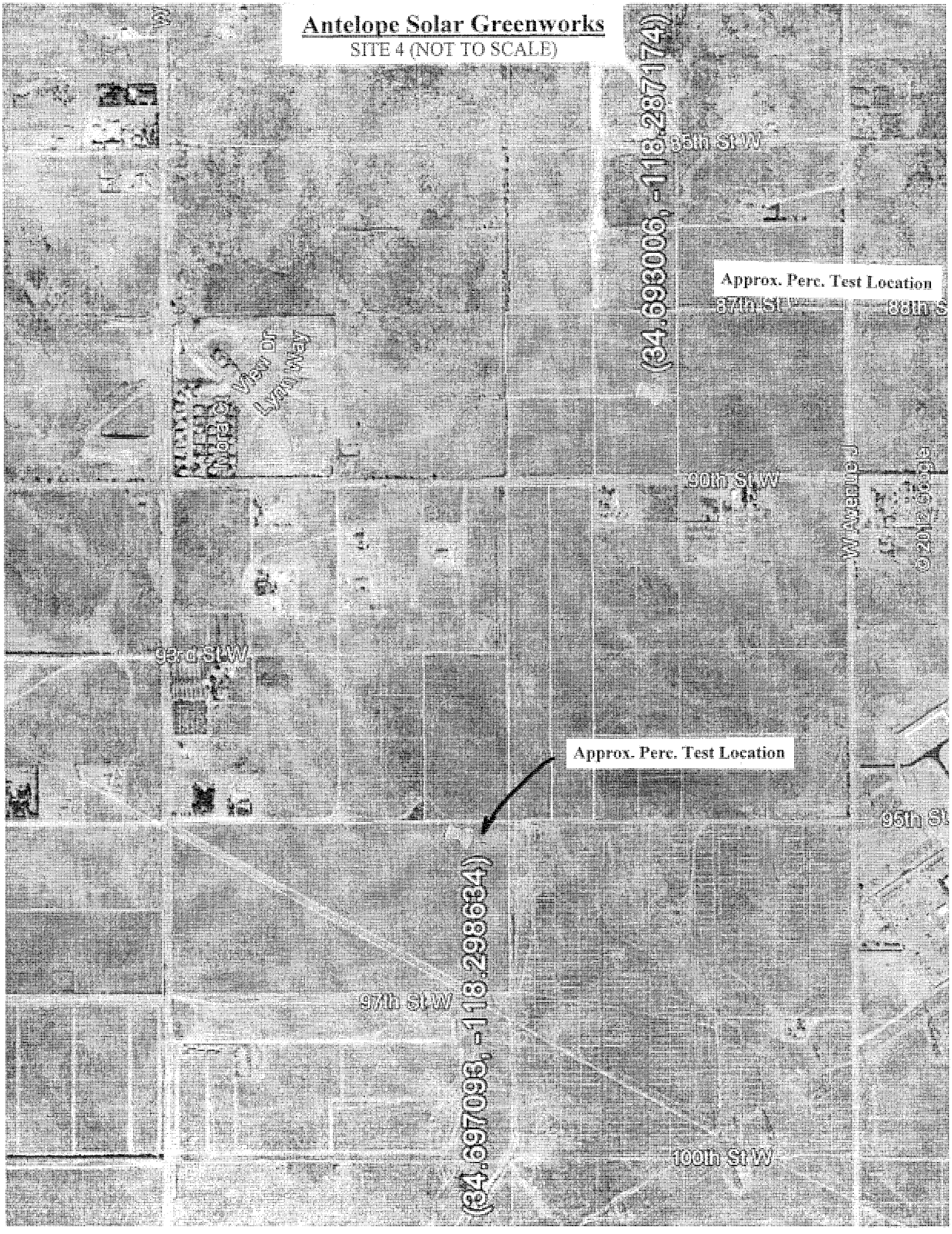


American Solar Greenworks

SITE 3 (NOT TO SCALE)

Antelope Solar Greenworks

SITE 4 (NOT TO SCALE)



Silver Sun Greenworks

SITE 5 (NOT TO SCALE)

Lancaster WAD

SITE 6 (NOT TO SCALE)

APPENDIX B

Soil Profile, Classifications and Absorption Rate

Site	Soil Description	USCS Classification	Absorption Rate (MPI)
Site 1 North Lancaster Ranch Ave. B & 110th St. West	Light brown fine sandy silt w/ medium to coarse sand (cemented)	ML	7
Site 2 Western Antelope Blue Sky Ranch Ave. K & 110th St. West	Dark Yellow brown silty fine to coarse sand	SM	3
Site 3 American Solar Greenworks Ave. G-8 & 70th St. West	Light brown silty fine to medium sand with coarse sand (slightly cemented)	SM	3
Site 4 Antelope Solar Greenworks Ave. J & 90th St. West (2 tests- A=NW portion, B=SE portion)	A-Moderate brown very silty fine to medium sand	SM	4
	B-Light brown silty fine to medium sand with coarse sand	SM	3
Site 5 Silver Sun Greenworks Ave. I & 120th St. West	Strong brown silty fine to coarse sand (slightly cemented)	SM	5
Site 6 Lancaster WAD Ave. D & 30th St. West	Light brown very silty fine to medium sand (cemented)	SM	3

APPENDIX C

Excavation Logs

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 1 North Lancaster Ranch	**Drill Type:** Case backhoe
Location: Ave. B &110th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
5'		ML	Light brown fine sandy silt w/ medium to coarse sand medium dense, dry (cemented)					
			(slightly cemented)					
10'		SM	Grey brown very silty fine sand w/ medium sand medium dense, moist (slightly cemented)					
		SM	Medium brown silty fine to medium medium dense, moist (slightly cemented)					
15'			Excavation terminated @ 10' bgs No free groundwater encountered No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 2 Western Antelope Blue Sky Ranch	**Drill Type:** Case backhoe
Location: K-8 & 110th St West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Dark yellow silty fine to medium sand w/ occasional coarse sand, medium dense, dry (slightly cemented)					
5'		SM	Reddish brown silty fine to coarse sand & clay binder medium dense, slightly moist					
		SM	Yellow brown silty fine to coarse sand w/ occasional #4 gravel medium dense moist (cemented)					
10'		SM	Yellow brown silty fine to coarse w/ occasional #4 gravel medium dense moist					
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 3 American Solar Greenworks	**Drill Type:** Case backhoe
Location: 70th st west & Ave G-8	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Light brown silty fine to medium sand medium dense, dry (slightly cemented)					
		SM	Moderate brown silty fine to coarse sand loose, moist					
5'								
		SM	Moderate brown silty fine to medium sand w/ coarse sand moist medium dense, moist (slightly cemented)					
		ML	Yellow brown silty fine to medium sand medium dense, moist					
10'								
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1 (A)

Client: Silverado Power	**Project No:** 12-59
Project: Site 4 Antelope Solar Greenworks	**Drill Type:** Case backhoe
Location: 90th West & Ave J	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
5'		SM	Moderate brown very silty fine to medium sand w/ coarse sand medium dense, dry (cemented dry)					
10'		SM	Yellow brown silty fine to medium sand w/ coarse sand loose, dry (slightly cemented)					
		SM/ML	Light brown very silty fine to medium sand w/ occasional coarse sand medium dense, moist (cemented)					
15'		SM/ML	Light brown very silty fine to medium sand w/ occasional coarse sand medium dense, moist (cemented) Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E2 (B)

Client: Silverado Power	**Project No:** 12-59
Project: Site 4 Antelope Solar Greenworks	**Drill Type:** Case backhoe
Location: 90th West & Ave J	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		ML	Light brown silty fine to medium sand medium dense, dry (slightly cemneted)					
5'		SM	Moderate brown silty fine to medium sand medium dense, moist (slightly cemented)					
		SM	Orange brown silty fine to medium sand w/ occasional #4-1/2 gravel loose, moist					
10'		SP	Yellowish brown slightly silty fine to medium sand w/ coarse sand medium dense, slightly moist					
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 5 Silver Sun Greenworks	**Drill Type:** Case backhoe
Location: Ave I & 120th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Medium brown silty fine to w/coarse sand					
			medium dense, dry (slightly cemneted)					
		SM	Dark brown silty fine to coarse sand w/ clay binder					
5'			medium dense (slightly cemented)					
		SM	Dark yellowish brown slightly silty fine to coarse sand w/ #4 gravel					
			loose, moist					
10'		SM	Dark brown slightly silty fine to coarse sand w/ #4 gravel & occasional 1"- 3" gravel					
			loose, moist					
15'			Excavation Terminated @ 10' bgs					
			No free groundwater encountered					
20'			No caving					
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 6 Lancaster WAD	**Drill Type:** Case backhoe
Location: Ave D & 30th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Light grey very silty brown fine to medium sand					
			medium dense (cemented)					
		ML	Light grey brown fine sandy silt					
			firm, slightly moist (cemented)					
5'		ML	Pale brown fine sandy silt					
			dense, dry					
		SM	Light brown silty fine sand w/ occasional medium sand					
			loose, dry					
10'		SM	Light brown silty sand w/ occasional medium sand					
			loose, dry					
			Excavation Terminated @ 10' bgs					
			No free groundwater encountered					
15'			No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

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APPENDIX B-7.4

PROJECT 4 ANTELOPE SOLAR
HYDROLOGY STUDY/DRAINAGE CONCEPT/SUSMP/LID

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HYDROLOGY STUDY/DRAINAGE CONCEPT/LID

PROJECT 4
ANTELOPE SOLAR GREENWORKS
R2011-00807 (RCUP201100076)

90TH ST. W & W AVE. J
LANCASTER
LOS ANGELES COUNTY, CA

December 2013

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID APPROVED FOR AREA AND Q ONLY

APPROVED BY: _____ RCE NO. _____DATE_____

CHECKED BY:_____ DATE_____

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS LAND DEVELOPMENT DIVISION

Prepared for:

SILVERADO power

2 Embarcadero Center, Suite 410
San Francisco, CA 94111
(415) 692-7740

Prepared by:

TETRA TECH, INC.

17885 Von Karman, Suite 500
Irvine, CA 92614
(949) 809-5000

Under the supervision of:
Joseph E. Dietz, P.E.

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.

12.6.13

Joseph E. Dietz P.E. 67032 Date Seal

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III. EXISTING DRAINAGE CONDITION **5**

IV. METHODOLOGY **6**

V. SUMMARY OF RESULTS **7**

APPENDIX

A: LOCATION MAP

B: EXISTING DRAINAGE CONDITION

C: HYDROLOGY MANUAL REFERENCES

D: PRE-/POST DEVELOPMENT ON-/OFF-SITE HYDROLOGIC CALCULATIONS – 25 & 50 YEAR EVENTS

E: IMPACT ANALYSIS CALCULATIONS

F: WATER QUALITY CALCULATIONS

G: DRAINAGE MAPS (ON-/OFF-SITE)

H: GEOTECHNICAL REPORT

I. INTRODUCTION

Project 4 Antelope Solar Greenworks is a solar power project located west of 80th Street, between W Avenue J to the south and W Avenue I to the north (see **Location Map, Appendix A**). The property is owned by Silverado Power (referred to as "applicant" for the remainder of this report). The scope of this hydrology report is to analyze the pre-development and post-development hydrological conditions (once the installation of the solar panels is complete) in order determine runoff effects on and off the site. The peak runoff calculations were developed for the 25-year and 50-year storm events. Currently, runoff from approximately 7,986 acres of offsite area enters the 255.5 acre project site from the west, creating a study watershed area of approximately 8,241.5 acres. The off-site runoff was added into the on-site runoff areas as shown on the attached Drainage Maps (see **Appendix G**). The majority of the watershed consists of un-developed land.

II. PROJECT BACKGROUND

Due to the predominantly flat nature of the site (less than 1.25% longitudinal slope), the project will involve minimal grading for construction of dirt access roads between the proposed arrays of solar panels. The project site currently drains from west to east. The post-development condition will maintain this flow path. The post-development runoff will continue to sheet flow in the pre-development condition in order to avoid disturbance to downstream drainage structures and wildlife. Impacts to the 50-year storm event flow rates, volumes, depths, and velocities leaving the site will be negligible (see **Impact Analysis, Appendix E**). The construction of the solar panel arrays and other miscellaneous site development will be accounted for by increasing the site's impervious percentage from 1% to the Los Angeles County approved value of 10%. Per the LACDPW Flood Control Division, the additional amount of runoff generated by this increase in impervious surface will be collected onsite with the help of 3 reinforced elevated road sections that run north to south at various locations along the site (see **On-Site Drainage Map, Appendix G)**. The ponding water will infiltrate in about 3.6 hours (see **Water Quality Calculations, Appendix F**). The basins are located within the first half of the site in order to allow flows to normalize before leaving the site.

III. EXISTING DRAINAGE CONDITION

In order to delineate the existing drainage conditions for the Antelope Solar Greenworks project site and its watershed, USGS and site specific topographic data were reviewed. A watershed boundary was developed for the project site (see **Off-Site Drainage Map, Appendix G)**. A site visit was conducted on January 31, 2012 by Cris Dragomir, PE to verify the delineated watersheds and to take site photos of the existing drainage features. A map showing locations where the photos were taken as well as photos identifying typical site drainage conditions are attached under the **Existing Drainage Condition Appendix B** of this report.

Review of the topographic information and results of the site survey found that storm runoff generally sheet flows in an eastern direction. Flow does not seem to concentrate anywhere on the site in any naturally formed channels, except for a wide channel located near the center of the site (see **Existing Drainage Condition, Appendix B**). There are minimal signs of erosion due to the presence of vegetation and soils with high infiltration rates.

A Geotechnical Report (see **Appendix H**) was prepared for the site. The report shows site soils consist of very silty fine to medium sand in the north-western portion of the site and silty fine to medium sand with coarse sand in the south-eastern portion of the site. The percolation test performed shows soil infiltration rates of 4 min/in, which is equivalent to 15.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 3.29 in/hr.

IV. METHODOLOGY

HYDROLOGIC CALCULATIONS

To determine the watershed boundaries tributary to the project site, existing USGS and site specific topographic data were reviewed. Hydrologic Calculations for the proposed project site were performed in conformance with the Los Angeles County Hydrology Manual, dated January 2006, utilizing the Modified Rational Method TC Calculator. The Modified Rational Method was used to estimate the runoff flows for each sub-area of the watershed, which were limited to 40 acres (see **Appendix D**). The Modified Rational Method equation relates rainfall intensity, time of concentration, runoff coefficient, and drainage area size to the direct runoff from each drainage sub-area. The TC Calculator along with rainfall intensity maps from the Los Angeles County Hydrology Manual were used to model the various watersheds and determine the peak flows.

Hydrologic Soil numbers 100, 120, and 134 were used as the soils group for the project site per the Los Angeles County Hydrology Manual, Map 1-H1.65 and 1-H1.66 (see **Appendix C**). Times of concentration for the various sub-areas were calculated by the TC Calculator based on the approximate length and the elevation difference over that length. Lastly, peak flows from each sub-area were summed in order to achieve a total peak runoff for the entire watershed. This approach is conservative due to the fact that it yields a slightly higher peak runoff if compared to an alternative approach which analyzes all sub-areas and utilizes surface routing to generate lag times.

DEBRIS POTENTIAL CALCULATIONS

A debris production rate was calculated for the site using the Debris Production Rate figures for the Antelope Valley from Appendix B of the LACDPW Sedimentation Manual (see **Appendix C**). These rates, multiplied by the square mileage of the site tributary to the specific zone, provide the debris potential for the site (see **Appendix G**). The site does not produce high levels of debris due to its relatively flat nature. Therefore, no debris protection will be provided for the low levels of debris produced.

V. SUMMARY OF RESULTS

Hydrologic calculations were performed for the pre-/post development conditions. Summary tables and detailed calculations 25-year and 50-year storm events showing drainage area size, soil type, storm frequency, flow length, slope, flow rate, burned flow rate, storm volumes, etc., are located in **Appendices D and G** of this report. The pre-development 25-year storm event yielded a clean runoff of 7,751.85 cfs and a storm volume of 516.71 ac-ft (for onsite areas + offsite areas). The proposed use of the project site as a solar farm is not expected to significantly change the imperviousness of the site. With the addition of the solar panel arrays and other miscellaneous development, the site's impervious surface was increased to the Los Angeles County approved value of 10%. With this increase in impervious surface, the post development 25-year storm event yielded a clean runoff of 7,768.67 cfs and a storm volume of 521.38 ac-ft (for onsite areas + offsite areas). The additional runoff of 16.82 cfs and the additional storm volume of 4.67 ac-ft represent the delta quantities which require mitigation in order for the pre- and post-development flow rate and storm volume to be the same for the 25-year storm event. The on-site clean runoffs and storm volumes from the Modified Rational Method TC Calculator are shown in Table 1 and 2 below. For off-site clean runoffs and storm volumes, see **Appendix D**.

Table 1 – Pre Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A	25-YEAR	0.70	0.22
B	25-YEAR	1.10	0.35
C	25-YEAR	1.24	0.40
D	25-YEAR	5.45	0.85
E	25-YEAR	3.82	0.66
F	25-YEAR	6.41	1.11
G	25-YEAR	5.55	0.96
H	25-YEAR	1.97	0.63
I	25-YEAR	4.96	0.85
J	25-YEAR	3.03	0.97
K	25-YEAR	2.15	0.69
A	50-YEAR	0.80	0.25
B	50-YEAR	1.25	0.40
C	50-YEAR	1.41	0.45
D	50-YEAR	12.40	1.08
E	50-YEAR	5.97	0.79
F	50-YEAR	10.03	1.33
G	50-YEAR	8.68	1.15
H	50-YEAR	2.26	0.72
I	50-YEAR	7.75	1.03
J	50-YEAR	3.48	1.11
K	50-YEAR	2.46	0.79

Table 2 – Post Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)	ΔQ (CFS)	ΔV (AC-FT)
A	25-YEAR	1.14	0.36	0.44	0.14
B	25-YEAR	1.79	0.57	0.69	0.22
C	25-YEAR	2.03	0.65	0.79	0.25
D	25-YEAR	10.15	1.37	4.70	0.52
E	25-YEAR	4.86	1.04	1.04	0.38
F	25-YEAR	8.16	1.75	1.75	0.64
G	25-YEAR	7.06	1.52	1.51	0.56
H	25-YEAR	3.22	1.03	1.25	0.40
I	25-YEAR	6.31	1.35	1.35	0.50
J	25-YEAR	4.96	1.59	1.93	0.62
K	25-YEAR	3.52	1.13	1.37	0.44
A	50-YEAR	1.30	0.42	0.50	0.17
B	50-YEAR	2.04	0.65	0.79	0.25
C	50-YEAR	2.31	0.74	0.90	0.29
D	50-YEAR	14.02	1.62	1.62	0.54
E	50-YEAR	8.43	1.26	2.46	0.47
F	50-YEAR	11.70	2.06	1.67	0.73
G	50-YEAR	10.12	1.79	1.44	0.64
H	50-YEAR	3.70	1.18	1.44	0.46
I	50-YEAR	9.04	1.59	1.29	0.56
J	50-YEAR	5.69	1.81	2.21	0.70
K	50-YEAR	4.03	1.29	1.57	0.50

As discussed further in the Water Quality Calculations, the peak mitigation flow rate (Q_{PM}) of 8.73 cfs and the mitigation volume (V_M) of 2.84 ac-ft from the post-development condition represent required mitigation quantities (see **Water Quality Calculations, Appendix F**). The mitigation runoffs and storm volumes for each subarea are shown below in Table 3. The mitigation measures will be sized to account for the 25-year storm event pre-/post-development delta quantities since they exceed the mitigation quantities.

Table 3 – Post Development Mitigation Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A	MITIGATION	0.27	0.09
B	MITIGATION	0.43	0.14
C	MITIGATION	0.48	0.16
D	MITIGATION	0.91	0.30
E	MITIGATION	0.72	0.24
F	MITIGATION	1.22	0.39
G	MITIGATION	1.05	0.34
H	MITIGATION	0.75	0.24
I	MITIGATION	0.94	0.31
J	MITIGATION	1.15	0.37
K	MITIGATION	0.81	0.26

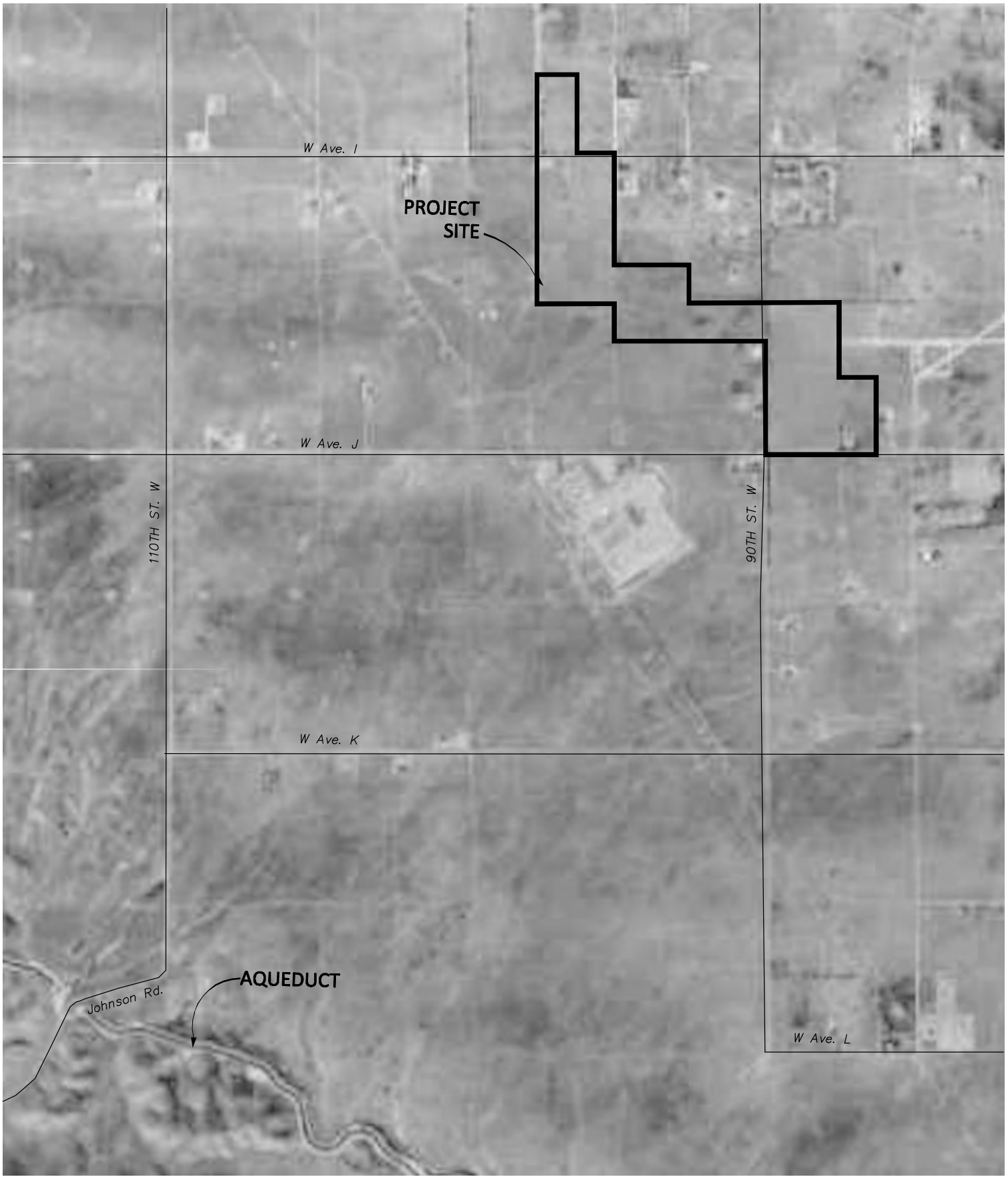
The proposed infiltration basins were sized to meet the ΔV_{25} of 4.67 ac-ft. The proposed basins will be created by 3 north to south reinforced elevated access road sections located at various locations throughout the site (see **Water Quality Calculations, Appendix F**). The role of the elevated road sections (ranging from 7.5 inches to 10.6 inches as shown on the **On-Site Drainage Maps, Appendix G**) is to capture only the ΔV_{25} and allow it to infiltrate. In doing so, the whole V_M will be infiltrated and treated by the existing soils. The additional flow will continue over the road toward the eastern part of the project site, therefore mimicking pre-development sheet flow patterns.

An analysis was performed to ensure that the post-development 50-year storm event flow rates and volumes leaving the site do not experience a significant increase over pre-development levels (see **Impact Analysis Calculations, Appendix E**). The infiltration basins were ignored for these calculations. This approach is conservative as the basins act to reduce the flow rates and volumes of the post-development condition. For the seven major site flow lines (see **On-Site Drainage Map, Appendix G**), the post-development yielded negligible increases less than 1% for the flow rates and less than 4% for the flow volumes.

An analysis for the development's impact on 50-year storm event flow depths and velocities leaving the site was deemed unnecessary due to the results of the flow rate analysis (see **Impact Analysis Calculations, Appendix E**). Flow depths and velocities are dependent on their corresponding flow rate. Since the flow rates experience negligible increases (less than 1%), the flow depths and velocities are anticipated to experience negligible increases.

Due to the predominantly flat nature of the site, the 112,283 cubic yards of debris produced (see **Appendix G**) will be spread evenly over the 255.5 acre project site and approximately half of the watershed (half of the watershed is predominantly flat). This amounts to approximately 0.20 inches of debris depth spread evenly across about 4,249 acres. Since the debris production volume is very small, protections measures will not be implemented at the project site.

APPENDIX A:
LOCATION MAP



N

TETRA TECH
17885 VON KARMAN AVE., STE. 500
IRVINE, CA 92614-6213
949-809-5000

Scale:

Date: 9-5-2013

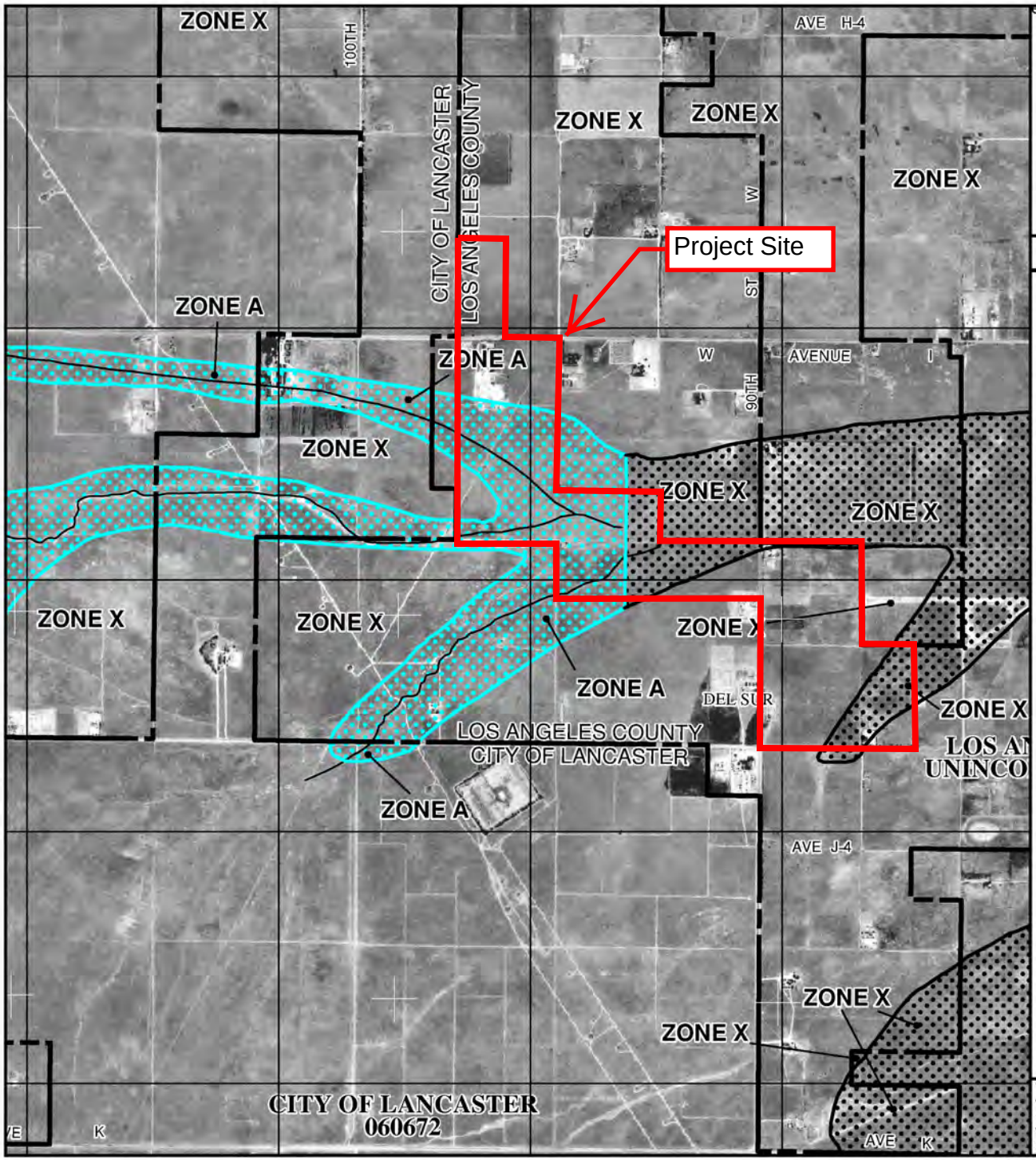
LOS ANGELES COUNTY

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOCATION MAP

FIGURE A

File Location:
P:\04546\135-04546-12001\SupportDocs\Calcs\Hydrology\10A\FINAL DESIGN\Figure A - Location Map.dwg 09/03/2013 13:52

APPENDIX B:
EXISTING DRAINAGE CONDITION



e National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

M

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0400F

FIRM

FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 400 OF 2350

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES COUNTY	065043	0400	F
LANCASTER, CITY OF	060672	0400	F
PALMDALE,CITY OF	060144	0400	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06037C0400F

EFFECTIVE DATE
SEPTEMBER 26, 2008

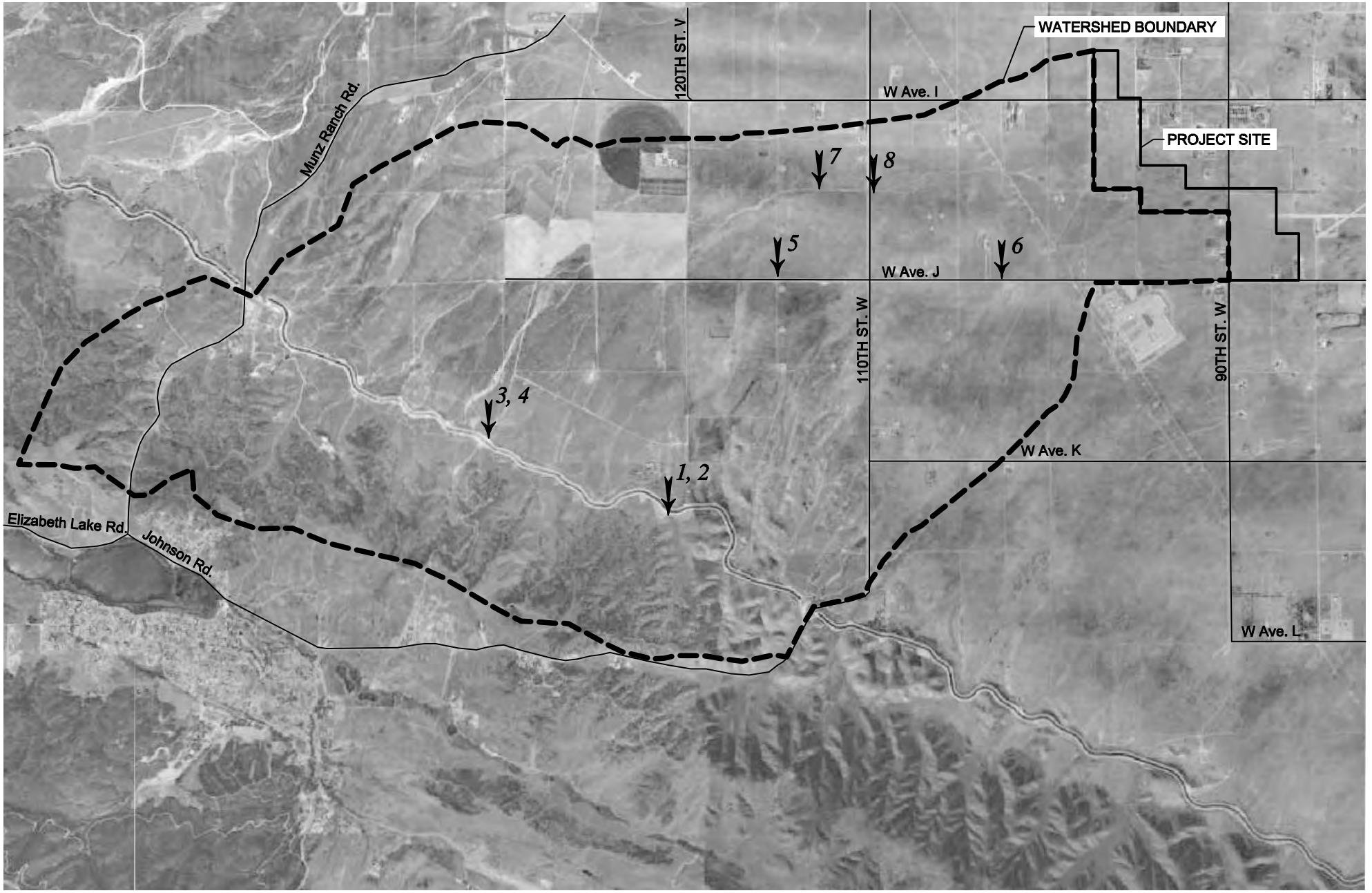
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Los Angeles County Flood Control

Flood Zone Determination Website

Click for more Information.



LEGEND

PROJECT BOUNDARY

WATERSHED BOUNDARY

3,4 PHOTO ID AND LOCATION

N

TETRA TECH
17885 VON KARMAN AVE., STE. 500
IRVINE, CA 92614-6213
949-809-5000

Scale: N.T.S.

Date: 9-5-2013

LOS ANGELES COUNTY

PROJECT 4 ANTELOPE SOLAR GREENWORKS EXISTING DRAINAGE STRUCTURES PHOTO LOCATIONS

FIGURE 1

File Location: P:\04546\135-04546-12001\SupportDocs\Calcs\Hydrology\10A\FINAL DESIGN\Photo Locations.dwg 09/03/2013 13:54

Photo 1 (Northward Facing):

Culvert Entrance: typical RCP culvert carries runoff from hills south of the aqueduct.
Culvert locations and spacing vary along entire length of aqueduct. Pipe diameter sizes range from 36" to 60"

Photo 2 (Southward Facing):

Culvert Exit: runoff exists the culvert underneath the aqueduct and continues to sheet flow toward the north.

Photo 3 (Northward Facing):
Runoff sheet flows northerly toward Project 4

Photo 4 (Northward Facing):
Runoff sheet flows northerly toward Project 4

Photo 5 (Eastward Facing):

Runoff sheet flow is intercepted by J Street which is graded as a trapezoidal dirt channel that runs west to east between 120th St. and 110th St. Approximate channel dimensions: 3ft deep x 30ft wide (bottom), 1:1 side slopes

Photo 6 (Westward Facing):

Runoff sheet flow is intercepted by two dirt swales that run on both sides of J Street west to east between 110th St. and 90th St. Approximate dimensions of each swale: 1ft deep x 15ft wide (top), 10% side slopes (triangular cross section)

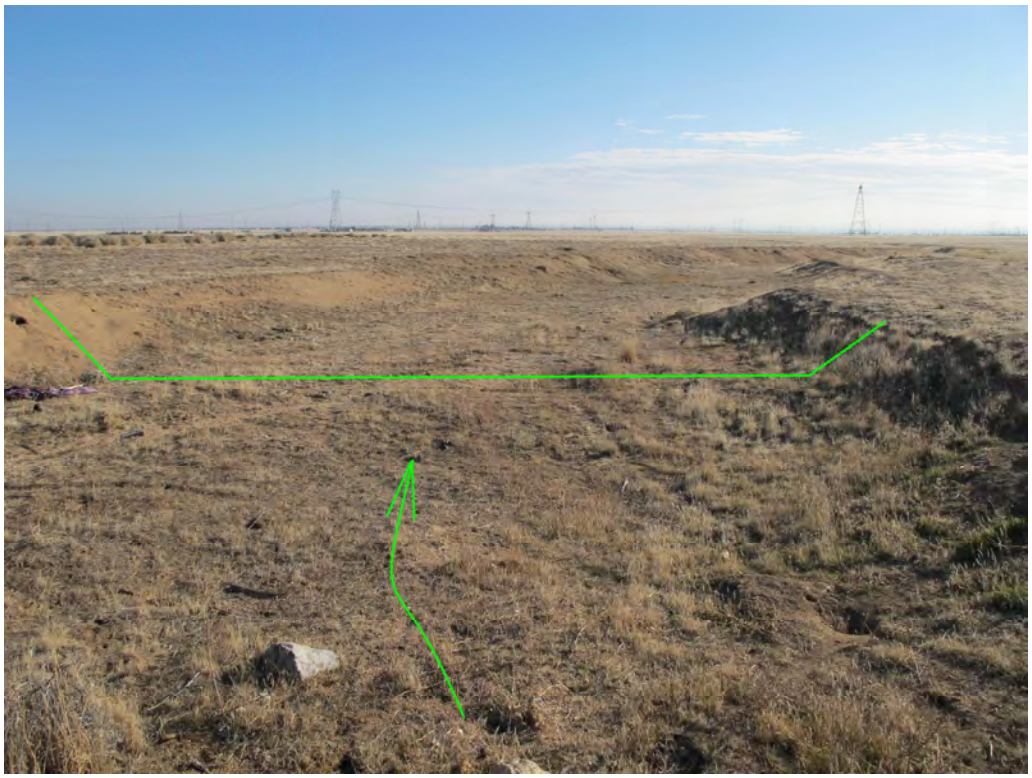


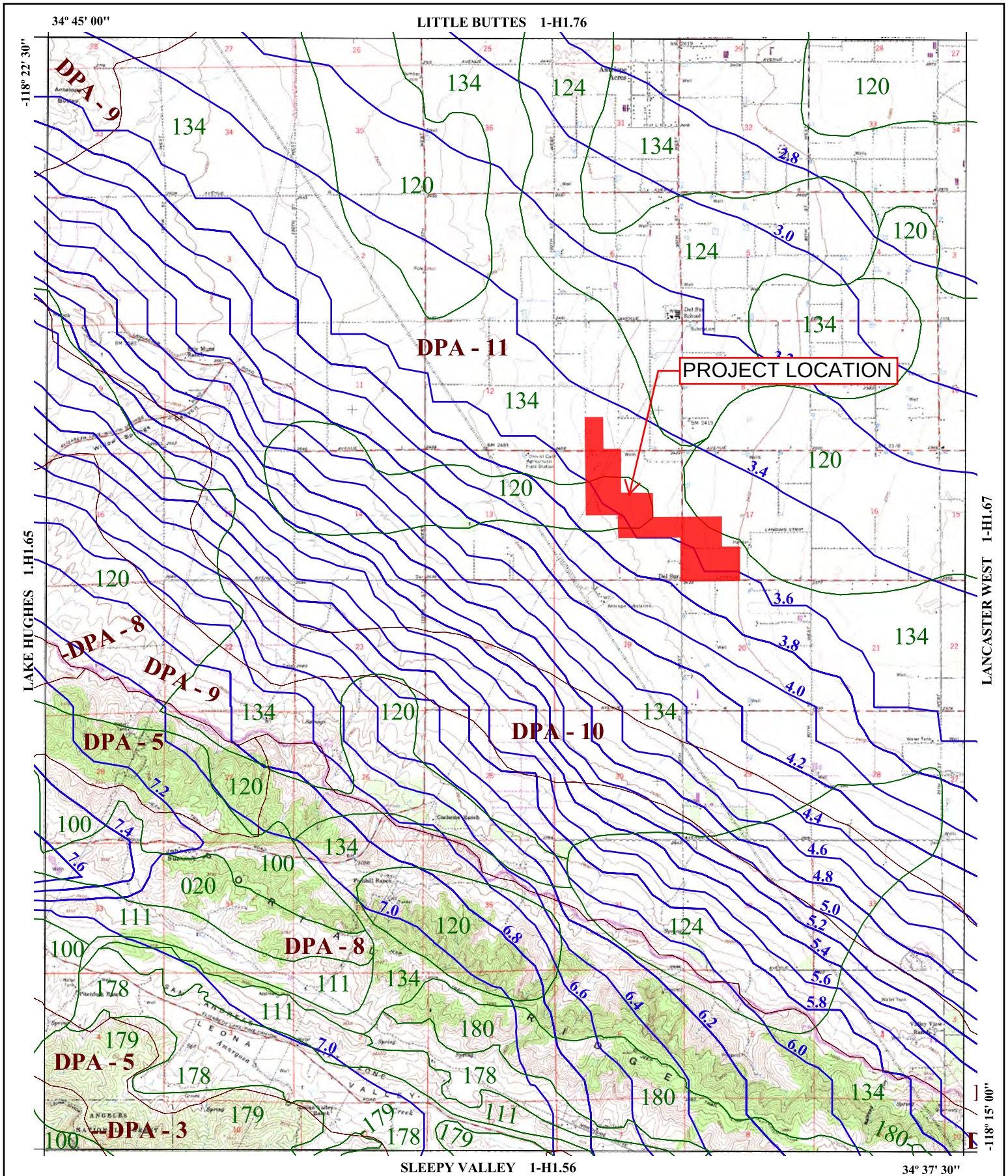
Photo 7 (Eastward Facing):

Potential overflow runoff from J Street as well as additional runoff developing north of J Street is intercepted by a trapezoidal dirt channel which runs west to east from 120th St. and continues past 90th St. The channel flows through the middle of the project site. Approximate channel dimensions: 4ft deep x 30ft wide (bottom), 1:1 side slopes

Photo 8 (Eastward Facing):

The trapezoidal channel mentioned in Photo 7, crosses under 110th St. through a series of 36 inch diameter CMP culverts.

APPENDIX C:
HYDROLOGY MANUAL REFERENCES



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

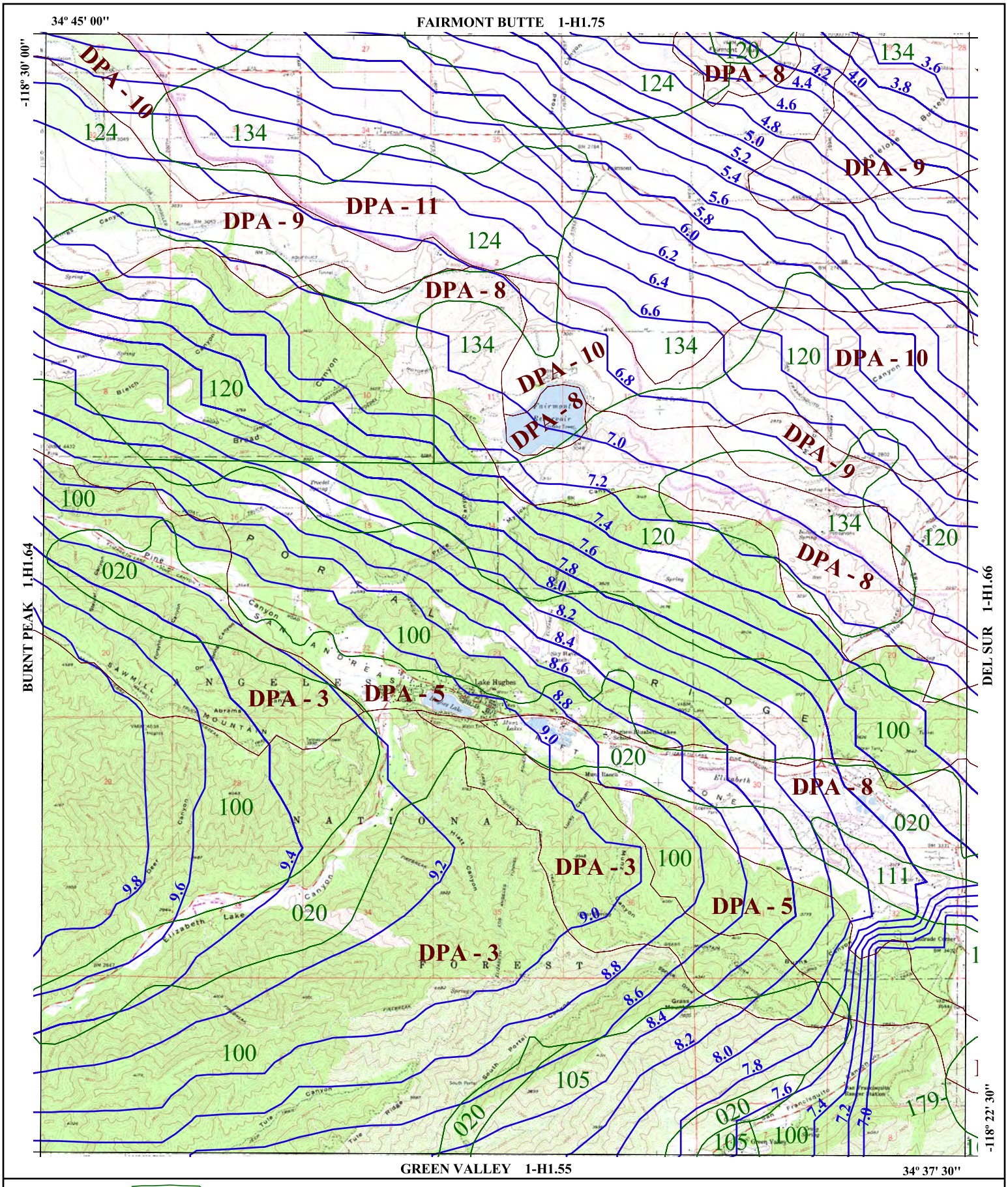
1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

DEL SUR
50-YEAR 24-HOUR ISOHYET

1-H1.66

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

LAKE HUGHES
50-YEAR 24-HOUR ISOHYET

1-H1.65

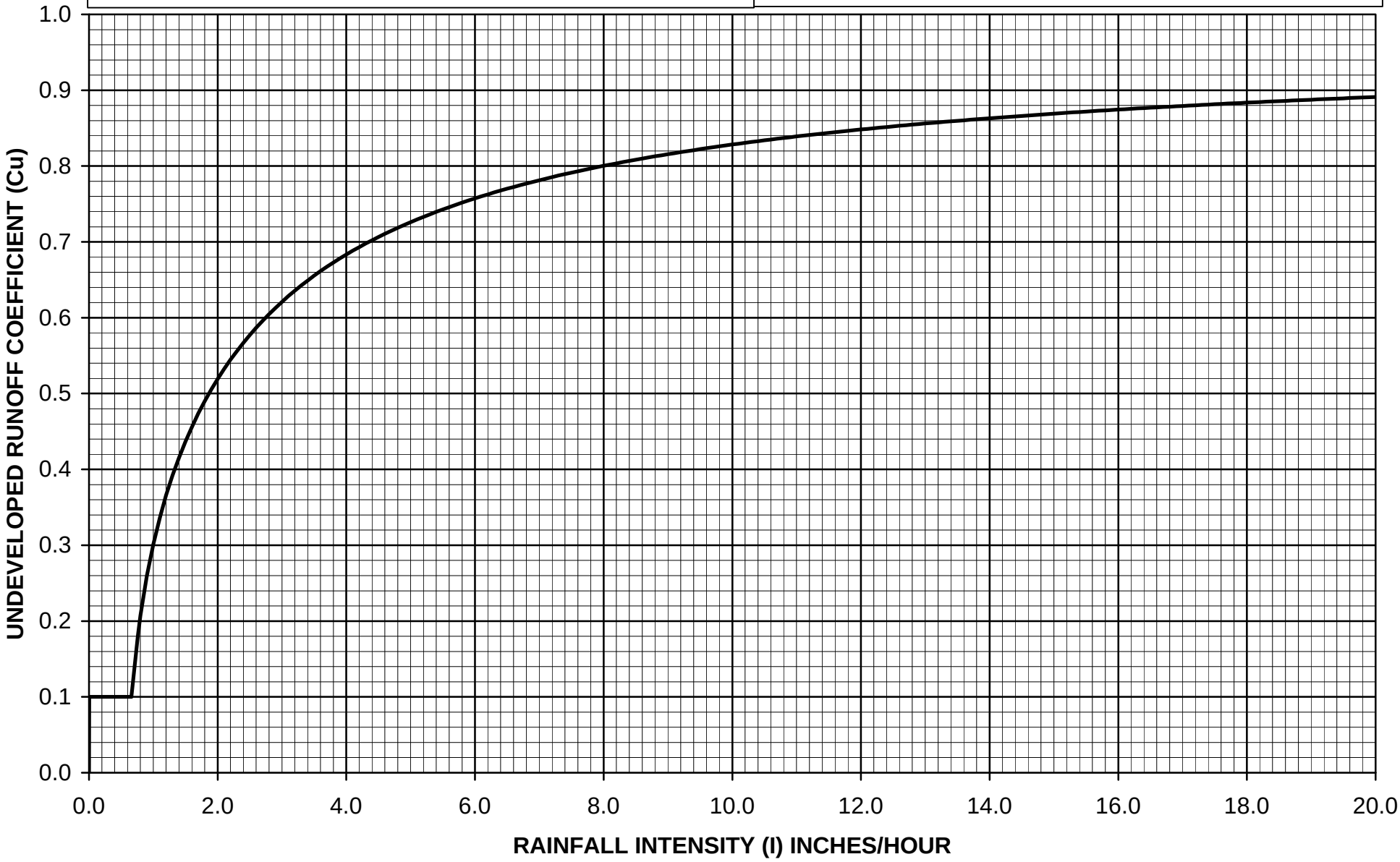
LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 100

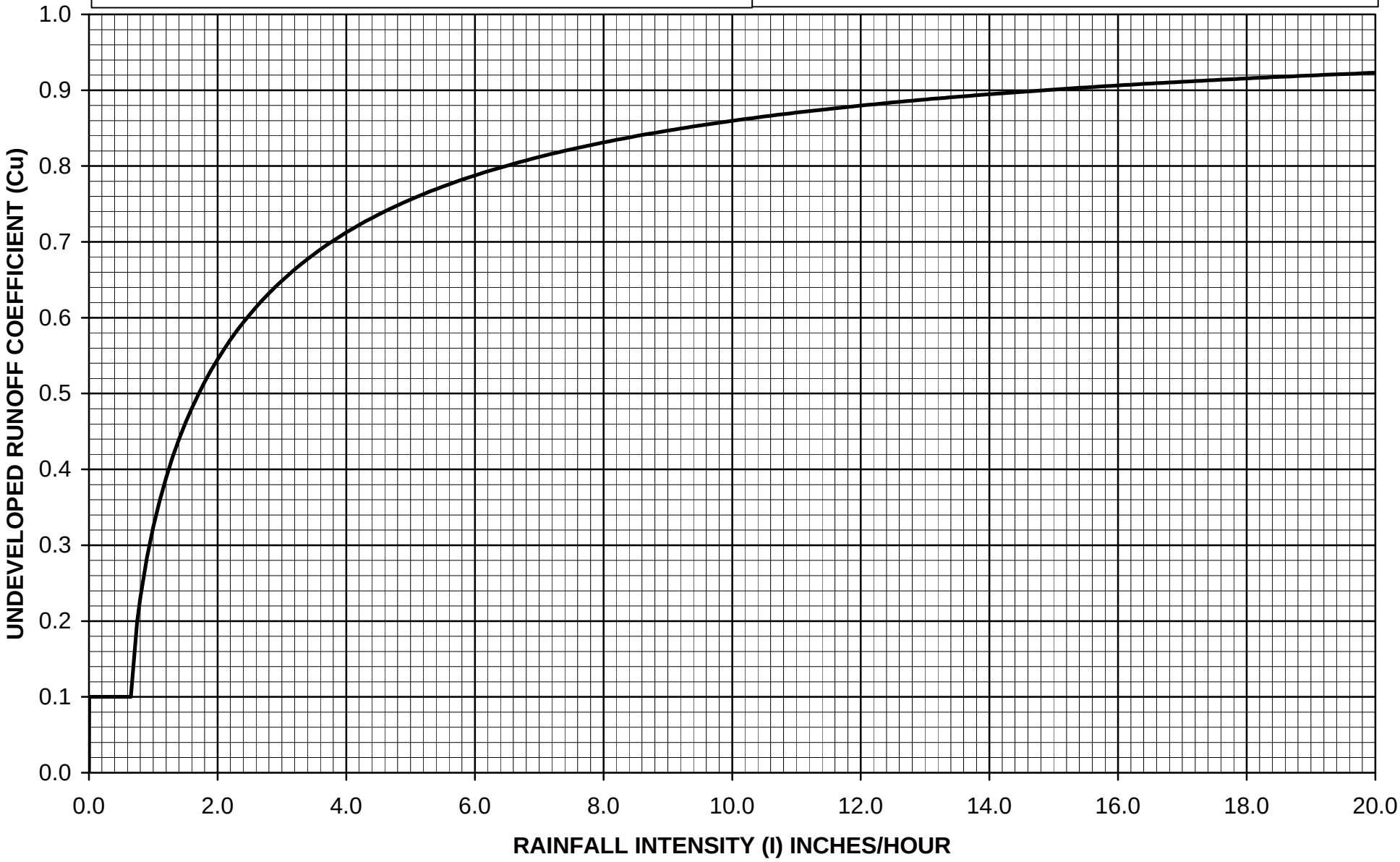


$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 120

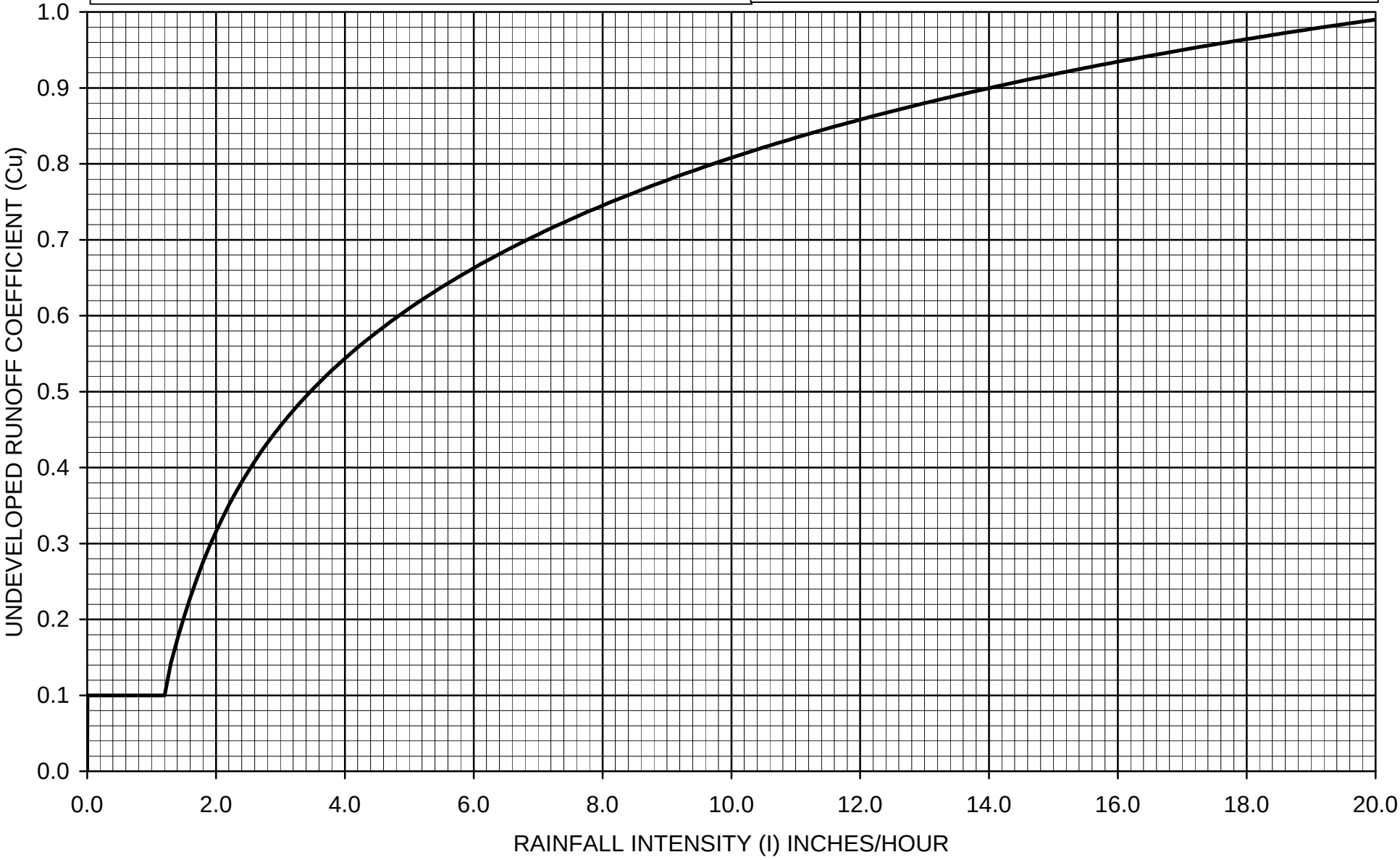


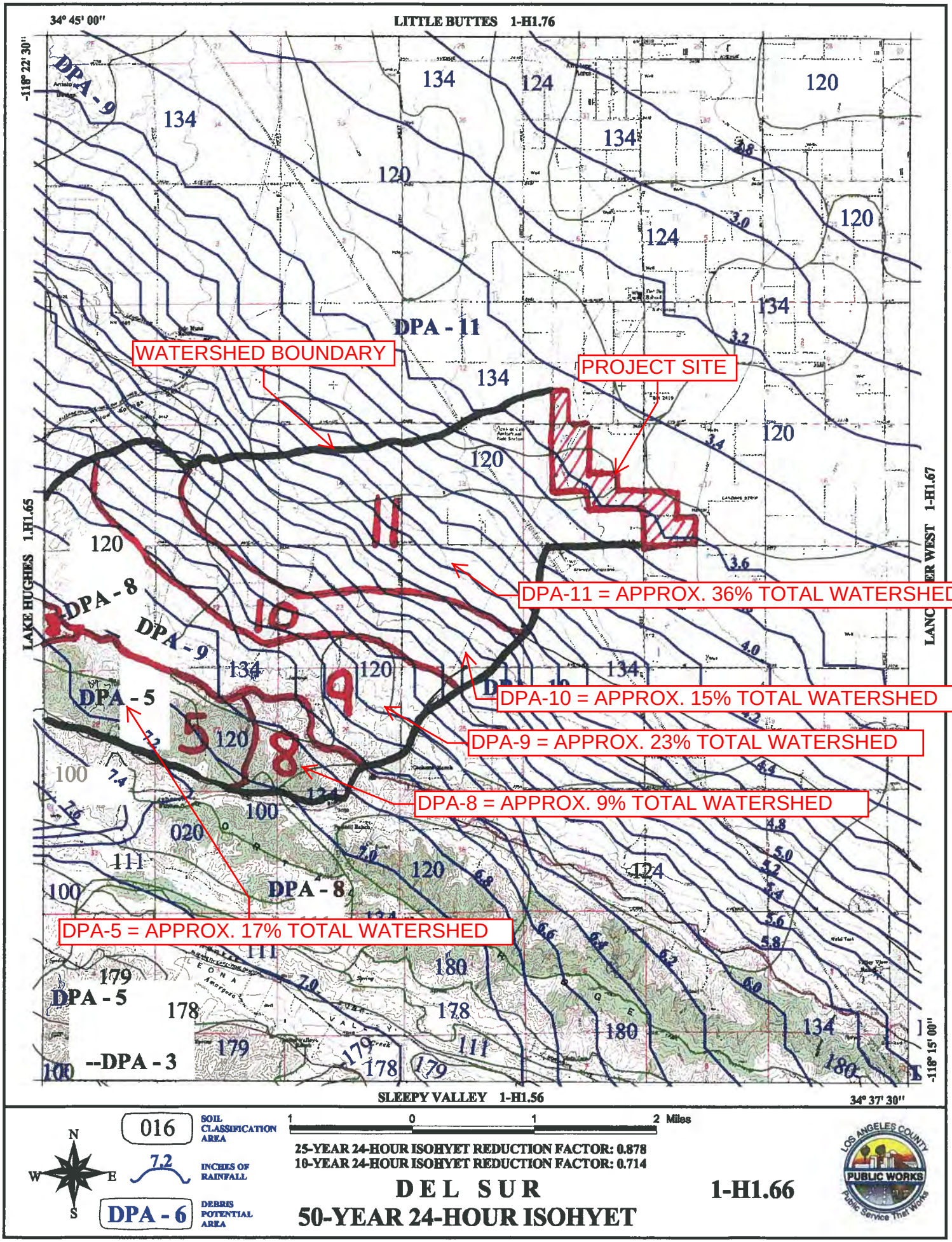
$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

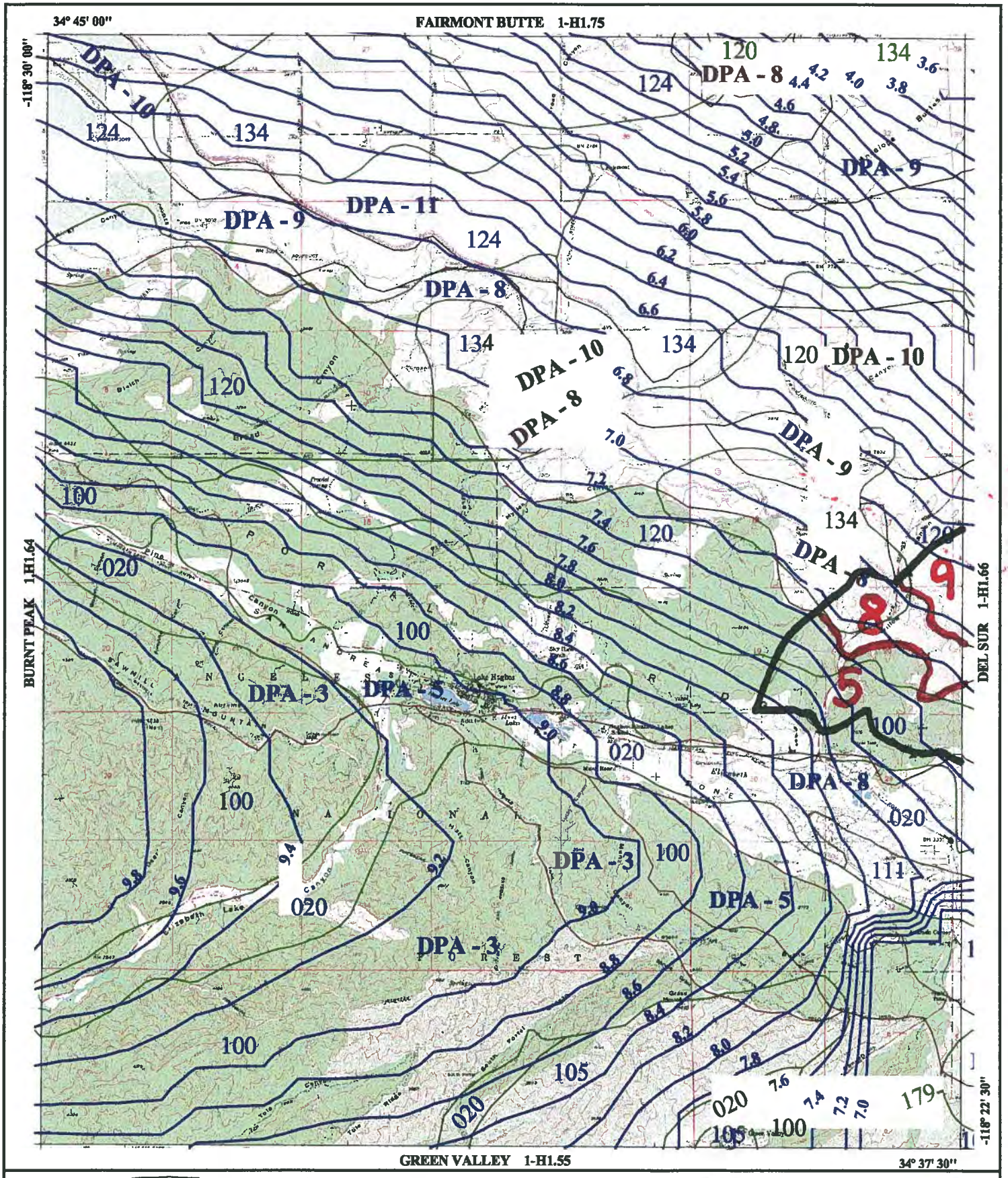
Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 134




34° 45' 00"
LITTLE BUTTES 1-H1.76
-118° 22' 30"
LAKE HUGHES 1-H1.65
LANCASTER WEST 1-H1.67
-118° 15' 00"
SLEEPY VALLEY 1-H1.56
34° 37' 30"
WATERSHED BOUNDARY
PROJECT SITE
DPA-11 = APPROX. 36% TOTAL WATERSHED
DPA-10 = APPROX. 15% TOTAL WATERSHED
DPA-9 = APPROX. 23% TOTAL WATERSHED
DPA-8 = APPROX. 9% TOTAL WATERSHED
DPA-5 = APPROX. 17% TOTAL WATERSHED
DPA - 11
DPA - 9
DPA - 8
DPA - 5
DPA - 3
016
SOIL CLASSIFICATION AREA
7.2
INCHES OF RAINFALL
DPA - 6
DEBRIS POTENTIAL AREA
N
W
E
S
1 0 1 2 Miles
25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714
DEL SUR
50-YEAR 24-HOUR ISOHYET
1-H1.66
LOS ANGELES COUNTY PUBLIC WORKS
Public Service That Works



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

LAKE HUGHES
50-YEAR 24-HOUR ISOHYET

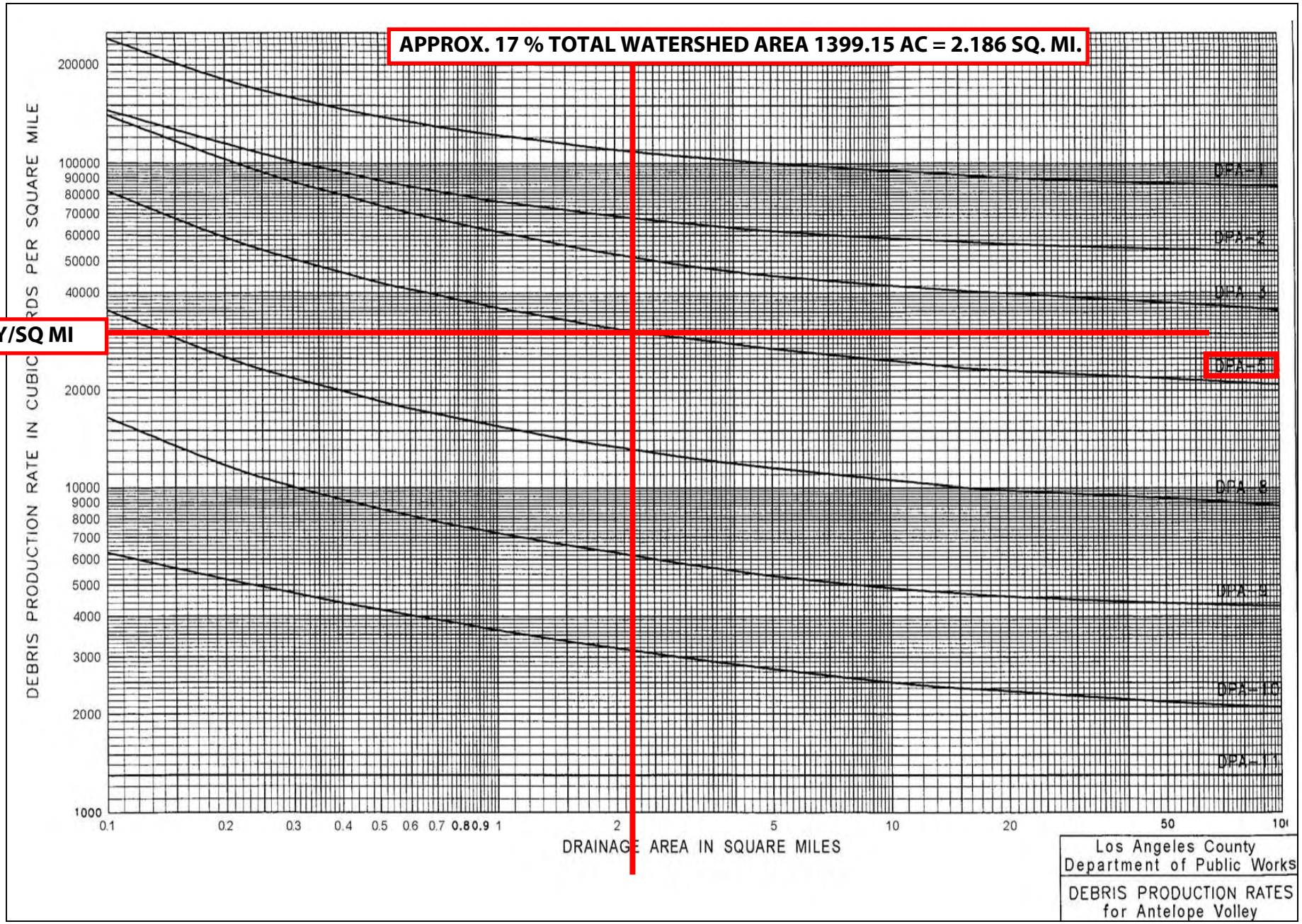
1-H1.65

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

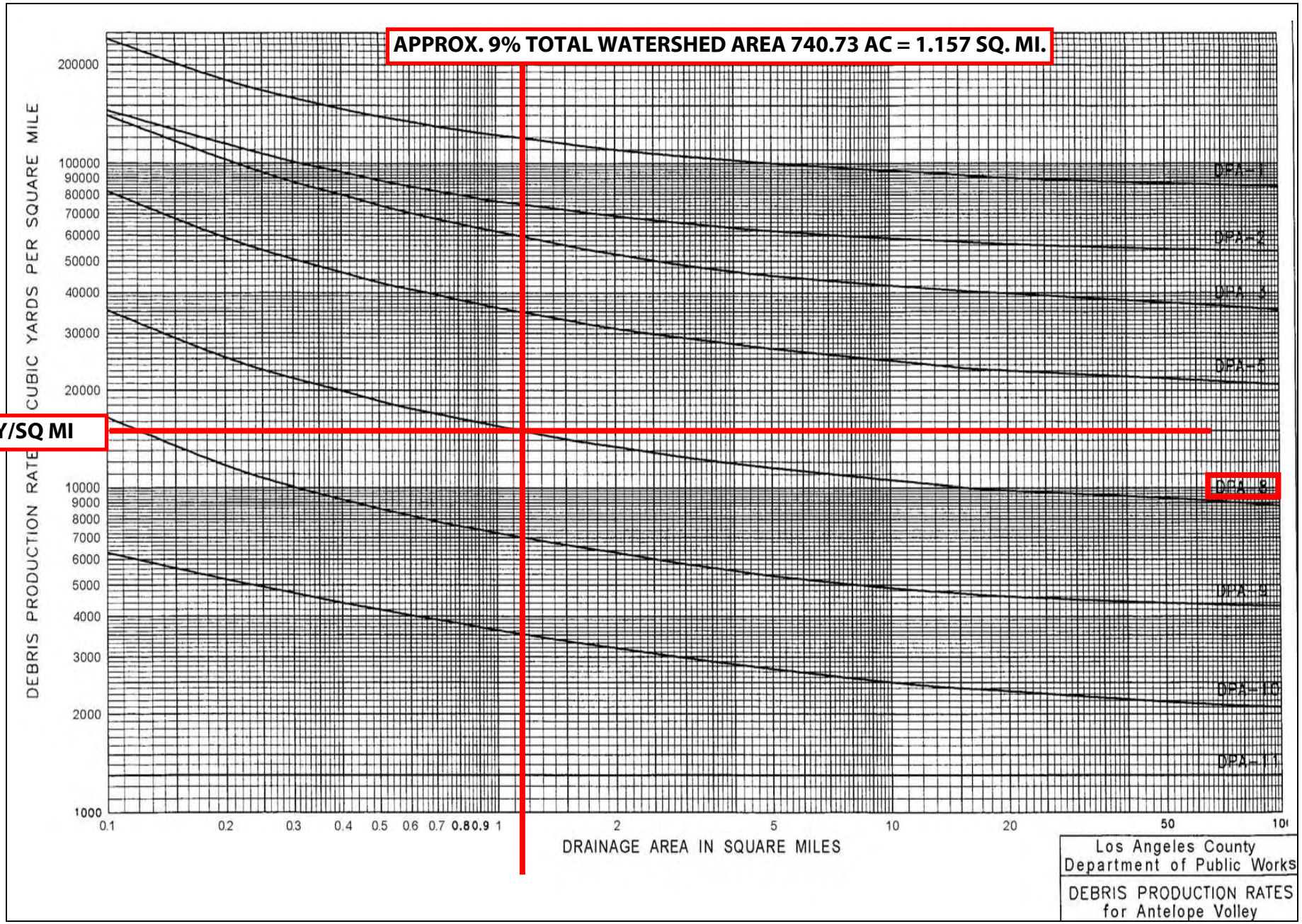
WATERSHED AREA UNDER DPA-5

APPROX. 17 % TOTAL WATERSHED AREA 1399.15 AC = 2.186 SQ. MI.

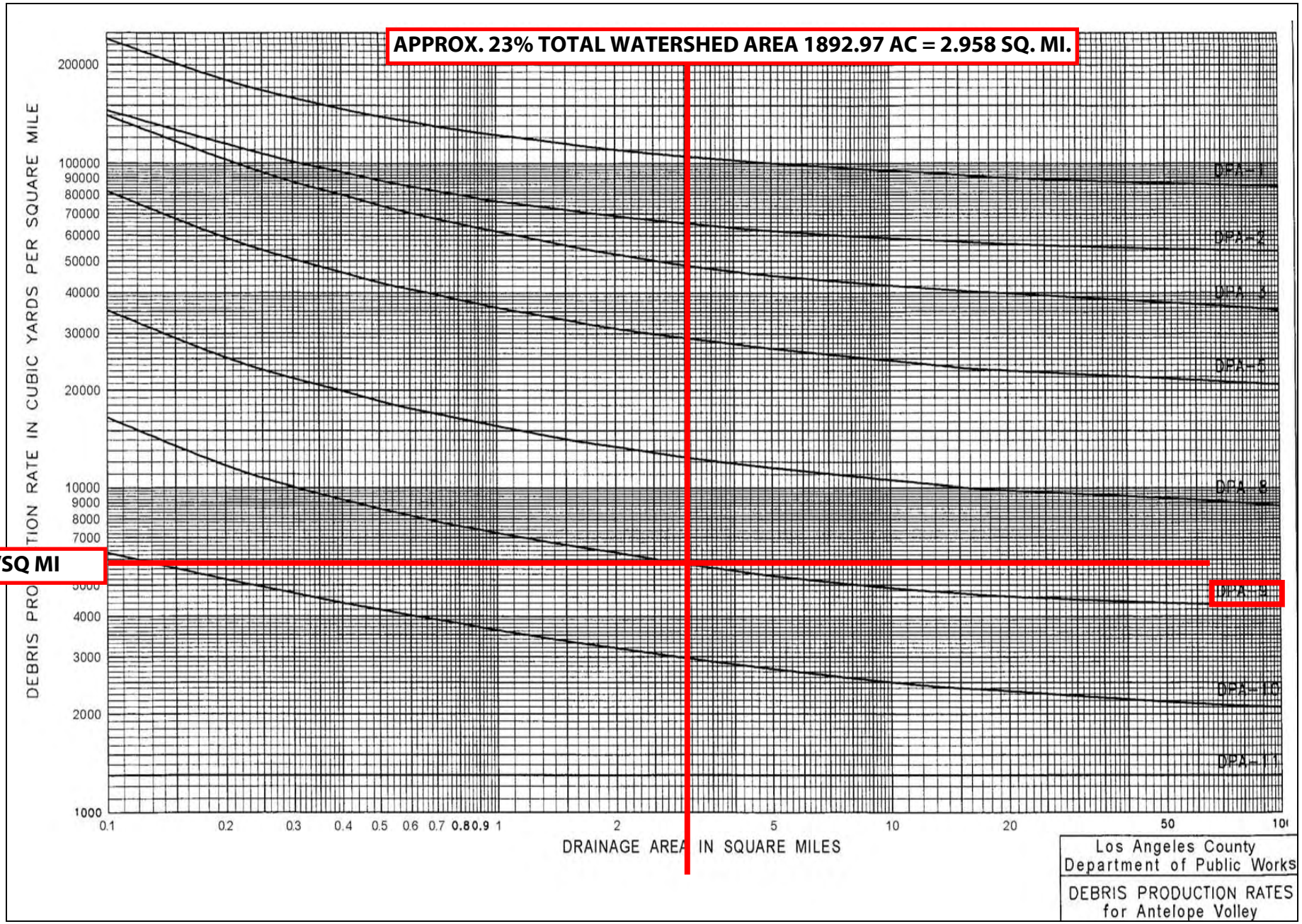
30,000 CY/SQ MI



WATERSHED AREA UNDER DPA-8

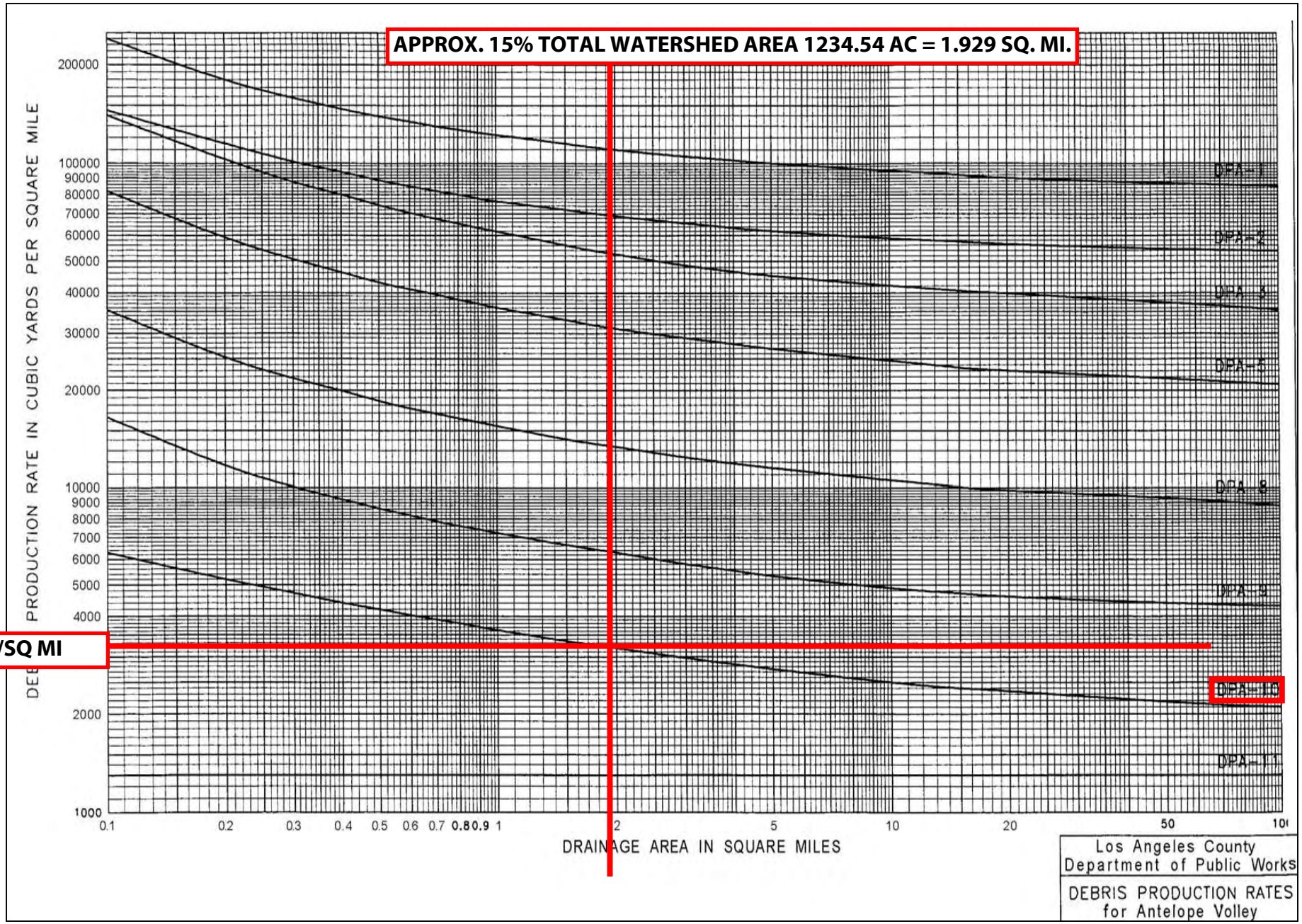


WATERSHED AREA UNDER DPA-9



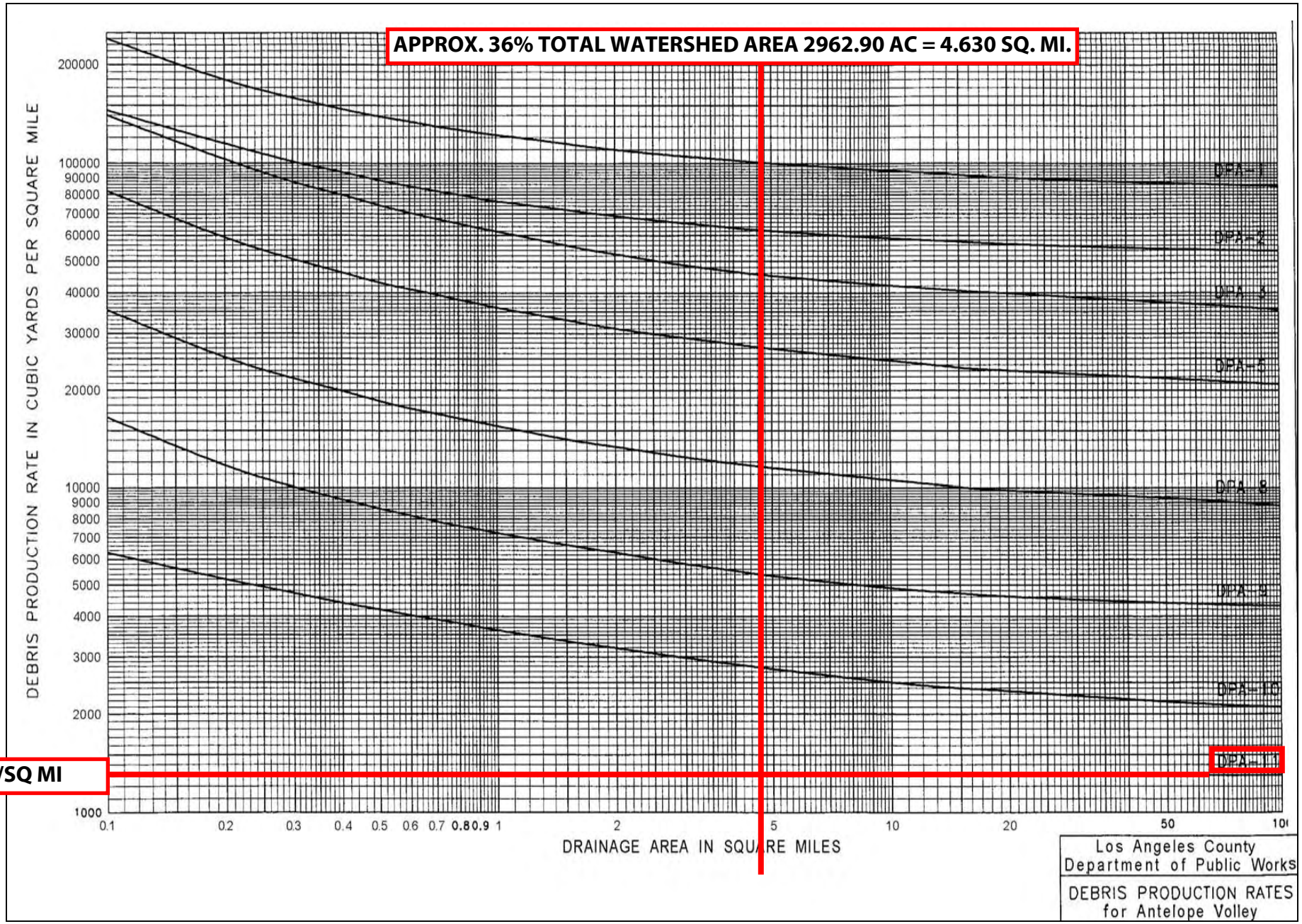
5,800 CY/SQ MI

WATERSHED AREA UNDER DPA-10



3,200 CY/SQ MI

WATERSHED AREA UNDER DPA-11



1,300 CY/SQ MI

TETRA TECH

Sheet No. _____ of _____ Date: _____
Checked By: _____ Office: _____
Telephone: _____
Engineer: _____ Job No.: _____
Subject: _____

DEBRIS POTENTIAL VOLUME (V_{DP})

V_{DP} = (30,000 CY/SQ. MI.) × (WATERSHED AREA UNDER DPA-5) +
(15,000 CY/SQ. MI.) × (WATERSHED AREA UNDER DPA-8) +
(5,800 CY/SQ. MI.) × (WATERSHED AREA UNDER DPA-9) +
(3,200 CY/SQ. MI.) × (WATERSHED AREA UNDER DPA-10) +
(1,300 CY/SQ. MI.) × (WATERSHED AREA UNDER DPA-11)

= (30,000 CY/SQ. MI.) × (2.186 SQ. MI.) + (15,000 CY/SQ MI.) × (1.157 SQ. MI.)
+ (5,800 CY/SQ MI.) × (2.958 SQ. MI.) + (3,200 CY/SQ MI.) × (1.929 SQ. MI.)
+ (1,300 CY/SQ. MI.) × (4.630 SQ. MI.)

= (65,580 CY) + (17,355 CY) + (17,156 CY) + (6,173 CY)
+ (6,019 CY)

V_{DP} = 112,283 CY

APPENDIX D:
PRE-/POST DEVELOPMENT ON-/OFF-SITE HYDROLOGIC CALCULATIONS –25 & 50 YEAR EVENTS

OFF-SITE PRE-/POST DEVELOPMENT HYDROLOGIC CALCULATIONS

OFF-SITE HYDROLOGY																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	A1	22.98	0.01	25	120	2126	0.0887	6.5	15	2.31	0.58	0.58	30.79	0.34	33.65	2.01
Project 4	A2	37.57	0.01	25	134	1314	0.0674	6.3	17	2.12	0.33	0.34	27.08	0.34	33.74	2.52
Project 4	A3	39.59	0.01	25	134	1072	0.1039	6.2	12	2.46	0.39	0.40	38.96	0.34	46.54	2.69
Project 4	A4	39.43	0.01	25	120	1849	0.0541	6.2	15	2.22	0.57	0.57	49.89	0.34	54.69	3.25
Project 4	B1	34.99	0.01	25	100	1657	0.0919	7.0	12	2.78	0.60	0.60	58.36	0.34	63.51	3.40
Project 4	B2	37.08	0.01	25	100	1066	0.1408	6.8	8	3.28	0.64	0.64	77.84	0.34	83.78	3.53
Project 4	B3	38.05	0.01	25	120	716	0.1745	6.8	6	3.70	0.69	0.69	97.14	0.34	103.17	3.54
Project 4	B4	34.47	0.01	25	120	807	0.1240	6.7	7	3.40	0.68	0.68	79.69	0.34	84.81	3.25
Project 4	B5	24.01	0.01	25	120	750	0.0994	6.6	7	3.35	0.67	0.67	53.89	0.34	57.50	2.22
Project 4	B6	38.98	0.01	25	120	1814	0.0829	6.5	13	2.47	0.60	0.60	57.77	0.34	62.77	3.47
Project 4	C1	23.39	0.01	25	100	1802	0.1067	7.0	12	2.78	0.60	0.60	39.01	0.34	42.46	2.27
Project 4	C2	30.22	0.01	25	100	674	0.2954	6.9	5	4.14	0.69	0.69	86.33	0.34	91.77	2.88
Project 4	C3	27.48	0.01	25	100	1170	0.0642	6.9	10	2.99	0.62	0.62	50.94	0.34	55.12	2.58
Project 4	D1	23.83	0.01	25	100	818	0.1638	6.8	7	3.44	0.65	0.65	53.28	0.34	57.21	2.23
Project 4	D2	22.51	0.01	25	100	853	0.0277	6.8	10	2.91	0.61	0.61	39.96	0.34	43.36	2.05
Project 4	E1	39.11	0.01	25	100	1053	0.0717	6.6	10	2.84	0.60	0.60	66.64	0.34	72.54	3.42
Project 4	E2	25.41	0.01	25	120	518	0.1933	6.5	5	3.88	0.70	0.70	69.01	0.34	73.13	2.26
Project 4	E3	25.07	0.01	25	120	948	0.1057	6.4	8	3.07	0.65	0.65	50.03	0.34	53.65	2.23
Project 4	F1	28.59	0.01	25	120	1745	0.0573	6.3	14	2.32	0.58	0.58	38.47	0.34	42.05	2.42
Project 4	F2	24.70	0.01	25	120	1052	0.0476	6.1	11	2.53	0.61	0.61	38.12	0.34	41.29	2.00
Project 4	G1	39.58	0.01	25	120	1061	0.0527	6.1	11	2.50	0.60	0.60	59.37	0.34	64.52	3.15
Project 4	G2	38.83	0.01	25	120	1063	0.0532	6.0	11	2.46	0.60	0.60	57.31	0.34	62.27	3.01
Project 4	G3	39.03	0.01	25	120	972	0.0495	5.9	11	2.42	0.59	0.59	55.73	0.34	60.74	2.98
Project 4	G4	38.06	0.01	25	120	701	0.0417	5.9	9	2.66	0.62	0.62	62.77	0.34	67.82	2.96
Project 4	G5	33.89	0.01	25	120	629	0.0390	5.8	8	2.77	0.63	0.63	59.14	0.34	63.73	2.61
Project 4	G6	35.37	0.01	25	120	492	0.0379	5.7	7	2.91	0.64	0.64	65.87	0.34	70.81	2.68
Project 4	G7	32.81	0.01	25	120	792	0.0378	5.6	10	2.42	0.59	0.59	46.85	0.34	51.06	2.36
Project 4	G8	30.05	0.01	25	120	1127	0.0239	5.6	14	2.07	0.55	0.55	34.21	0.34	37.74	2.17
Project 4	G9	30.28	0.01	25	120	3877	0.0155	5.4	30	1.38	0.43	0.43	17.97	0.34	20.76	1.97
Project 4	H1	35.93	0.01	25	120	869	0.0173	5.3	14	1.94	0.54	0.54	37.64	0.34	41.64	2.37
Project 4	H2	36.52	0.01	25	120	1498	0.0164	5.2	22	1.54	0.47	0.47	26.43	0.34	30.00	2.33
Project 4	H3	30.80	0.01	25	120	1387	0.0143	5.1	21	1.55	0.47	0.47	22.44	0.34	25.47	1.90
Project 4	H4	34.53	0.01	25	120	1605	0.0156	5.0	25	1.40	0.43	0.43	20.79	0.34	24.02	2.07
Project 4	I1	38.22	0.01	25	100	1935	0.1206	6.6	13	2.51	0.58	0.58	55.64	0.34	60.88	3.39
Project 4	I2	38.42	0.01	25	120	912	0.0978	6.4	8	3.07	0.65	0.65	76.67	0.34	82.21	3.42
Project 4	I3	36.92	0.01	25	120	1121	0.1212	6.3	9	2.86	0.63	0.63	66.52	0.34	71.71	3.16
Project 4	I4	32.95	0.01	25	120	1148	0.0950	6.2	10	2.69	0.62	0.62	54.95	0.34	59.39	2.74
Project 4	I5	34.51	0.01	25	120	944	0.0700	6.1	9	2.78	0.63	0.63	60.44	0.34	65.14	2.85
Project 4	I6	37.79	0.01	25	120	1054	0.0470	6.1	11	2.50	0.60	0.60	56.69	0.34	61.60	3.00
Project 4	I7	39.67	0.01	25	120	1105	0.0455	6.1	12	2.40	0.59	0.59	56.17	0.34	61.21	3.20
Project 4	I8	32.66	0.01	25	120	988	0.0414	5.9	11	2.42	0.59	0.59	46.63	0.34	50.82	2.49
Project 4	I9	33.40	0.01	25	120	853	0.0401	5.9	10	2.53	0.61	0.61	51.55	0.34	55.84	2.57
Project 4	I10	31.70	0.01	25	120	941	0.0339	5.8	12	2.29	0.58	0.58	42.10	0.34	46.01	2.41
Project 4	I11	26.12	0.01	25	120	917	0.0346	5.5	12	2.19	0.57	0.57	32.61	0.34	35.73	1.86
Project 4	I12	26.81	0.01	25	120	1151	0.0213	5.4	16	1.88	0.53	0.53	26.71	0.34	29.65	1.82
Project 4	I13	18.03	0.01	25	120	2163	0.0170	5.2	30	1.33	0.41	0.41	9.83	0.34	11.48	1.12
Project 4	J1	33.46	0.01	25	100	1081	0.0796	6.6	10	2.84	0.60	0.60	57.02	0.34	62.06	2.93
Project 4	J2	20.47	0.01	25	100	1223	0.0933	6.6	10	2.84	0.60	0.60	34.88	0.34	37.97	1.79
Project 4	K1	39.41	0.01	25	100	638	0.0870	6.6	6	3.61	0.66	0.66	93.90	0.34	100.56	3.45
Project 4	K2	37.15	0.01	25	100	1150	0.0963	6.6	10	2.84	0.60	0.60	63.30	0.34	68.91	3.25
Project 4	K3	15.23	0.01	25	100	517	0.1620	6.5	5	3.88	0.67	0.67	39.59	0.34	42.30	1.32
Project 4	L1	30.11	0.01	25	100	883	0.1037	6.5	8	3.11	0.62	0.62	58.06	0.34	62.85	2.66
Project 4	L2	27.64	0.01	25	120	915	0.0847	6.4	8	3.07	0.65	0.65	55.16	0.34	59.14	2.46
Project 4	L3	28.98	0.01	25	120	879	0.0770	6.3	8	3.02	0.65	0.65	56.89	0.34	60.99	2.53
Project 4	L4	33.97	0.01	25	120	1044	0.0967	6.2	9	2.82	0.63	0.63	60.35	0.34	65.05	2.86
Project 4	L5	22.21	0.01	25	120	675	0.0926	6.1	7	3.13	0.65	0.65	45.19	0.34	48.46	1.87
Project 4	L6	22.37	0.01	25	120	697	0.0719	6.1	8	2.90	0.64	0.64	41.52	0.34	44.63	1.83
Project 4	L7	26.08	0.01	25	120	1126	0.0444	6.1	12	2.40	0.59	0.59	36.93	0.34	40.24	2.11

OFF-SITE HYDROLOGY																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	M1	38.00	0.01	25	100	1654	0.1240	6.5	12	2.57	0.58	0.58	56.64	0.34	62.00	3.32
Project 4	M2	33.36	0.01	25	100	948	0.1621	6.4	8	3.07	0.62	0.62	63.50	0.34	68.73	2.90
Project 4	M3	35.68	0.01	25	100	1027	0.1713	6.4	8	3.07	0.62	0.62	67.91	0.34	73.51	3.10
Project 4	M4	38.71	0.01	25	120	1228	0.1223	6.3	10	2.72	0.62	0.62	65.28	0.34	70.55	3.28
Project 4	M5	29.99	0.01	25	120	1262	0.0983	6.2	11	2.57	0.61	0.61	47.02	0.34	50.94	2.48
Project 4	M6	35.13	0.01	25	120	1909	0.0719	6.1	15	2.19	0.57	0.57	43.85	0.34	48.06	2.84
Project 4	N1	31.97	0.01	25	120	842	0.0454	6.0	10	2.57	0.61	0.61	50.12	0.34	54.30	2.50
Project 4	N2	36.82	0.01	25	120	1142	0.0321	5.9	13	2.24	0.57	0.57	47.01	0.34	51.54	2.86
Project 4	N3	36.86	0.01	25	120	1001	0.0296	5.8	12	2.29	0.58	0.58	48.96	0.34	53.50	2.80
Project 4	N4	36.20	0.01	25	120	1124	0.0299	5.6	14	2.07	0.55	0.55	41.21	0.34	45.46	2.61
Project 4	N5	29.70	0.01	25	120	1026	0.0282	5.4	14	1.97	0.54	0.54	31.59	0.34	34.96	2.01
Project 4	N6	37.04	0.01	25	120	1808	0.0181	5.2	25	1.45	0.45	0.45	24.17	0.34	27.66	2.33
Project 4	O1	35.28	0.01	25	134	1035	0.0164	4.7	30	1.22	0.11	0.12	5.16	0.34	9.49	1.51
Project 4	O2	37.38	0.01	25	120	1302	0.0157	4.6	24	1.30	0.41	0.41	19.92	0.34	23.24	1.99
Project 4	O3	24.53	0.01	25	120	1105	0.0113	4.3	24	1.23	0.39	0.40	12.07	0.34	14.14	1.20
Project 4	P1	33.21	0.01	25	100	986	0.0754	6.4	9	2.90	0.61	0.61	58.75	0.34	63.75	2.84
Project 4	P2	30.73	0.01	25	100	688	0.2561	6.4	6	3.51	0.66	0.66	71.19	0.34	76.22	2.58
Project 4	P3	38.75	0.01	25	100	815	0.2142	6.3	7	3.22	0.63	0.63	78.61	0.34	84.86	3.31
Project 4	P4	32.71	0.01	25	120	687	0.1583	6.2	6	3.41	0.68	0.68	75.85	0.34	80.72	2.70
Project 4	P5	37.46	0.01	25	120	1344	0.1060	6.2	11	2.57	0.61	0.61	58.73	0.34	63.63	3.10
Project 4	P6	34.72	0.01	25	120	701	0.1782	6.1	6	3.37	0.67	0.67	78.39	0.34	83.65	2.82
Project 4	P7	37.23	0.01	25	120	524	0.1088	6.1	6	3.32	0.67	0.67	82.81	0.34	88.36	2.97
Project 4	P8	39.37	0.01	25	120	615	0.0897	6.1	7	3.09	0.65	0.65	79.07	0.34	84.80	3.25
Project 4	P9	37.35	0.01	25	120	1086	0.0462	6.1	11	2.50	0.59	0.59	55.09	0.34	60.04	2.97
Project 4	P10	39.70	0.01	25	120	1230	0.0406	6.0	13	2.27	0.58	0.58	52.27	0.34	57.11	3.14
Project 4	P11	36.59	0.01	25	120	782	0.0358	5.8	10	2.50	0.60	0.60	54.89	0.34	59.64	2.75
Project 4	P12	33.16	0.01	25	120	763	0.0304	5.6	11	2.31	0.58	0.58	44.43	0.34	48.56	2.38
Project 4	P13	38.23	0.01	25	120	879	0.0287	5.5	12	2.19	0.57	0.57	47.72	0.34	52.30	2.73
Project 4	P14	39.76	0.01	25	134	925	0.0255	5.4	28	1.42	0.17	0.18	10.16	0.34	15.64	2.01
Project 4	P15	39.93	0.01	25	134	916	0.0217	5.2	30	1.33	0.14	0.15	7.97	0.34	13.22	1.91
Project 4	P16	36.68	0.01	25	134	884	0.0180	4.9	30	1.26	0.12	0.13	6.01	0.34	10.63	1.65
Project 4	P17	39.67	0.01	25	120	1149	0.0174	4.7	20	1.47	0.45	0.45	26.24	0.34	30.04	2.24
Project 4	P18	34.63	0.01	25	120	1357	0.0142	4.7	25	1.30	0.41	0.41	18.46	0.34	21.53	1.88
Project 4	Q1	39.01	0.01	25	120	1059	0.0102	4.3	24	1.23	0.39	0.40	19.19	0.34	22.49	1.91
Project 4	Q2	36.04	0.01	25	120	1187	0.0105	4.1	29	1.08	0.35	0.36	14.01	0.34	16.79	1.65
Project 4	Q3	39.98	0.01	25	120	1792	0.0102	4.0	30	1.02	0.33	0.34	13.87	0.34	16.83	1.70
Project 4	Q4	30.77	0.01	25	120	1903	0.0088	3.7	30	0.95	0.29	0.30	8.77	0.34	10.99	1.18
Project 4	Q5	27.49	0.01	25	134	1849	0.0084	3.4	30	0.88	0.10	0.11	2.66	0.34	4.96	0.85
Project 4	Q6	30.47	0.01	25	134	1683	0.0075	3.2	30	0.83	0.10	0.11	2.78	0.34	5.15	0.90
Project 4	Q7	32.58	0.01	25	134	1526	0.0073	3.1	30	0.79	0.10	0.11	2.83	0.34	5.22	0.91
Project 4	R1	32.09	0.01	25	100	2577	0.1628	6.3	16	2.18	0.54	0.54	37.78	0.34	41.87	2.62
Project 4	R2	35.87	0.01	25	100	1059	0.1716	6.2	9	2.82	0.60	0.60	60.69	0.34	66.06	2.95
Project 4	R3	39.66	0.01	25	120	963	0.1497	6.1	8	2.94	0.64	0.64	74.62	0.34	80.22	3.33
Project 4	R4	38.16	0.01	25	120	963	0.1024	6.1	9	2.74	0.62	0.62	64.83	0.34	70.07	3.08
Project 4	R5	33.31	0.01	25	120	751	0.0849	6.1	8	2.90	0.64	0.64	61.82	0.34	66.45	2.73
Project 4	R6	37.01	0.01	25	120	757	0.0757	6.0	8	2.86	0.63	0.63	66.68	0.34	71.89	2.98
Project 4	R7	35.37	0.01	25	120	1058	0.0475	5.9	12	2.33	0.58	0.58	47.80	0.34	52.25	2.75
Project 4	R8	37.83	0.01	25	120	1044	0.0386	5.8	12	2.29	0.58	0.58	50.25	0.34	54.91	2.87
Project 4	R9	33.08	0.01	25	134	973	0.0289	5.6	21	1.71	0.25	0.26	14.71	0.34	19.81	1.83
Project 4	R10	25.89	0.01	25	134	829	0.0285	5.4	20	1.67	0.24	0.25	10.81	0.34	14.75	1.36
Project 4	R11	28.59	0.01	25	134	1022	0.0245	5.2	30	1.33	0.14	0.15	5.70	0.34	9.46	1.37
Project 4	S1	37.15	0.01	25	100	1736	0.1383	6.4	12	2.53	0.58	0.58	54.51	0.34	59.66	3.17
Project 4	S2	35.17	0.01	25	100	1178	0.1728	6.2	9	2.82	0.60	0.60	59.51	0.34	64.77	2.89
Project 4	S3	30.64	0.01	25	120	967	0.1624	6.2	8	2.98	0.64	0.64	58.44	0.34	62.83	2.61
Project 4	S4	35.99	0.01	25	120	1010	0.1608	6.1	8	2.90	0.64	0.64	66.80	0.34	71.80	2.95
Project 4	S5	32.25	0.01	25	134	834	0.1161	6.1	11	2.50	0.39	0.40	32.25	0.34	38.55	2.08
Project 4	S6	37.34	0.01	25	134	958	0.0690	6.1	13	2.31	0.36	0.37	31.91	0.34	38.89	2.43
Project 4	S7	33.26	0.01	25	134	789	0.0738	6.0	12	2.36	0.37	0.38	29.83	0.34	36.10	2.13

OFF-SITE HYDROLOGY																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	S8	38.79	0.01	25	134	1109	0.0368	5.8	21	1.76	0.27	0.28	19.12	0.34	25.14	2.24
Project 4	S9	32.99	0.01	25	134	724	0.0279	5.6	15	2.00	0.31	0.32	21.11	0.34	26.74	1.90
Project 4	S10	35.39	0.01	25	134	569	0.0279	5.5	12	2.19	0.34	0.35	27.13	0.34	33.54	2.06
Project 4	S11	38.16	0.01	25	134	693	0.0271	5.4	17	1.80	0.27	0.28	19.23	0.34	25.32	2.06
Project 4	S12	39.34	0.01	25	134	865	0.0265	5.2	30	1.33	0.14	0.15	7.85	0.34	13.02	1.88
Project 4	S13	37.63	0.01	25	134	1077	0.0256	5.1	30	1.31	0.13	0.14	6.90	0.34	11.82	1.76
Project 4	T1	38.70	0.01	25	134	1036	0.0177	4.7	30	1.20	0.10	0.11	5.11	0.34	9.82	1.63
Project 4	T2	39.37	0.01	25	134	1021	0.0203	4.5	30	1.15	0.10	0.11	4.98	0.34	9.53	1.60
Project 4	T3	34.64	0.01	25	120	1063	0.0170	4.3	22	1.28	0.40	0.41	18.18	0.34	21.20	1.72
Project 4	T4	34.97	0.01	25	120	1303	0.0121	4.1	30	1.06	0.34	0.35	12.97	0.34	15.65	1.58
Project 4	T5	38.36	0.01	25	120	1772	0.0105	3.9	30	0.99	0.32	0.33	12.53	0.34	15.32	1.58
Project 4	T6	34.73	0.01	25	120	1920	0.0089	3.6	30	0.93	0.28	0.29	9.37	0.34	11.84	1.28
Project 4	T7	34.08	0.01	25	120	2228	0.0084	3.4	30	0.88	0.25	0.26	7.80	0.34	10.16	1.17
Project 4	T8	39.42	0.01	25	134	2639	0.0078	3.2	30	0.83	0.10	0.11	3.60	0.34	6.66	1.16
Project 4	U1	38.54	0.01	25	100	2361	0.1424	6.2	16	2.15	0.54	0.54	44.74	0.34	49.58	3.10
Project 4	U2	31.64	0.01	25	120	814	0.2145	6.1	7	3.13	0.65	0.65	64.37	0.34	69.04	2.66
Project 4	U3	34.70	0.01	25	120	1053	0.1165	6.1	9	2.74	0.62	0.62	58.95	0.34	63.72	2.80
Project 4	U4	31.48	0.01	25	134	979	0.1062	6.0	12	2.36	0.37	0.38	28.23	0.34	34.17	2.02
Project 4	U5	35.79	0.01	25	134	969	0.1220	5.9	12	2.33	0.37	0.38	31.69	0.34	38.34	2.25
Project 4	U6	39.16	0.01	25	134	962	0.0832	5.9	13	2.24	0.35	0.36	31.58	0.34	38.75	2.45
Project 4	U7	37.63	0.01	25	134	751	0.0563	5.8	12	2.29	0.36	0.37	31.88	0.34	38.85	2.33
Project 4	U8	36.35	0.01	25	134	1300	0.0208	5.7	30	1.47	0.18	0.19	10.15	0.34	15.28	1.97
Project 4	U9	31.01	0.01	25	134	1060	0.0254	5.5	30	1.42	0.17	0.18	7.93	0.34	12.19	1.61
Project 4	U10	31.05	0.01	25	134	787	0.0379	5.4	17	1.80	0.27	0.28	15.65	0.34	20.60	1.68
Project 4	U11	39.07	0.01	25	134	649	0.0406	5.2	15	1.84	0.28	0.29	20.85	0.34	27.15	2.02
Project 4	U12	36.94	0.01	25	134	657	0.0282	5.0	20	1.56	0.21	0.22	12.68	0.34	18.07	1.78
Project 4	U13	38.36	0.01	25	134	762	0.0198	4.8	30	1.24	0.11	0.12	5.71	0.34	10.51	1.68
Project 4	U14	38.56	0.01	25	134	639	0.0197	4.7	30	1.22	0.11	0.12	5.65	0.34	10.38	1.65
Project 4	U15	38.12	0.01	25	134	610	0.0195	4.6	30	1.17	0.10	0.11	4.91	0.34	9.41	1.57
Project 4	U16	38.64	0.01	25	134	605	0.0185	4.4	30	1.13	0.10	0.11	4.80	0.34	9.18	1.53
Project 4	U17	39.37	0.01	25	120	626	0.0198	4.2	14	1.55	0.47	0.47	28.68	0.34	32.55	1.94
Project 4	U18	36.96	0.01	25	120	671	0.0183	4.1	15	1.47	0.45	0.45	24.45	0.34	27.99	1.75
Project 4	U19	28.08	0.01	25	120	663	0.0124	4.0	18	1.29	0.40	0.41	14.85	0.34	17.32	1.26
Project 4	U20	27.81	0.01	25	120	815	0.0103	3.9	23	1.13	0.36	0.37	11.63	0.34	13.85	1.19
Project 4	U21	32.76	0.01	25	120	1153	0.0091	3.8	30	0.97	0.31	0.32	10.17	0.34	12.52	1.30
Project 4	U22	39.59	0.01	25	120	1513	0.0084	3.6	30	0.93	0.28	0.29	10.68	0.34	13.50	1.46
Project 4	U23	34.66	0.01	25	120	1493	0.0087	3.4	30	0.88	0.25	0.26	7.93	0.34	10.34	1.19
Project 4	U24	22.26	0.01	25	134	1580	0.0081	3.2	30	0.83	0.10	0.11	2.03	0.34	3.76	0.65
Project 4	V1	38.16	0.01	25	100	2701	0.0408	6.4	22	1.91	0.50	0.50	36.44	0.34	40.97	3.18
Project 4	V2	39.48	0.01	25	100	1998	0.0754	6.2	16	2.15	0.54	0.54	45.84	0.34	50.79	3.17
Project 4	V3	37.65	0.01	25	120	2921	0.1486	6.1	18	2.01	0.55	0.55	41.62	0.34	45.89	3.07
Project 4	V4	39.78	0.01	25	134	1430	0.1214	5.9	18	1.92	0.29	0.30	22.91	0.34	29.57	2.42
Project 4	V5	37.86	0.01	25	120	999	0.0990	5.9	9	2.66	0.62	0.62	62.44	0.34	67.46	2.95
Project 4	V6	37.87	0.01	25	120	1036	0.0397	5.8	12	2.29	0.58	0.58	50.30	0.34	54.97	2.88
Project 4	V7	36.34	0.01	25	120	982	0.0369	5.6	12	2.22	0.57	0.57	45.98	0.34	50.41	2.65
Project 4	V8	39.43	0.01	25	120	1263	0.0341	5.4	15	1.91	0.53	0.53	39.91	0.34	44.31	2.64
Project 4	V9	31.35	0.01	25	134	1105	0.0345	5.2	30	1.33	0.14	0.15	6.25	0.34	10.38	1.50
Project 4	V10	35.86	0.01	25	134	1264	0.0244	4.8	30	1.24	0.11	0.12	5.34	0.34	9.82	1.57
Project 4	V11	36.13	0.01	25	134	1337	0.0188	4.7	30	1.20	0.10	0.11	4.77	0.34	9.17	1.52
Project 4	V12	37.62	0.01	25	134	1443	0.0183	4.3	30	1.11	0.10	0.11	4.59	0.34	8.76	1.46
Project 4	V13	36.27	0.01	25	134	1239	0.0160	4.0	30	1.02	0.10	0.11	4.07	0.34	7.70	1.30
Project 4	V14	38.50	0.01	25	120	1348	0.0128	3.8	30	0.97	0.31	0.32	11.95	0.34	14.72	1.53
Project 4	V15	36.79	0.01	25	120	1557	0.0093	3.6	30	0.93	0.28	0.29	9.92	0.34	12.54	1.35
Project 4	V16	39.54	0.01	25	120	2190	0.0089	3.4	30	0.88	0.25	0.26	9.05	0.34	11.79	1.36
Project 4	W1	36.18	0.01	25	100	603	0.0300	6.3	8	3.02	0.62	0.62	67.74	0.34	73.31	3.08
Project 4	W2	35.88	0.01	25	100	2847	0.1033	6.2	20	1.94	0.51	0.51	35.50	0.34	39.75	2.87
Project 4	W3	31.27	0.01	25	120	1839	0.1342	6.1	13	2.31	0.58	0.58	41.90	0.34	45.79	2.53
Project 4	W4	29.31	0.01	25	134	1588	0.0757	5.9	24	1.68	0.24	0.25	12.31	0.34	16.80	1.72

OFF-SITE HYDROLOGY																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	W5	27.28	0.01	25	120	1064	0.0696	5.7	11	2.35	0.59	0.59	37.82	0.34	41.21	1.99
Project 4	W6	27.58	0.01	25	120	819	0.0772	5.5	9	2.50	0.60	0.60	41.37	0.34	44.96	1.97
Project 4	W7	35.38	0.01	25	120	1120	0.0623	5.5	12	2.19	0.57	0.57	44.16	0.34	48.40	2.52
Project 4	W8	39.04	0.01	25	120	1006	0.0437	5.4	12	2.12	0.56	0.56	46.35	0.34	50.96	2.66
Project 4	W9	36.08	0.01	25	134	879	0.0428	5.2	23	1.51	0.20	0.21	11.44	0.34	16.59	1.79
Project 4	W10	38.73	0.01	25	134	1000	0.0364	5.0	30	1.29	0.13	0.14	6.99	0.34	11.96	1.77
Project 4	W11	38.92	0.01	25	134	1091	0.0288	4.8	30	1.24	0.11	0.12	5.79	0.34	10.66	1.71
Project 4	W12	33.71	0.01	25	134	987	0.0180	4.6	30	1.17	0.10	0.11	4.34	0.34	8.32	1.39
Project 4	W13	38.35	0.01	25	134	1115	0.0172	4.4	30	1.13	0.10	0.11	4.77	0.34	9.11	1.52
Project 4	W14	36.98	0.01	25	134	1171	0.0160	4.1	30	1.06	0.10	0.11	4.31	0.34	8.19	1.38
Project 4	W15	38.82	0.01	25	134	1218	0.0166	4.0	30	1.02	0.10	0.11	4.36	0.34	8.24	1.39
Project 4	W16	36.93	0.01	25	134	1011	0.0141	3.8	30	0.97	0.10	0.11	3.94	0.34	7.41	1.26
Project 4	W17	39.52	0.01	25	120	1275	0.0106	3.6	30	0.93	0.28	0.29	10.66	0.34	13.48	1.46
Project 4	W18	37.94	0.01	25	120	890	0.0096	3.4	30	0.88	0.25	0.26	8.68	0.34	11.32	1.30
Project 4	X1	37.91	0.01	25	100	1722	0.1279	6.2	13	2.37	0.56	0.56	50.31	0.34	55.41	3.11
Project 4	X2	38.21	0.01	25	120	1012	0.1517	6.1	8	2.90	0.64	0.64	70.92	0.34	76.23	3.13
Project 4	X3	39.02	0.01	25	120	924	0.1347	6.1	8	2.90	0.64	0.64	72.42	0.34	77.84	3.20
Project 4	X4	36.08	0.01	25	120	913	0.1370	6.1	8	2.90	0.64	0.64	66.96	0.34	71.98	2.96
Project 4	X5	35.00	0.01	25	134	872	0.1052	5.9	12	2.33	0.37	0.38	30.99	0.34	37.49	2.20
Project 4	X6	37.32	0.01	25	120	1762	0.0384	5.8	18	1.89	0.53	0.53	37.38	0.34	41.50	2.80
Project 4	X7	32.37	0.01	25	120	1475	0.0490	5.5	15	1.97	0.54	0.54	34.44	0.34	38.10	2.27
Project 4	X8	38.01	0.01	25	120	1512	0.0478	5.4	17	1.80	0.51	0.51	34.89	0.34	39.02	2.57
Project 4	X9	33.34	0.01	25	134	1127	0.0434	5.3	30	1.35	0.14	0.15	6.75	0.34	11.21	1.63
Project 4	X10	38.82	0.01	25	134	983	0.0409	5.1	30	1.31	0.13	0.14	7.12	0.34	12.19	1.82
Project 4	X11	38.26	0.01	25	134	1014	0.0405	4.8	30	1.24	0.11	0.12	5.69	0.34	10.48	1.68
Project 4	X12	37.30	0.01	25	134	1024	0.0324	4.7	30	1.20	0.10	0.11	4.92	0.34	9.46	1.57
Project 4	X13	30.59	0.01	25	134	897	0.0191	4.3	30	1.11	0.10	0.11	3.74	0.34	7.12	1.19
Project 4	X14	39.44	0.01	25	134	1126	0.0164	4.1	30	1.06	0.10	0.11	4.60	0.34	8.73	1.47
Project 4	X15	35.29	0.01	25	134	1193	0.0155	4.0	30	1.02	0.10	0.11	3.96	0.34	7.49	1.26
Project 4	X16	31.14	0.01	25	134	1280	0.0133	3.8	30	0.97	0.10	0.11	3.32	0.34	6.25	1.06
Project 4	X17	22.19	0.01	25	134	906	0.0163	3.5	30	0.90	0.10	0.11	2.20	0.34	4.10	0.71
Project 4	X18	37.26	0.01	25	120	1255	0.0111	3.4	30	0.88	0.25	0.26	8.53	0.34	11.11	1.28
Project 4	X19	39.19	0.01	25	120	223	0.0080	3.2	11	1.34	0.42	0.42	22.06	0.34	25.60	1.37
Project 4	Y1	36.50	0.01	25	100	2414	0.1078	6.2	17	2.09	0.53	0.53	40.43	0.34	44.96	2.97
Project 4	Y2	37.67	0.01	25	100	2217	0.0734	6.1	18	2.01	0.52	0.52	39.37	0.34	43.93	3.00
Project 4	Y3	37.93	0.01	25	120	1673	0.1114	6.1	13	2.31	0.58	0.58	50.82	0.34	55.54	3.07
Project 4	Y4	38.51	0.01	25	120	1651	0.0945	5.9	14	2.16	0.56	0.56	46.58	0.34	51.23	2.95
Project 4	Y5	39.77	0.01	25	120	1868	0.0479	5.6	18	1.84	0.52	0.52	38.05	0.34	42.39	2.85
Project 4	Y6	35.40	0.01	25	134	1673	0.0431	5.4	30	1.38	0.15	0.16	7.82	0.34	12.62	1.77
Project 4	Y7	25.29	0.01	25	134	1195	0.0396	5.2	30	1.33	0.14	0.15	5.05	0.34	8.37	1.21
Project 4	Y8	25.86	0.01	25	134	1207	0.0361	5.0	30	1.29	0.13	0.14	4.67	0.34	7.99	1.18
Project 4	Y9	23.44	0.01	25	134	927	0.0390	4.7	30	1.22	0.11	0.12	3.43	0.34	6.31	1.01
Project 4	Y10	28.25	0.01	25	134	922	0.0375	4.6	30	1.17	0.10	0.11	3.64	0.34	6.97	1.17
Project 4	Y11	21.96	0.01	25	134	725	0.0258	4.3	30	1.11	0.10	0.11	2.68	0.34	5.11	0.85
Project 4	Y12	29.08	0.01	25	134	992	0.0179	4.1	30	1.06	0.10	0.11	3.39	0.34	6.44	1.09
Project 4	Y13	39.18	0.01	25	134	2017	0.0174	4.0	30	1.02	0.10	0.11	4.40	0.34	8.31	1.40
Project 4	Z1	35.69	0.01	25	134	2395	0.0988	6.1	30	1.58	0.21	0.22	12.41	0.34	17.69	2.14
Project 4	Z2	37.32	0.01	25	120	1900	0.0986	6.0	15	2.13	0.56	0.56	44.52	0.34	48.94	2.90
Project 4	Z3	36.64	0.01	25	120	1786	0.0632	5.7	16	1.97	0.54	0.54	38.98	0.34	43.13	2.67
Project 4	Z4	38.90	0.01	25	120	2341	0.0479	5.5	22	1.64	0.48	0.48	30.62	0.34	34.63	2.72
Project 4	Z5	38.20	0.01	25	134	2182	0.0385	5.1	30	1.31	0.13	0.14	7.01	0.34	12.00	1.79
Project 4	Z6	39.14	0.01	25	134	1824	0.0388	4.8	30	1.24	0.11	0.12	5.82	0.34	10.72	1.72
Project 4	Z7	39.23	0.01	25	134	1734	0.0271	4.6	30	1.17	0.10	0.11	5.05	0.34	9.68	1.62
Project 4	Z8	39.50	0.01	25	134	2862	0.0169	4.1	30	1.06	0.10	0.11	4.61	0.34	8.74	1.47
Project 4	ZZ1	30.99	0.01	25	134	1558	0.0146	3.5	30	0.90	0.10	0.11	3.07	0.34	5.73	0.98
Project 4	ZZ2	36.09	0.01	25	134	1233	0.0104	3.3	30	0.86	0.10	0.11	3.41	0.34	6.35	1.09
Project 4	ZZ3	38.30	0.01	25	134	1104	0.0085	3.3	30	0.86	0.10	0.11	3.62	0.34	6.73	1.16
Project 4	ZZ4	19.88	0.01	25	134	592	0.0084	3.2	30	0.83	0.10	0.11	1.82	0.34	3.36	0.58

OFF-SITE HYDROLOGY																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	A1	22.98	0.01	50	120	2126	0.0887	7.4	13	2.82	0.63	0.63	40.83	0.34	44.00	2.46
Project 4	A2	37.57	0.01	50	134	1314	0.0674	7.2	13	2.74	0.42	0.42	43.24	0.34	51.12	3.05
Project 4	A3	39.59	0.01	50	134	1072	0.1039	7.1	11	2.92	0.45	0.45	52.02	0.34	60.50	3.11
Project 4	A4	39.43	0.01	50	120	1849	0.0541	7.1	13	2.70	0.62	0.62	66.01	0.34	71.33	3.98
Project 4	B1	34.99	0.01	50	100	1657	0.0919	8.0	10	3.45	0.65	0.65	78.47	0.34	84.24	4.05
Project 4	B2	37.08	0.01	50	100	1066	0.1408	7.8	7	3.97	0.68	0.68	100.10	0.34	106.68	4.25
Project 4	B3	38.05	0.01	50	120	716	0.1745	7.7	5	4.59	0.74	0.74	129.24	0.34	135.71	4.30
Project 4	B4	34.47	0.01	50	120	807	0.1240	7.6	6	4.16	0.72	0.72	103.24	0.34	108.88	3.78
Project 4	B5	24.01	0.01	50	120	750	0.0994	7.5	6	4.11	0.72	0.72	71.05	0.34	74.92	2.59
Project 4	B6	38.98	0.01	50	120	1814	0.0829	7.4	12	2.93	0.64	0.64	73.10	0.34	78.58	4.18
Project 4	C1	23.39	0.01	50	100	1802	0.1067	8.0	11	3.29	0.64	0.64	49.25	0.34	53.01	2.69
Project 4	C2	30.22	0.01	50	100	674	0.2954	7.9	5	4.71	0.71	0.71	101.06	0.34	106.96	3.46
Project 4	C3	27.48	0.01	50	100	1170	0.0642	7.9	9	3.58	0.66	0.66	64.93	0.34	69.53	3.15
Project 4	D1	23.83	0.01	50	100	818	0.1638	7.7	6	4.22	0.69	0.69	69.39	0.34	73.78	2.60
Project 4	D2	22.51	0.01	50	100	853	0.0277	7.7	8	3.68	0.66	0.66	54.67	0.34	58.56	2.52
Project 4	E1	39.11	0.01	50	100	1053	0.0717	7.5	8	3.59	0.66	0.66	92.67	0.34	99.23	4.24
Project 4	E2	25.41	0.01	50	120	518	0.1933	7.4	5	4.42	0.73	0.73	81.99	0.34	86.28	2.71
Project 4	E3	25.07	0.01	50	120	948	0.1057	7.3	7	3.72	0.70	0.70	65.28	0.34	69.15	2.69
Project 4	F1	28.59	0.01	50	120	1745	0.0573	7.2	12	2.85	0.63	0.63	51.33	0.34	55.34	2.95
Project 4	F2	24.70	0.01	50	120	1052	0.0476	7.0	9	3.17	0.66	0.66	51.68	0.34	55.27	2.45
Project 4	G1	39.58	0.01	50	120	1061	0.0527	6.9	9	3.12	0.65	0.65	80.27	0.34	86.09	3.84
Project 4	G2	38.83	0.01	50	120	1063	0.0532	6.8	10	2.93	0.64	0.64	72.81	0.34	78.28	3.65
Project 4	G3	39.03	0.01	50	120	972	0.0495	6.7	9	3.03	0.65	0.65	76.87	0.34	82.42	3.64
Project 4	G4	38.06	0.01	50	120	701	0.0417	6.7	8	3.21	0.66	0.66	80.63	0.34	86.25	3.60
Project 4	G5	33.89	0.01	50	120	629	0.0390	6.6	7	3.36	0.67	0.67	76.29	0.34	81.41	3.15
Project 4	G6	35.37	0.01	50	120	492	0.0379	6.5	6	3.56	0.69	0.69	86.88	0.34	92.24	3.11
Project 4	G7	32.81	0.01	50	120	792	0.0378	6.4	9	2.90	0.64	0.64	60.90	0.34	65.46	2.87
Project 4	G8	30.05	0.01	50	120	1127	0.0239	6.4	12	2.53	0.61	0.61	46.38	0.34	50.24	2.62
Project 4	G9	30.28	0.01	50	120	3877	0.0155	6.1	30	1.57	0.47	0.47	22.34	0.34	25.37	2.38
Project 4	H1	35.93	0.01	50	120	869	0.0173	6.0	12	2.37	0.59	0.59	50.24	0.34	54.74	2.87
Project 4	H2	36.52	0.01	50	120	1498	0.0164	5.9	18	1.93	0.53	0.53	37.36	0.34	41.48	2.80
Project 4	H3	30.80	0.01	50	120	1387	0.0143	5.8	18	1.90	0.53	0.53	31.02	0.34	34.43	2.31
Project 4	H4	34.53	0.01	50	120	1605	0.0156	5.7	20	1.77	0.51	0.51	31.17	0.34	34.84	2.50
Project 4	I1	38.22	0.01	50	100	1935	0.1206	7.5	12	2.97	0.61	0.61	69.24	0.34	75.16	4.07
Project 4	I2	38.42	0.01	50	120	912	0.0978	7.3	7	3.72	0.70	0.70	100.05	0.34	105.97	4.11
Project 4	I3	36.92	0.01	50	120	1121	0.1212	7.2	8	3.44	0.68	0.68	86.36	0.34	91.92	3.86
Project 4	I4	32.95	0.01	50	120	1148	0.0950	7.1	9	3.21	0.66	0.66	69.81	0.34	74.67	3.32
Project 4	I5	34.51	0.01	50	120	944	0.0700	7.0	8	3.35	0.67	0.67	77.46	0.34	82.65	3.47
Project 4	I6	37.79	0.01	50	120	1054	0.0470	6.9	10	2.97	0.64	0.64	71.83	0.34	77.23	3.62
Project 4	I7	39.67	0.01	50	120	1105	0.0455	6.9	10	2.97	0.64	0.64	75.40	0.34	81.07	3.80
Project 4	I8	32.66	0.01	50	120	988	0.0414	6.7	10	2.89	0.64	0.64	60.41	0.34	64.93	3.00
Project 4	I9	33.40	0.01	50	120	853	0.0401	6.7	9	3.03	0.65	0.65	65.78	0.34	70.53	3.11
Project 4	I10	31.70	0.01	50	120	941	0.0339	6.6	10	2.84	0.63	0.63	56.72	0.34	61.14	2.85
Project 4	I11	26.12	0.01	50	120	917	0.0346	6.3	10	2.71	0.62	0.62	43.89	0.34	47.43	2.21
Project 4	I12	26.81	0.01	50	120	1151	0.0213	6.2	13	2.36	0.59	0.59	37.33	0.34	40.67	2.23
Project 4	I13	18.03	0.01	50	120	2163	0.0170	5.9	24	1.68	0.49	0.49	14.84	0.34	16.72	1.37
Project 4	J1	33.46	0.01	50	100	1081	0.0796	7.5	8	3.59	0.66	0.66	79.28	0.34	84.90	3.62
Project 4	J2	20.47	0.01	50	100	1223	0.0933	7.5	9	3.39	0.65	0.65	45.11	0.34	48.42	2.18
Project 4	K1	39.41	0.01	50	100	638	0.0870	7.5	6	4.11	0.69	0.69	111.76	0.34	118.81	4.14
Project 4	K2	37.15	0.01	50	100	1150	0.0963	7.5	8	3.59	0.66	0.66	88.02	0.34	94.26	4.02
Project 4	K3	15.23	0.01	50	100	517	0.1620	7.4	5	4.42	0.70	0.70	47.12	0.34	49.98	1.58
Project 4	L1	30.11	0.01	50	100	883	0.1037	7.4	7	3.77	0.67	0.67	76.05	0.34	81.24	3.21
Project 4	L2	27.64	0.01	50	120	915	0.0847	7.3	7	3.72	0.70	0.70	71.97	0.34	76.24	2.96
Project 4	L3	28.98	0.01	50	120	879	0.0770	7.2	7	3.67	0.69	0.69	73.39	0.34	77.93	3.05
Project 4	L4	33.97	0.01	50	120	1044	0.0967	7.1	8	3.40	0.68	0.68	78.54	0.34	83.58	3.49
Project 4	L5	22.21	0.01	50	120	675	0.0926	7.0	6	3.83	0.70	0.70	59.55	0.34	63.09	2.17
Project 4	L6	22.37	0.01	50	120	697	0.0719	6.9	7	3.51	0.68	0.68	53.39	0.34	56.84	2.21
Project 4	L7	26.08	0.01	50	120	1126	0.0444	6.9	10	2.97	0.64	0.64	49.57	0.34	53.30	2.50

OFF-SITE HYDROLOGY																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	M1	38.00	0.01	50	100	1654	0.1240	7.4	11	3.05	0.62	0.62	71.86	0.34	77.77	3.91
Project 4	M2	33.36	0.01	50	100	948	0.1621	7.3	7	3.72	0.67	0.67	83.15	0.34	88.81	3.48
Project 4	M3	35.68	0.01	50	100	1027	0.1713	7.3	7	3.72	0.67	0.67	88.93	0.34	94.99	3.72
Project 4	M4	38.71	0.01	50	120	1228	0.1223	7.2	9	3.26	0.66	0.66	83.29	0.34	89.10	3.99
Project 4	M5	29.99	0.01	50	120	1262	0.0983	7.1	9	3.21	0.66	0.66	63.54	0.34	67.96	3.03
Project 4	M6	35.13	0.01	50	120	1909	0.0719	7.0	13	2.67	0.62	0.62	58.15	0.34	62.84	3.48
Project 4	N1	31.97	0.01	50	120	842	0.0454	6.8	8	3.25	0.66	0.66	68.58	0.34	73.36	3.08
Project 4	N2	36.82	0.01	50	120	1142	0.0321	6.7	11	2.76	0.62	0.62	63.01	0.34	68.11	3.36
Project 4	N3	36.86	0.01	50	120	1001	0.0296	6.6	11	2.72	0.62	0.62	62.16	0.34	67.18	3.29
Project 4	N4	36.20	0.01	50	120	1124	0.0299	6.4	12	2.53	0.61	0.61	55.87	0.34	60.52	3.16
Project 4	N5	29.70	0.01	50	120	1026	0.0282	6.1	12	2.41	0.59	0.59	42.23	0.34	46.02	2.43
Project 4	N6	37.04	0.01	50	120	1808	0.0181	5.9	21	1.79	0.51	0.51	33.81	0.34	37.80	2.80
Project 4	O1	35.28	0.01	50	134	1035	0.0164	5.4	30	1.39	0.16	0.17	8.34	0.34	13.11	1.78
Project 4	O2	37.38	0.01	50	120	1302	0.0157	5.2	19	1.66	0.49	0.49	30.40	0.34	34.24	2.41
Project 4	O3	24.53	0.01	50	120	1105	0.0113	4.9	20	1.52	0.46	0.46	17.15	0.34	19.55	1.44
Project 4	P1	33.21	0.01	50	100	986	0.0754	7.3	8	3.49	0.65	0.65	75.34	0.34	80.89	3.46
Project 4	P2	30.73	0.01	50	100	688	0.2561	7.3	5	4.36	0.70	0.70	93.79	0.34	99.47	3.14
Project 4	P3	38.75	0.01	50	100	815	0.2142	7.2	6	3.94	0.68	0.68	103.82	0.34	110.63	3.84
Project 4	P4	32.71	0.01	50	120	687	0.1583	7.1	5	4.24	0.72	0.72	99.86	0.34	105.33	3.29
Project 4	P5	37.46	0.01	50	120	1344	0.1060	7.1	9	3.21	0.66	0.66	79.36	0.34	84.89	3.78
Project 4	P6	34.72	0.01	50	120	701	0.1782	7.0	6	3.83	0.70	0.70	93.08	0.34	98.62	3.39
Project 4	P7	37.23	0.01	50	120	524	0.1088	6.9	5	4.12	0.72	0.72	110.44	0.34	116.46	3.60
Project 4	P8	39.37	0.01	50	120	615	0.0897	6.9	6	3.78	0.70	0.70	104.17	0.34	110.36	3.77
Project 4	P9	37.35	0.01	50	120	1086	0.0462	6.9	10	2.97	0.64	0.64	70.99	0.34	76.33	3.58
Project 4	P10	39.70	0.01	50	120	1230	0.0406	6.8	11	2.80	0.63	0.63	70.03	0.34	75.48	3.70
Project 4	P11	36.59	0.01	50	120	782	0.0358	6.6	9	2.99	0.64	0.64	70.02	0.34	75.29	3.33
Project 4	P12	33.16	0.01	50	120	763	0.0304	6.4	9	2.90	0.64	0.64	61.54	0.34	66.15	2.90
Project 4	P13	38.23	0.01	50	120	879	0.0287	6.3	10	2.71	0.62	0.62	64.23	0.34	69.42	3.23
Project 4	P14	39.76	0.01	50	134	925	0.0255	6.1	17	2.05	0.32	0.33	26.90	0.34	33.77	2.55
Project 4	P15	39.93	0.01	50	134	916	0.0217	5.9	19	1.88	0.29	0.30	22.52	0.34	29.04	2.41
Project 4	P16	36.68	0.01	50	134	884	0.0180	5.6	23	1.63	0.23	0.24	14.35	0.34	19.84	2.03
Project 4	P17	39.67	0.01	50	120	1149	0.0174	5.4	17	1.81	0.51	0.51	36.62	0.34	40.95	2.70
Project 4	P18	34.63	0.01	50	120	1357	0.0142	5.3	20	1.65	0.49	0.49	28.00	0.34	31.53	2.27
Project 4	Q1	39.01	0.01	50	120	1059	0.0102	4.9	20	1.52	0.46	0.46	27.28	0.34	31.09	2.30
Project 4	Q2	36.04	0.01	50	120	1187	0.0105	4.7	23	1.37	0.43	0.43	21.23	0.34	24.52	2.00
Project 4	Q3	39.98	0.01	50	120	1792	0.0102	4.5	30	1.16	0.37	0.38	17.62	0.34	20.88	2.04
Project 4	Q4	30.77	0.01	50	120	1903	0.0088	4.2	30	1.08	0.35	0.36	11.96	0.34	14.33	1.43
Project 4	Q5	27.49	0.01	50	134	1849	0.0084	3.9	30	1.00	0.10	0.11	3.02	0.34	5.71	0.97
Project 4	Q6	30.47	0.01	50	134	1683	0.0075	3.7	30	0.95	0.10	0.11	3.18	0.34	5.98	1.02
Project 4	Q7	32.58	0.01	50	134	1526	0.0073	3.5	30	0.90	0.10	0.11	3.23	0.34	6.02	1.03
Project 4	R1	32.09	0.01	50	100	2577	0.1628	7.2	14	2.65	0.59	0.59	50.17	0.34	54.75	3.19
Project 4	R2	35.87	0.01	50	100	1059	0.1716	7.1	8	3.40	0.65	0.65	79.27	0.34	85.10	3.59
Project 4	R3	39.66	0.01	50	120	963	0.1497	7.0	7	3.57	0.69	0.69	97.69	0.34	103.72	4.00
Project 4	R4	38.16	0.01	50	120	963	0.1024	6.9	8	3.30	0.67	0.67	84.37	0.34	90.02	3.76
Project 4	R5	33.31	0.01	50	120	751	0.0849	6.9	7	3.51	0.68	0.68	79.50	0.34	84.63	3.29
Project 4	R6	37.01	0.01	50	120	757	0.0757	6.8	7	3.46	0.68	0.68	87.08	0.34	92.68	3.58
Project 4	R7	35.37	0.01	50	120	1058	0.0475	6.7	10	2.89	0.64	0.64	65.42	0.34	70.32	3.25
Project 4	R8	37.83	0.01	50	120	1044	0.0386	6.6	11	2.72	0.62	0.62	63.80	0.34	68.95	3.38
Project 4	R9	33.08	0.01	50	134	973	0.0289	6.4	15	2.28	0.36	0.37	27.91	0.34	34.00	2.26
Project 4	R10	25.89	0.01	50	134	829	0.0285	6.1	14	2.24	0.35	0.36	20.88	0.34	25.62	1.68
Project 4	R11	28.59	0.01	50	134	1022	0.0245	5.9	20	1.83	0.28	0.29	15.17	0.34	19.76	1.71
Project 4	S1	37.15	0.01	50	100	1736	0.1383	7.3	11	3.01	0.62	0.62	69.33	0.34	75.02	3.74
Project 4	S2	35.17	0.01	50	100	1178	0.1728	7.1	8	3.40	0.65	0.65	77.73	0.34	83.44	3.52
Project 4	S3	30.64	0.01	50	120	967	0.1624	7.1	7	3.62	0.69	0.69	76.53	0.34	81.27	3.15
Project 4	S4	35.99	0.01	50	120	1010	0.1608	6.9	7	3.51	0.68	0.68	85.90	0.34	91.44	3.55
Project 4	S5	32.25	0.01	50	134	834	0.1161	6.9	9	3.12	0.47	0.47	47.29	0.34	54.48	2.51
Project 4	S6	37.34	0.01	50	134	958	0.0690	6.9	11	2.84	0.44	0.44	46.66	0.34	54.55	2.83
Project 4	S7	33.26	0.01	50	134	789	0.0738	6.8	10	2.93	0.45	0.45	43.85	0.34	51.01	2.50

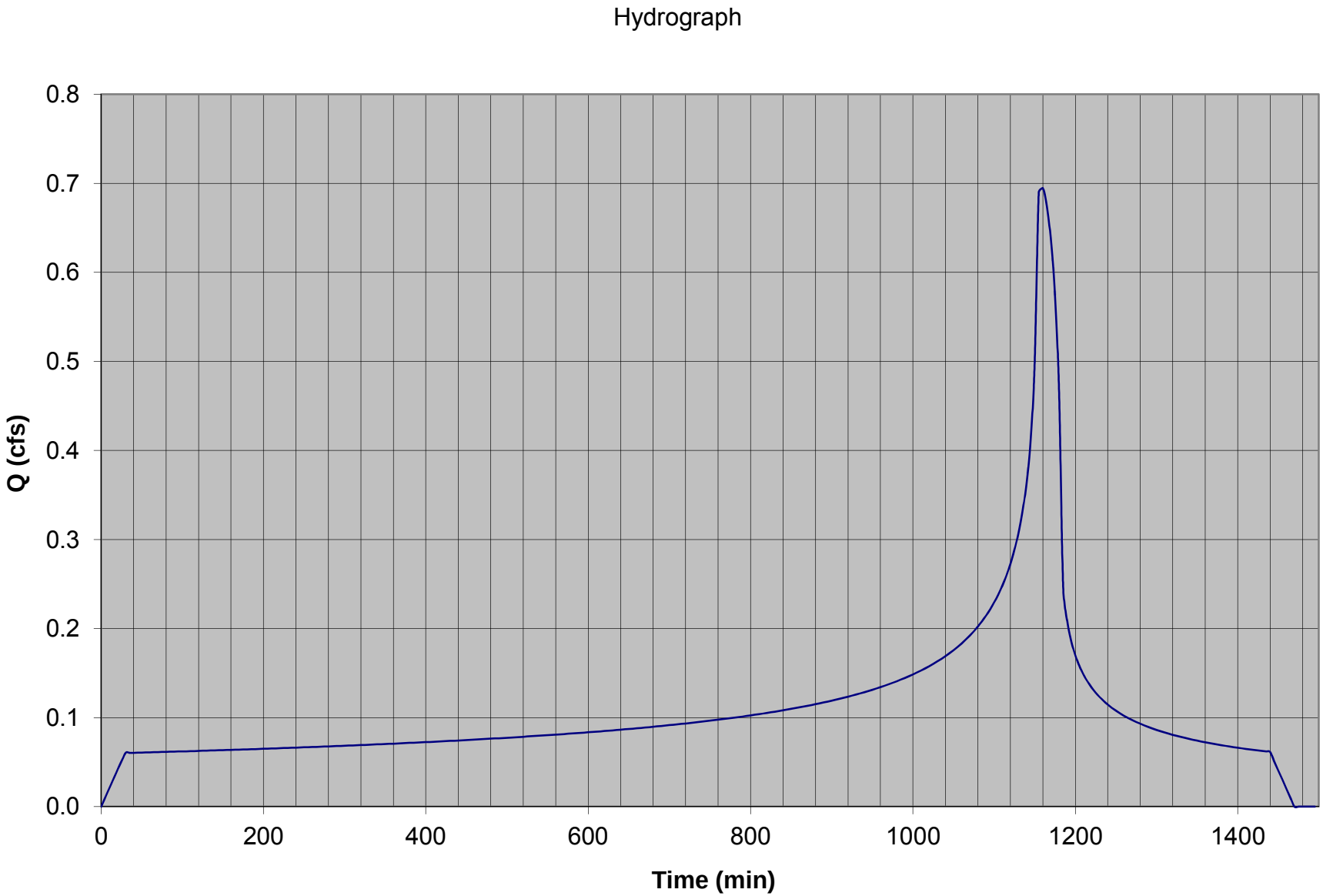
OFF-SITE HYDROLOGY																	
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	S8	38.79	0.01	50	134	1109	0.0368	6.6	15	2.35	0.37	0.38	34.64	0.34	41.92	2.75
Project 4	S9	32.99	0.01	50	134	724	0.0279	6.4	12	2.53	0.40	0.41	34.22	0.34	40.64	2.32
Project 4	S10	35.39	0.01	50	134	569	0.0279	6.3	10	2.71	0.42	0.42	40.28	0.34	47.62	2.41
Project 4	S11	38.16	0.01	50	134	693	0.0271	6.1	12	2.41	0.38	0.39	35.87	0.34	43.12	2.52
Project 4	S12	39.34	0.01	50	134	865	0.0265	5.9	17	1.98	0.30	0.31	24.15	0.34	30.87	2.41
Project 4	S13	37.63	0.01	50	134	1077	0.0256	5.8	22	1.72	0.26	0.27	17.48	0.34	23.24	2.19
Project 4	T1	38.70	0.01	50	134	1036	0.0177	5.3	30	1.36	0.15	0.16	8.42	0.34	13.58	1.91
Project 4	T2	39.37	0.01	50	134	1021	0.0203	5.1	30	1.31	0.13	0.14	7.22	0.34	12.36	1.84
Project 4	T3	34.64	0.01	50	120	1063	0.0170	4.9	18	1.60	0.48	0.48	26.60	0.34	30.07	2.07
Project 4	T4	34.97	0.01	50	120	1303	0.0121	4.7	24	1.34	0.42	0.42	19.68	0.34	22.84	1.93
Project 4	T5	38.36	0.01	50	120	1772	0.0105	4.4	30	1.13	0.36	0.37	16.04	0.34	19.11	1.90
Project 4	T6	34.73	0.01	50	120	1920	0.0089	4.1	30	1.05	0.34	0.35	12.76	0.34	15.39	1.56
Project 4	T7	34.08	0.01	50	120	2228	0.0084	3.9	30	1.00	0.32	0.33	11.25	0.34	13.75	1.42
Project 4	T8	39.42	0.01	50	134	2639	0.0078	3.7	30	0.95	0.10	0.11	4.12	0.34	7.74	1.32
Project 4	U1	38.54	0.01	50	100	2361	0.1424	7.1	14	2.61	0.59	0.59	59.35	0.34	64.75	3.76
Project 4	U2	31.64	0.01	50	120	814	0.2145	7.0	6	3.83	0.70	0.70	84.83	0.34	89.87	3.09
Project 4	U3	34.70	0.01	50	120	1053	0.1165	6.9	8	3.30	0.67	0.67	76.72	0.34	81.85	3.42
Project 4	U4	31.48	0.01	50	134	979	0.1062	6.8	11	2.80	0.43	0.43	37.90	0.34	44.56	2.34
Project 4	U5	35.79	0.01	50	134	969	0.1220	6.7	10	2.89	0.44	0.44	45.51	0.34	53.23	2.64
Project 4	U6	39.16	0.01	50	134	962	0.0832	6.7	11	2.76	0.43	0.43	46.48	0.34	54.62	2.86
Project 4	U7	37.63	0.01	50	134	751	0.0563	6.6	10	2.84	0.44	0.44	47.02	0.34	54.97	2.72
Project 4	U8	36.35	0.01	50	134	1300	0.0208	6.5	22	1.93	0.30	0.31	21.75	0.34	27.78	2.48
Project 4	U9	31.01	0.01	50	134	1060	0.0254	6.3	18	2.06	0.32	0.33	21.08	0.34	26.47	2.06
Project 4	U10	31.05	0.01	50	134	787	0.0379	6.1	13	2.32	0.36	0.37	26.65	0.34	32.49	2.04
Project 4	U11	39.07	0.01	50	134	649	0.0406	5.9	12	2.33	0.37	0.38	34.59	0.34	41.85	2.46
Project 4	U12	36.94	0.01	50	134	657	0.0282	5.7	13	2.17	0.34	0.35	28.06	0.34	34.68	2.22
Project 4	U13	38.36	0.01	50	134	762	0.0198	5.5	19	1.75	0.26	0.27	18.13	0.34	24.12	2.11
Project 4	U14	38.56	0.01	50	134	639	0.0197	5.4	16	1.86	0.28	0.29	20.80	0.34	27.10	2.08
Project 4	U15	38.12	0.01	50	134	610	0.0195	5.2	17	1.75	0.26	0.27	18.01	0.34	23.97	1.98
Project 4	U16	38.64	0.01	50	134	605	0.0185	5.0	22	1.49	0.19	0.20	11.51	0.34	16.99	1.84
Project 4	U17	39.37	0.01	50	120	626	0.0198	4.8	12	1.90	0.53	0.53	39.65	0.34	44.01	2.33
Project 4	U18	36.96	0.01	50	120	671	0.0183	4.7	13	1.79	0.51	0.51	33.74	0.34	37.72	2.12
Project 4	U19	28.08	0.01	50	120	663	0.0124	4.5	15	1.60	0.48	0.48	21.57	0.34	24.38	1.49
Project 4	U20	27.81	0.01	50	120	815	0.0103	4.4	19	1.40	0.43	0.43	16.74	0.34	19.35	1.43
Project 4	U21	32.76	0.01	50	120	1153	0.0091	4.3	27	1.16	0.37	0.38	14.44	0.34	17.11	1.60
Project 4	U22	39.59	0.01	50	120	1513	0.0084	4.1	30	1.05	0.34	0.35	14.55	0.34	17.54	1.78
Project 4	U23	34.66	0.01	50	120	1493	0.0087	3.9	30	1.00	0.32	0.33	11.44	0.34	13.98	1.44
Project 4	U24	22.26	0.01	50	134	1580	0.0081	3.7	30	0.95	0.10	0.11	2.33	0.34	4.37	0.75
Project 4	V1	38.16	0.01	50	100	2701	0.0408	7.3	19	2.33	0.56	0.56	49.79	0.34	54.82	3.83
Project 4	V2	39.48	0.01	50	100	1998	0.0754	7.1	14	2.61	0.59	0.59	60.80	0.34	66.33	3.85
Project 4	V3	37.65	0.01	50	120	2921	0.1486	7.0	15	2.49	0.60	0.60	56.25	0.34	61.12	3.65
Project 4	V4	39.78	0.01	50	134	1430	0.1214	6.7	14	2.46	0.39	0.40	39.14	0.34	46.76	2.91
Project 4	V5	37.86	0.01	50	120	999	0.0990	6.7	8	3.21	0.66	0.66	80.21	0.34	85.80	3.58
Project 4	V6	37.87	0.01	50	120	1036	0.0397	6.6	10	2.84	0.63	0.63	67.76	0.34	73.04	3.41
Project 4	V7	36.34	0.01	50	120	982	0.0369	6.4	10	2.76	0.62	0.62	62.19	0.34	67.22	3.13
Project 4	V8	39.43	0.01	50	120	1263	0.0341	6.1	13	2.32	0.58	0.58	53.06	0.34	57.99	3.21
Project 4	V9	31.35	0.01	50	134	1105	0.0345	5.9	20	1.83	0.28	0.29	16.64	0.34	21.66	1.87
Project 4	V10	35.86	0.01	50	134	1264	0.0244	5.5	30	1.41	0.16	0.17	8.60	0.34	13.53	1.85
Project 4	V11	36.13	0.01	50	134	1337	0.0188	5.3	30	1.36	0.15	0.16	7.86	0.34	12.68	1.78
Project 4	V12	37.62	0.01	50	134	1443	0.0183	4.9	30	1.26	0.12	0.13	6.16	0.34	10.91	1.68
Project 4	V13	36.27	0.01	50	134	1239	0.0160	4.5	30	1.16	0.10	0.11	4.63	0.34	8.87	1.48
Project 4	V14	38.50	0.01	50	120	1348	0.0128	4.3	29	1.12	0.36	0.37	15.95	0.34	19.00	1.86
Project 4	V15	36.79	0.01	50	120	1557	0.0093	4.1	30	1.05	0.34	0.35	13.52	0.34	16.30	1.65
Project 4	V16	39.54	0.01	50	120	2190	0.0089	3.9	30	1.00	0.32	0.33	13.05	0.34	15.95	1.65
Project 4	W1	36.18	0.01	50	100	603	0.0300	7.2	7	3.67	0.66	0.66	87.64	0.34	93.87	3.71
Project 4	W2	35.88	0.01	50	100	2847	0.1033	7.1	17	2.38	0.56	0.56	47.82	0.34	52.67	3.50
Project 4	W3	31.27	0.01	50	120	1839	0.1342	6.9	12	2.73	0.62	0.62	52.93	0.34	57.21	3.04
Project 4	W4	29.31	0.01	50	134	1588	0.0757	6.7	17	2.25	0.35	0.36	23.74	0.34	29.14	2.12

OFF-SITE HYDROLOGY																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	W5	27.28	0.01	50	120	1064	0.0696	6.5	10	2.80	0.63	0.63	48.12	0.34	51.86	2.40
Project 4	W6	27.58	0.01	50	120	819	0.0772	6.3	8	3.01	0.64	0.64	53.13	0.34	57.13	2.40
Project 4	W7	35.38	0.01	50	120	1120	0.0623	6.3	11	2.59	0.61	0.61	55.90	0.34	60.57	2.97
Project 4	W8	39.04	0.01	50	120	1006	0.0437	6.1	11	2.51	0.61	0.61	59.77	0.34	64.75	3.13
Project 4	W9	36.08	0.01	50	134	879	0.0428	5.9	15	2.10	0.33	0.34	25.76	0.34	32.08	2.21
Project 4	W10	38.73	0.01	50	134	1000	0.0364	5.7	19	1.82	0.28	0.29	20.44	0.34	26.61	2.23
Project 4	W11	38.92	0.01	50	134	1091	0.0288	5.5	30	1.41	0.16	0.17	9.33	0.34	14.69	2.01
Project 4	W12	33.71	0.01	50	134	987	0.0180	5.2	30	1.34	0.14	0.15	6.78	0.34	11.25	1.62
Project 4	W13	38.35	0.01	50	134	1115	0.0172	5.0	30	1.29	0.13	0.14	6.93	0.34	11.84	1.75
Project 4	W14	36.98	0.01	50	134	1171	0.0160	4.7	30	1.21	0.10	0.11	4.92	0.34	9.47	1.57
Project 4	W15	38.82	0.01	50	134	1218	0.0166	4.5	30	1.16	0.10	0.11	4.95	0.34	9.49	1.58
Project 4	W16	36.93	0.01	50	134	1011	0.0141	4.3	30	1.11	0.10	0.11	4.51	0.34	8.60	1.44
Project 4	W17	39.52	0.01	50	120	1275	0.0106	4.1	30	1.05	0.34	0.35	14.52	0.34	17.51	1.77
Project 4	W18	37.94	0.01	50	120	890	0.0096	3.9	25	1.09	0.35	0.36	14.89	0.34	17.84	1.61
Project 4	X1	37.91	0.01	50	100	1722	0.1279	7.1	11	2.92	0.61	0.61	67.53	0.34	73.28	3.67
Project 4	X2	38.21	0.01	50	120	1012	0.1517	6.9	7	3.51	0.68	0.68	91.20	0.34	97.08	3.77
Project 4	X3	39.02	0.01	50	120	924	0.1347	6.9	7	3.51	0.68	0.68	93.13	0.34	99.14	3.85
Project 4	X4	36.08	0.01	50	120	913	0.1370	6.9	7	3.51	0.68	0.68	86.12	0.34	91.67	3.56
Project 4	X5	35.00	0.01	50	134	872	0.1052	6.7	10	2.89	0.44	0.44	44.51	0.34	52.05	2.58
Project 4	X6	37.32	0.01	50	120	1762	0.0384	6.6	15	2.35	0.59	0.59	51.74	0.34	56.37	3.34
Project 4	X7	32.37	0.01	50	120	1475	0.0490	6.3	13	2.40	0.59	0.59	45.84	0.34	49.95	2.76
Project 4	X8	38.01	0.01	50	120	1512	0.0478	6.1	14	2.24	0.57	0.57	48.53	0.34	53.21	3.06
Project 4	X9	33.34	0.01	50	134	1127	0.0434	6.0	18	1.96	0.30	0.31	20.26	0.34	25.89	2.08
Project 4	X10	38.82	0.01	50	134	983	0.0409	5.8	17	1.95	0.30	0.31	23.47	0.34	29.99	2.34
Project 4	X11	38.26	0.01	50	134	1014	0.0405	5.5	21	1.67	0.24	0.25	15.97	0.34	21.79	2.06
Project 4	X12	37.30	0.01	50	134	1024	0.0324	5.3	30	1.36	0.15	0.16	8.12	0.34	13.09	1.84
Project 4	X13	30.59	0.01	50	134	897	0.0191	4.9	30	1.26	0.12	0.13	5.01	0.34	8.87	1.37
Project 4	X14	39.44	0.01	50	134	1126	0.0164	4.7	30	1.21	0.10	0.11	5.25	0.34	10.10	1.68
Project 4	X15	35.29	0.01	50	134	1193	0.0155	4.5	30	1.16	0.10	0.11	4.50	0.34	8.63	1.44
Project 4	X16	31.14	0.01	50	134	1280	0.0133	4.3	30	1.11	0.10	0.11	3.80	0.34	7.25	1.21
Project 4	X17	22.19	0.01	50	134	906	0.0163	4.0	30	1.03	0.10	0.11	2.51	0.34	4.76	0.80
Project 4	X18	37.26	0.01	50	120	1255	0.0111	3.9	30	1.00	0.32	0.33	12.30	0.34	15.03	1.55
Project 4	X19	39.19	0.01	50	120	223	0.0080	3.7	9	1.67	0.49	0.49	32.07	0.34	36.12	1.65
Project 4	Y1	36.50	0.01	50	100	2414	0.1078	7.1	15	2.53	0.58	0.58	53.56	0.34	58.61	3.52
Project 4	Y2	37.67	0.01	50	100	2217	0.0734	7.0	15	2.49	0.58	0.58	54.40	0.34	59.52	3.58
Project 4	Y3	37.93	0.01	50	120	1673	0.1114	6.9	11	2.84	0.63	0.63	67.86	0.34	73.15	3.61
Project 4	Y4	38.51	0.01	50	120	1651	0.0945	6.7	12	2.65	0.62	0.62	63.27	0.34	68.36	3.59
Project 4	Y5	39.77	0.01	50	120	1868	0.0479	6.4	16	2.21	0.57	0.57	50.10	0.34	54.91	3.39
Project 4	Y6	35.40	0.01	50	134	1673	0.0431	6.1	28	1.62	0.23	0.24	13.76	0.34	19.02	2.14
Project 4	Y7	25.29	0.01	50	134	1195	0.0396	5.9	21	1.79	0.27	0.28	12.68	0.34	16.68	1.50
Project 4	Y8	25.86	0.01	50	134	1207	0.0361	5.7	25	1.60	0.22	0.23	9.52	0.34	13.35	1.44
Project 4	Y9	23.44	0.01	50	134	927	0.0390	5.4	21	1.64	0.23	0.24	9.23	0.34	12.76	1.23
Project 4	Y10	28.25	0.01	50	134	922	0.0375	5.2	26	1.43	0.17	0.18	7.27	0.34	11.18	1.38
Project 4	Y11	21.96	0.01	50	134	725	0.0258	4.9	30	1.26	0.12	0.13	3.60	0.34	6.37	0.98
Project 4	Y12	29.08	0.01	50	134	992	0.0179	4.7	30	1.21	0.10	0.11	3.87	0.34	7.44	1.24
Project 4	Y13	39.18	0.01	50	134	2017	0.0174	4.5	30	1.16	0.10	0.11	5.00	0.34	9.58	1.60
Project 4	Z1	35.69	0.01	50	134	2395	0.0988	7.0	22	2.08	0.32	0.33	24.50	0.34	30.77	2.68
Project 4	Z2	37.32	0.01	50	120	1900	0.0986	6.8	12	2.69	0.62	0.62	62.24	0.34	67.26	3.54
Project 4	Z3	36.64	0.01	50	120	1786	0.0632	6.5	14	2.39	0.59	0.59	51.67	0.34	56.30	3.23
Project 4	Z4	38.90	0.01	50	120	2341	0.0479	6.3	19	2.01	0.55	0.55	43.00	0.34	47.41	3.25
Project 4	Z5	38.20	0.01	50	134	2182	0.0385	5.8	30	1.49	0.19	0.20	11.38	0.34	16.80	2.12
Project 4	Z6	39.14	0.01	50	134	1824	0.0388	5.5	30	1.41	0.16	0.17	9.38	0.34	14.77	2.02
Project 4	Z7	39.23	0.01	50	134	1734	0.0271	5.2	30	1.34	0.14	0.15	7.89	0.34	13.09	1.89
Project 4	Z8	39.50	0.01	50	134	2862	0.0169	4.7	30	1.21	0.10	0.11	5.26	0.34	10.11	1.68
Project 4	ZZ1	30.99	0.01	50	134	1558	0.0146	4.0	30	1.03	0.10	0.11	3.51	0.34	6.65	1.12
Project 4	ZZ2	36.09	0.01	50	134	1233	0.0104	3.8	30	0.98	0.10	0.11	3.89	0.34	7.33	1.24
Project 4	ZZ3	38.30	0.01	50	134	1104	0.0085	3.8	30	0.98	0.10	0.11	4.13	0.34	7.78	1.32
Project 4	ZZ4	19.88	0.01	50	134	592	0.0084	3.7	30	0.95	0.10	0.11	2.08	0.34	3.90	0.67

ON-SITE PRE-DEVELOPMENT HYDROLOGIC CALCULATIONS

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	A	7.95	0.01	25	134	654	0.0076	3.1	30	0.80	0.10	0.11	0.70	0.34	1.29	0.22
Project 4	B	12.45	0.01	25	134	653	0.0092	3.1	30	0.80	0.10	0.11	1.10	0.34	2.02	0.35
Project 4	C	14.13	0.01	25	134	1316	0.0084	3.1	30	0.80	0.10	0.11	1.24	0.34	2.29	0.40
Project 4	D	26.72	0.01	25	120	546	0.0092	3.2	28	0.85	0.23	0.24	5.45	0.34	7.28	0.85
Project 4	E	21.18	0.01	25	120	773	0.0052	3.2	30	0.82	0.21	0.22	3.82	0.34	5.24	0.66
Project 4	F	35.55	0.01	25	120	2651	0.0075	3.2	30	0.82	0.21	0.22	6.41	0.34	8.80	1.11
Project 4	G	30.77	0.01	25	120	1797	0.0072	3.2	30	0.82	0.21	0.22	5.55	0.34	7.62	0.96
Project 4	H	21.84	0.01	25	134	1066	0.0094	3.2	30	0.82	0.10	0.11	1.97	0.34	3.64	0.63
Project 4	I	27.47	0.01	25	120	1046	0.0057	3.2	30	0.82	0.21	0.22	4.96	0.34	6.80	0.85
Project 4	J	33.62	0.01	25	134	1131	0.0119	3.2	30	0.82	0.10	0.11	3.03	0.34	5.61	0.97
Project 4	K	23.82	0.01	25	134	845	0.0095	3.2	30	0.82	0.10	0.11	2.15	0.34	3.97	0.69
Project 4	A	7.95	0.01	50	134	654	0.0076	3.5	30	0.91	0.10	0.11	0.80	0.34	1.49	0.25
Project 4	B	12.45	0.01	50	134	653	0.0092	3.5	30	0.91	0.10	0.11	1.25	0.34	2.33	0.40
Project 4	C	14.13	0.01	50	134	1316	0.0084	3.5	30	0.91	0.10	0.11	1.41	0.34	2.64	0.45
Project 4	D	26.72	0.01	50	120	546	0.0092	3.6	18	1.19	0.38	0.39	12.40	0.34	14.61	1.08
Project 4	E	21.18	0.01	50	120	773	0.0052	3.6	30	0.94	0.29	0.30	5.97	0.34	7.48	0.79
Project 4	F	35.55	0.01	50	120	2651	0.0075	3.6	30	0.94	0.29	0.30	10.03	0.34	12.56	1.33
Project 4	G	30.77	0.01	50	120	1797	0.0072	3.6	30	0.94	0.29	0.30	8.68	0.34	10.87	1.15
Project 4	H	21.84	0.01	50	134	1066	0.0094	3.6	30	0.94	0.10	0.11	2.26	0.34	4.24	0.72
Project 4	I	27.47	0.01	50	120	1046	0.0057	3.6	30	0.94	0.29	0.30	7.75	0.34	9.70	1.03
Project 4	J	33.62	0.01	50	134	1131	0.0119	3.6	30	0.94	0.10	0.11	3.48	0.34	6.52	1.11
Project 4	K	23.82	0.01	50	134	845	0.0095	3.6	30	0.94	0.10	0.11	2.46	0.34	4.62	0.79

DRAINAGE AREA A 25-YEAR STORM EVENT



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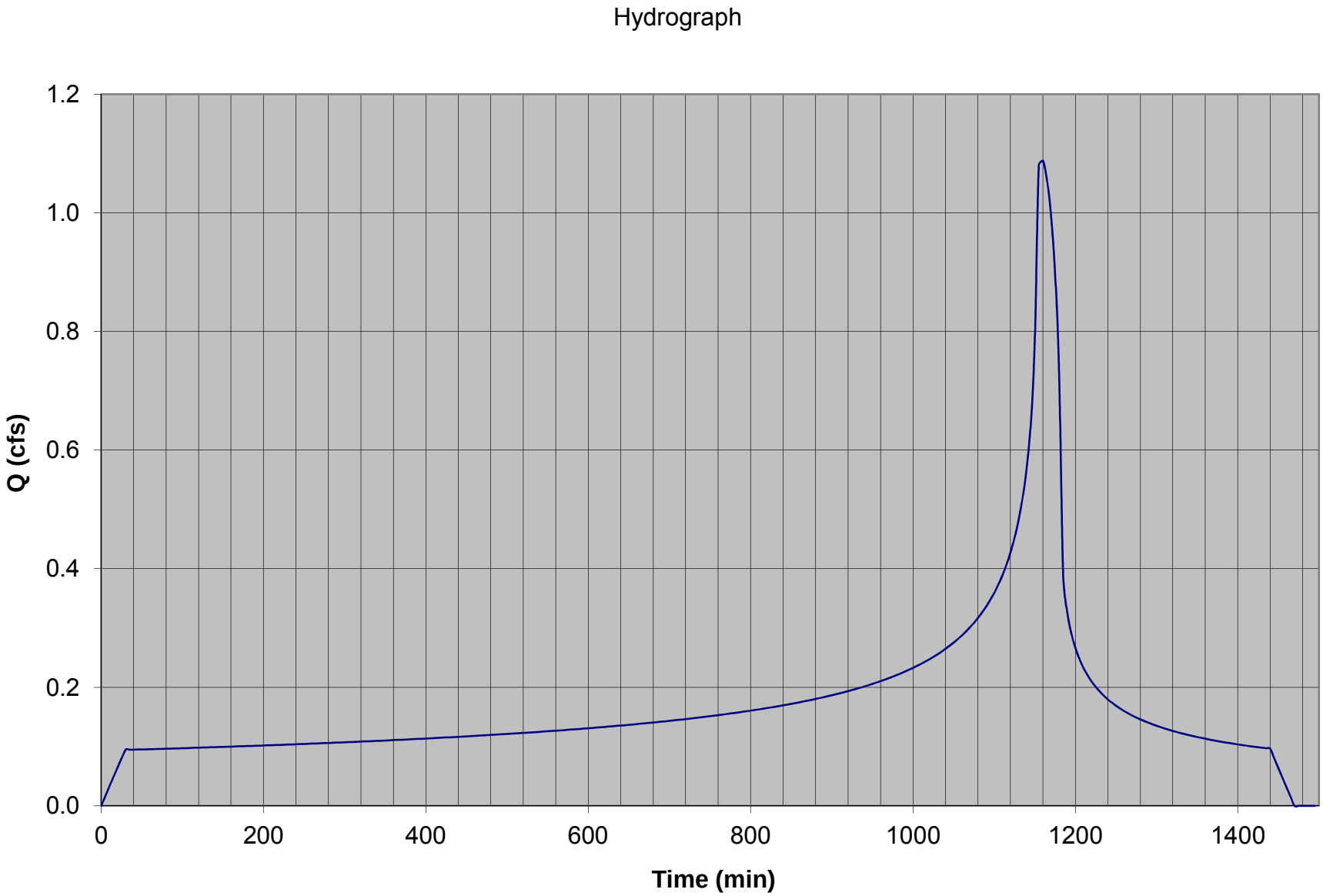

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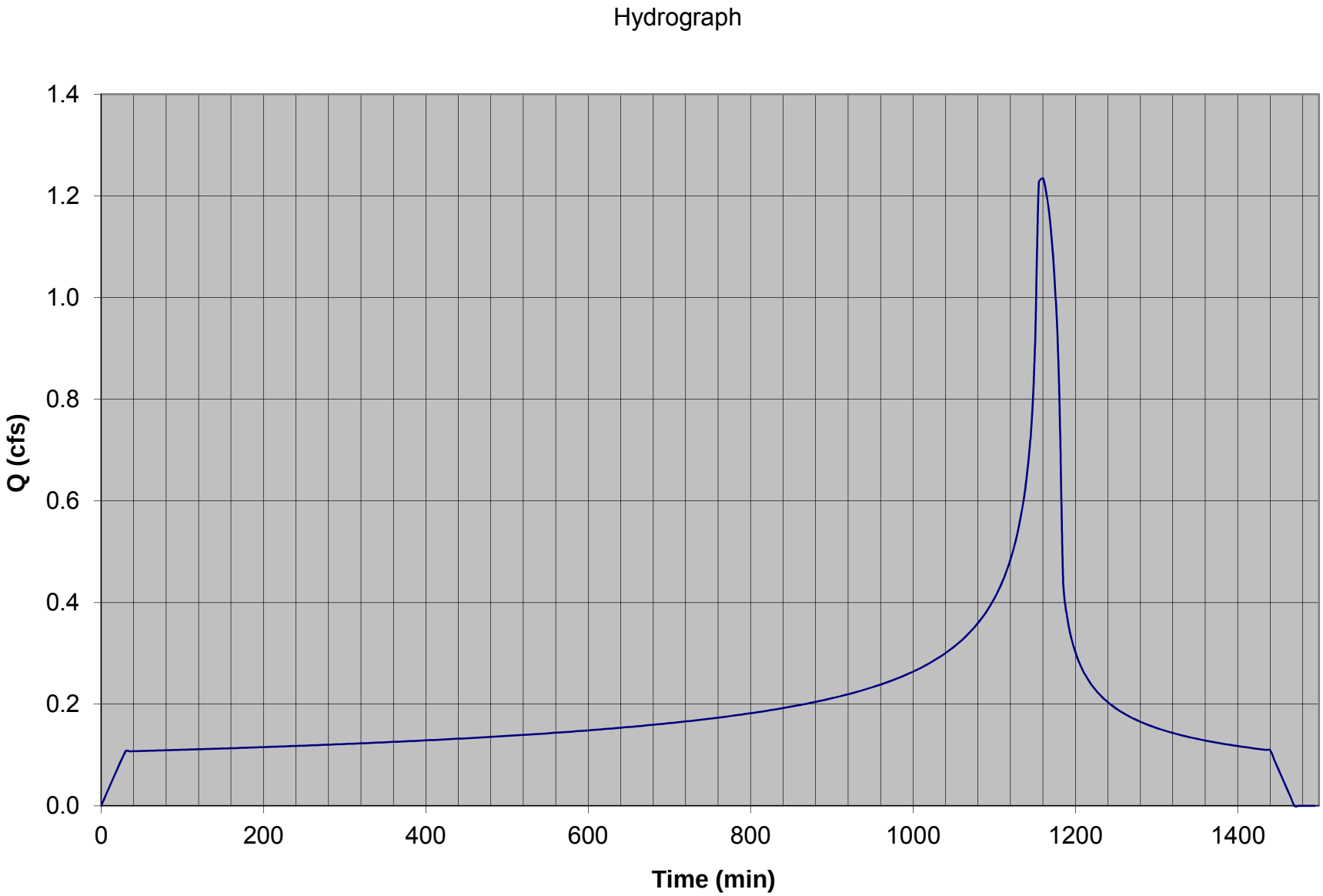

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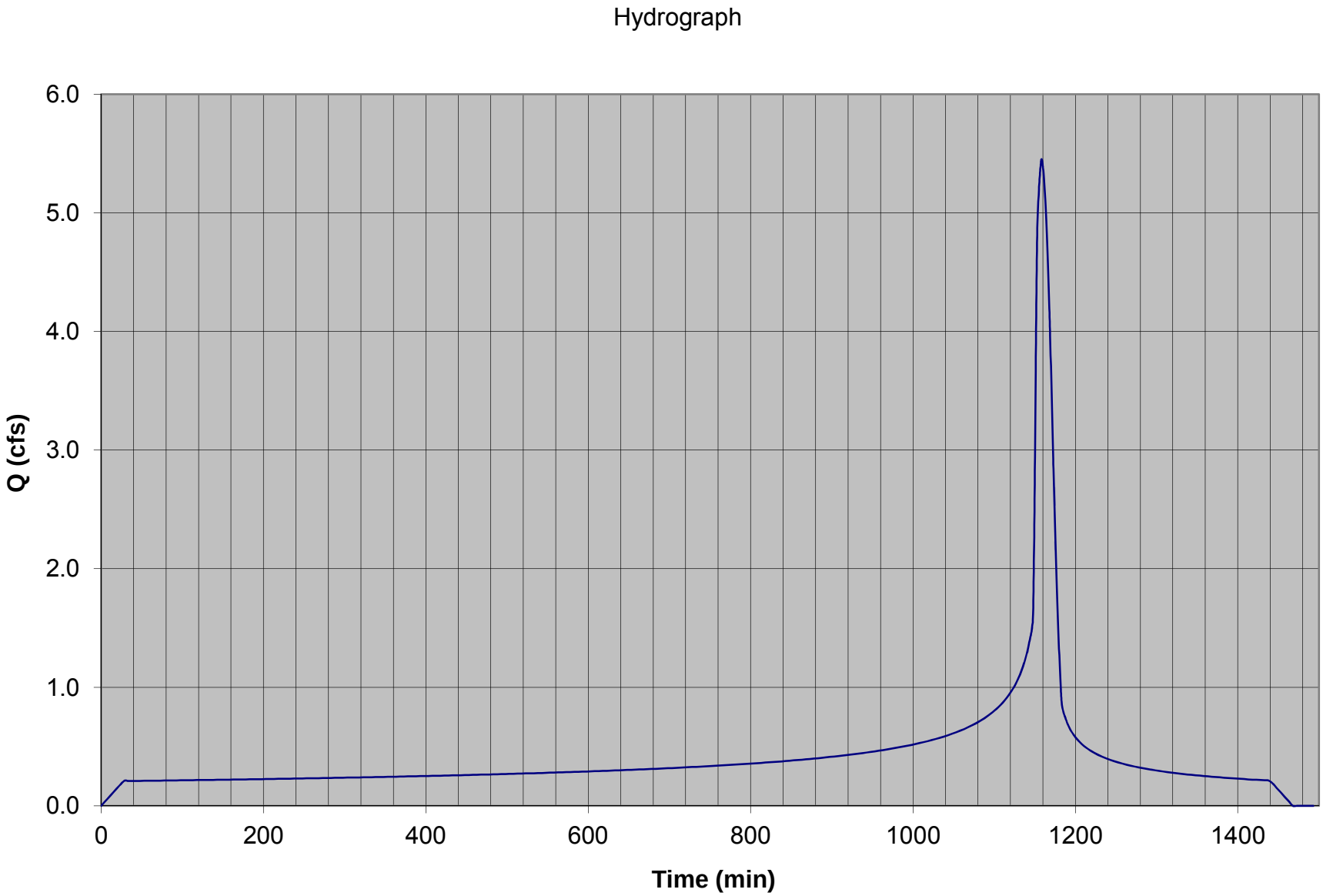

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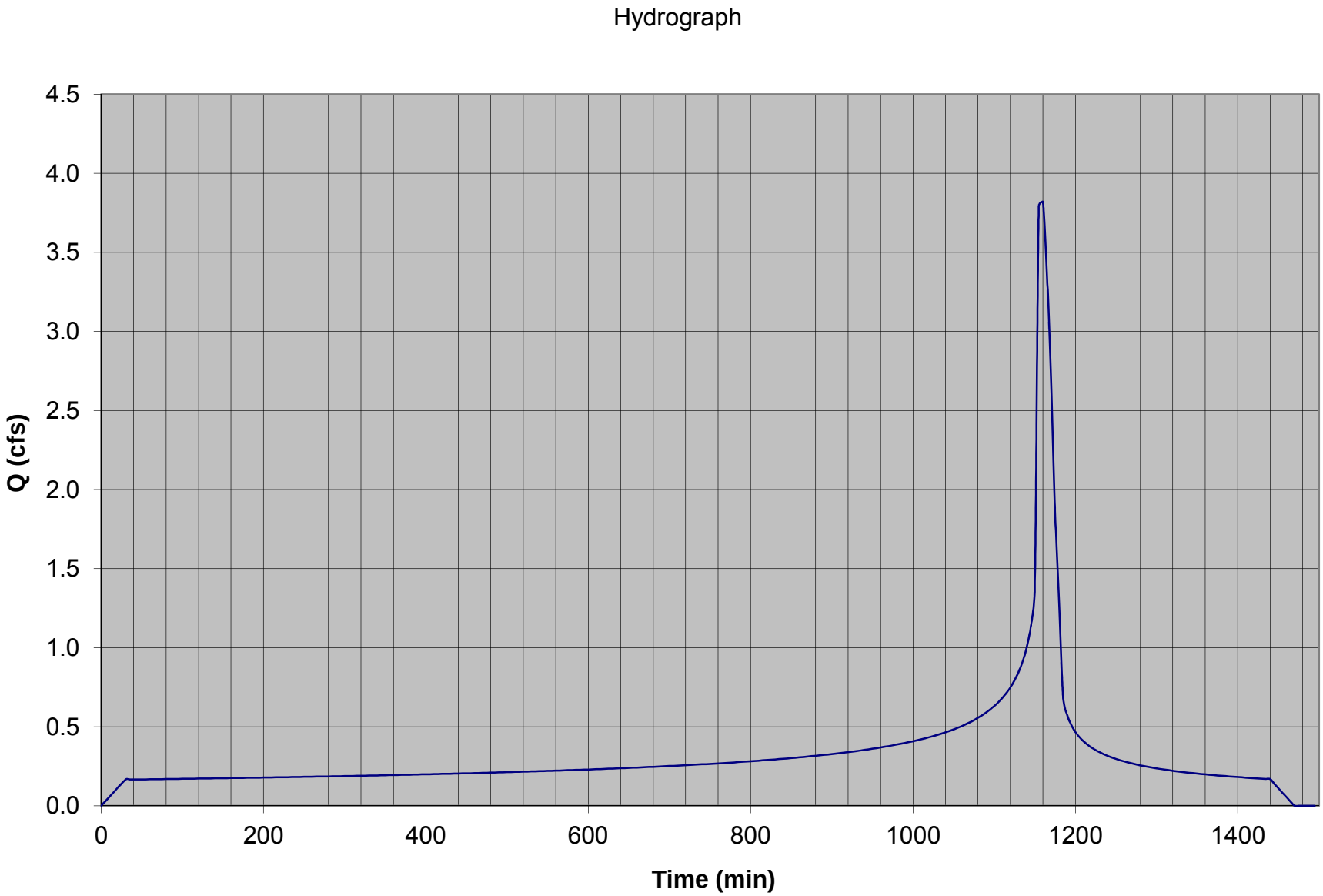

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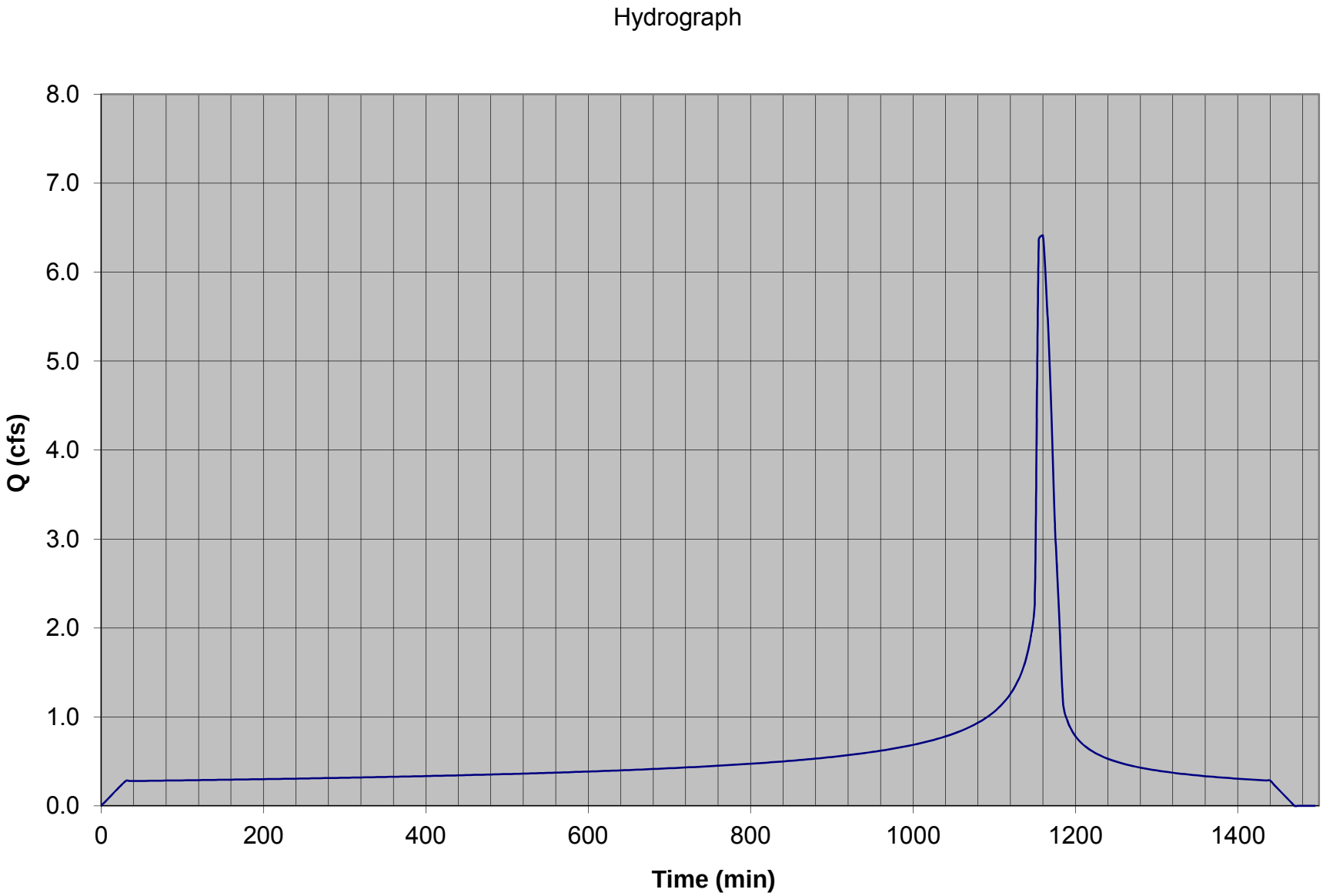
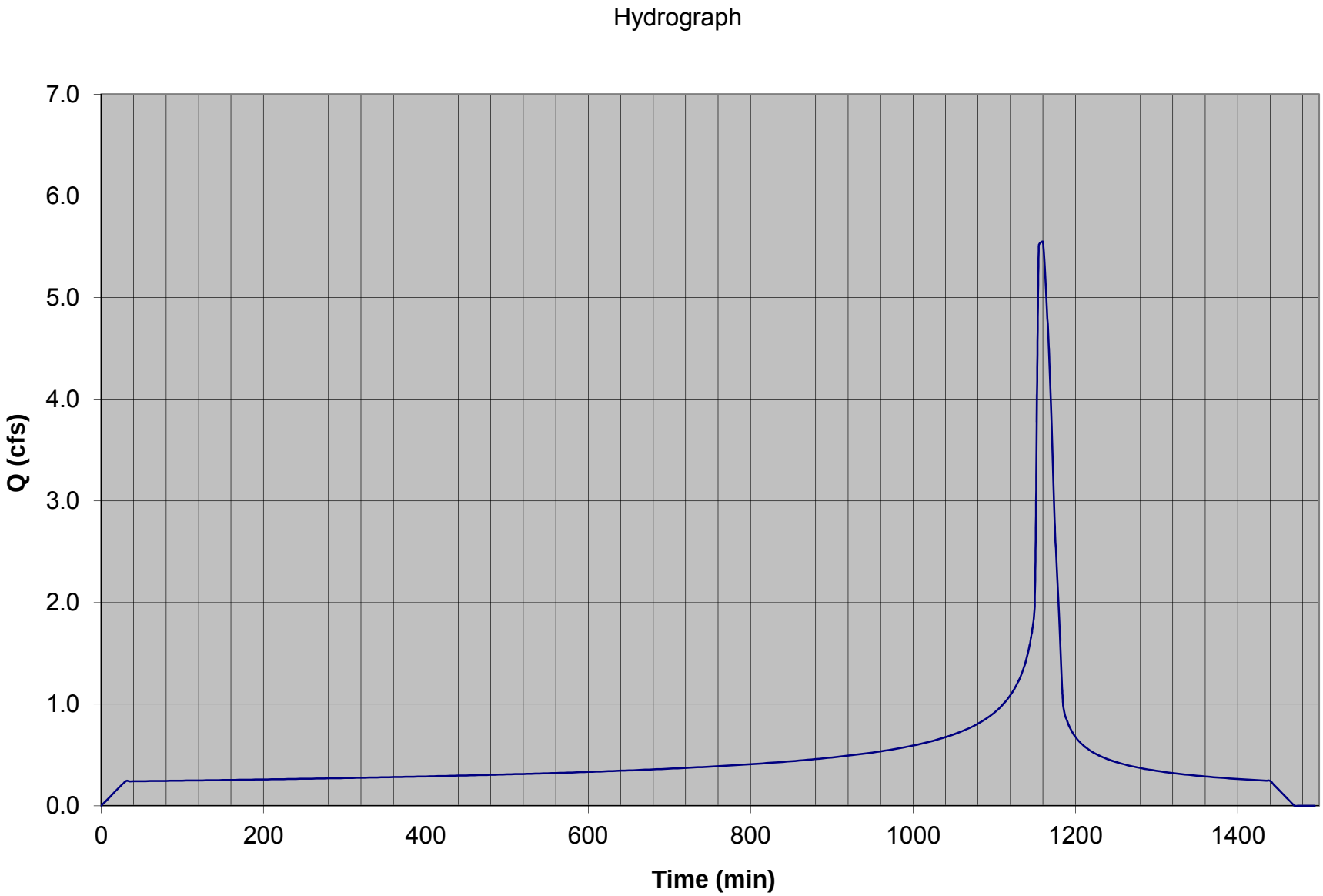


DRAINAGE AREA G 25-YEAR STORM EVENT



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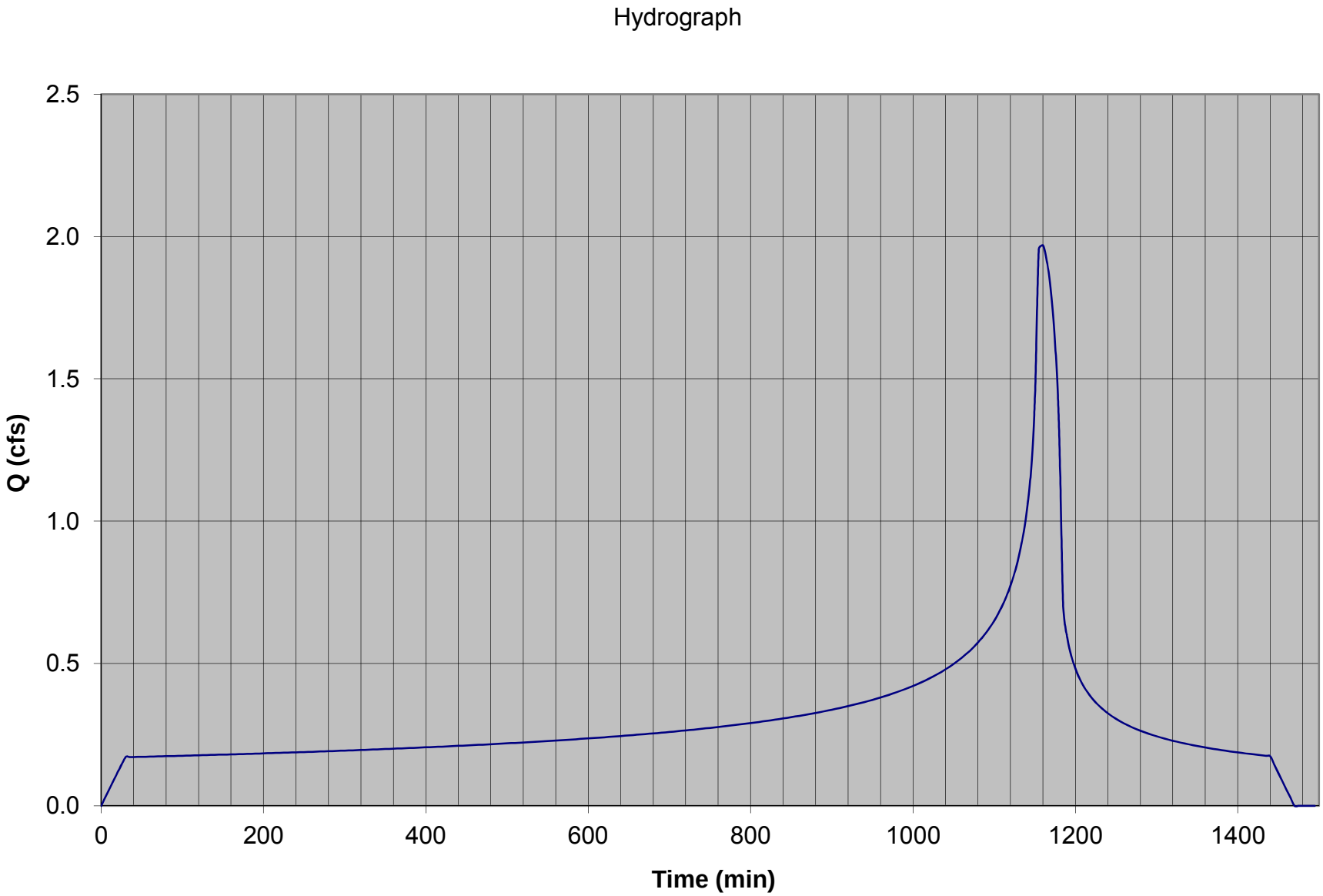

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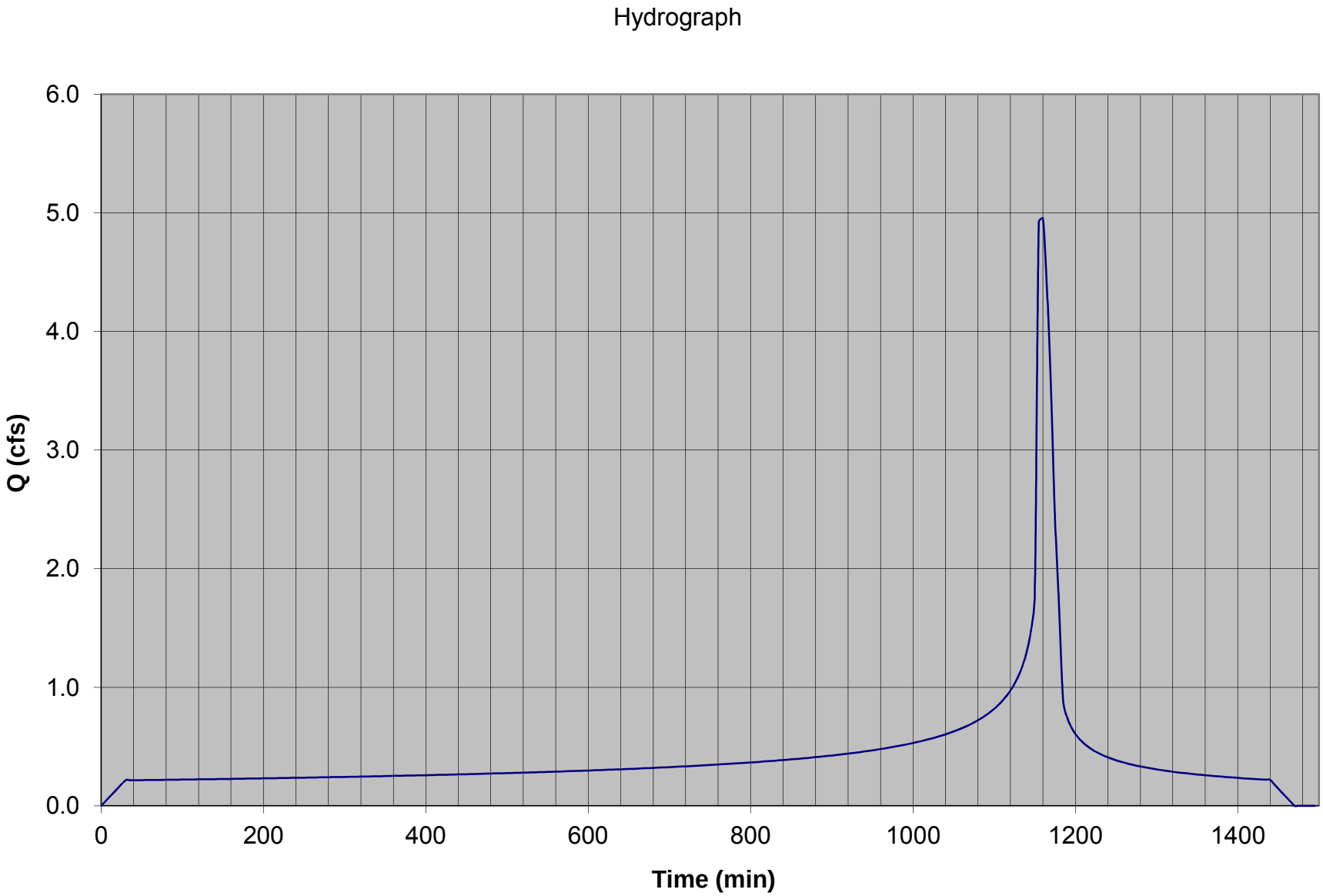
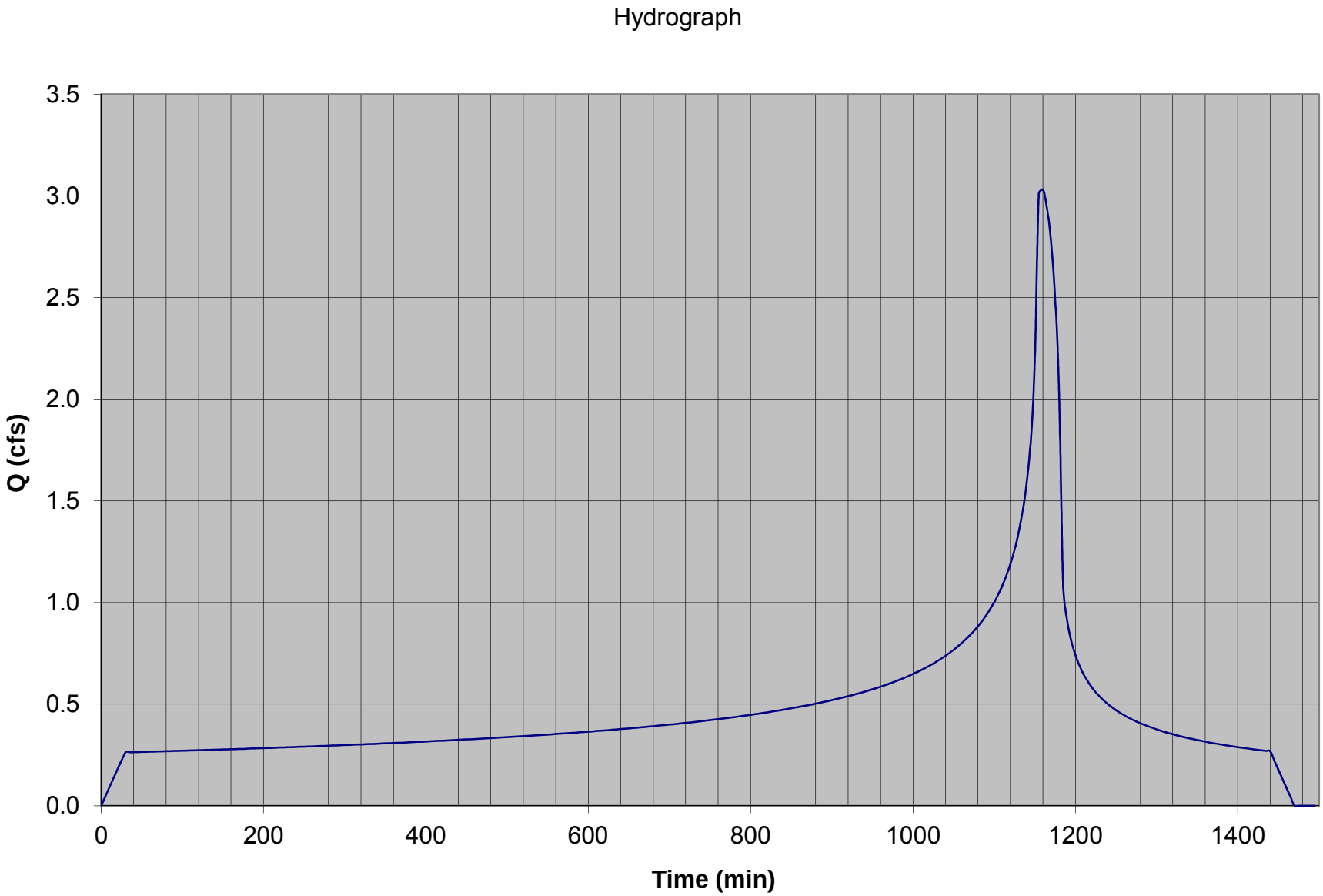
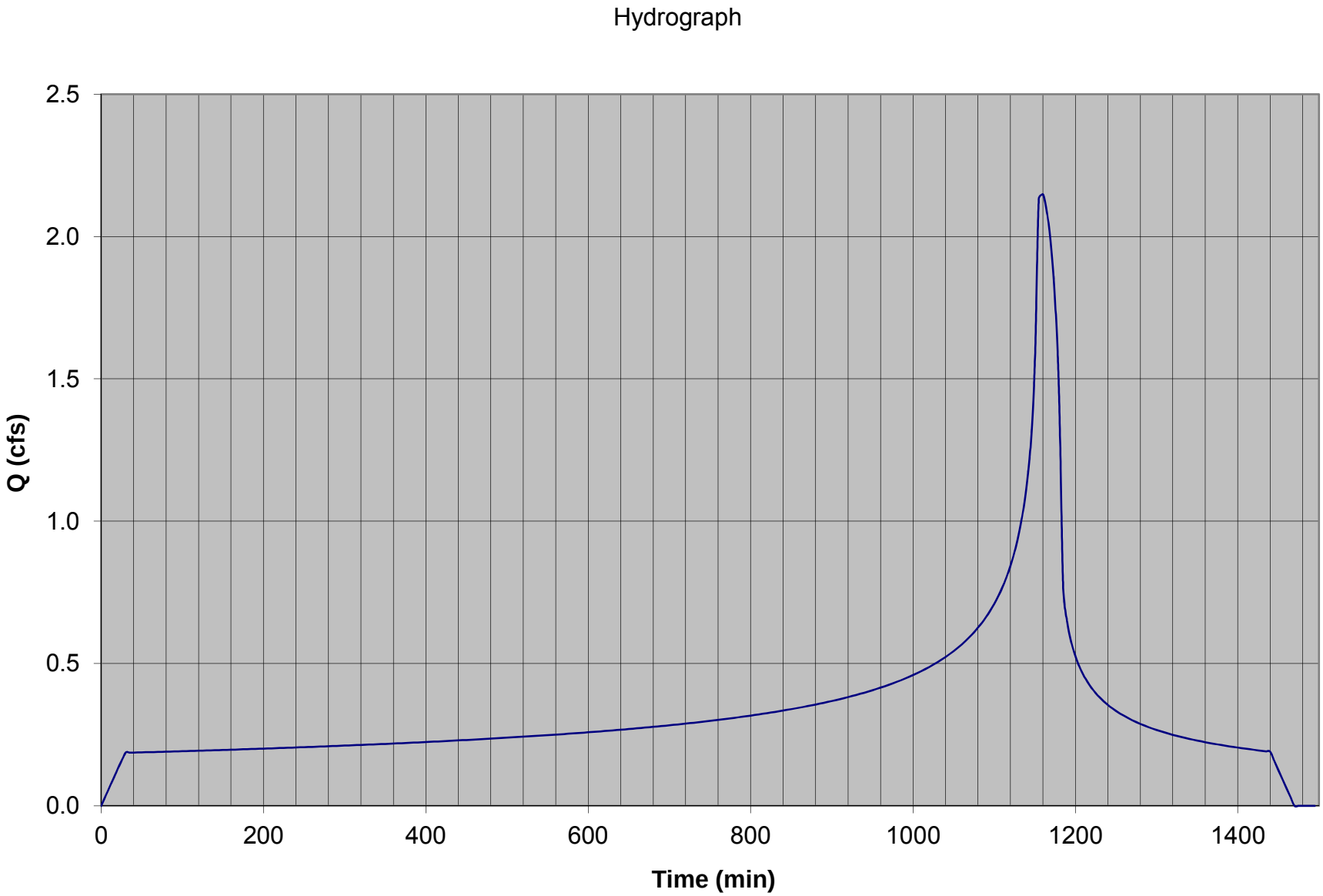


DRAINAGE AREA J 25-YEAR STORM EVENT



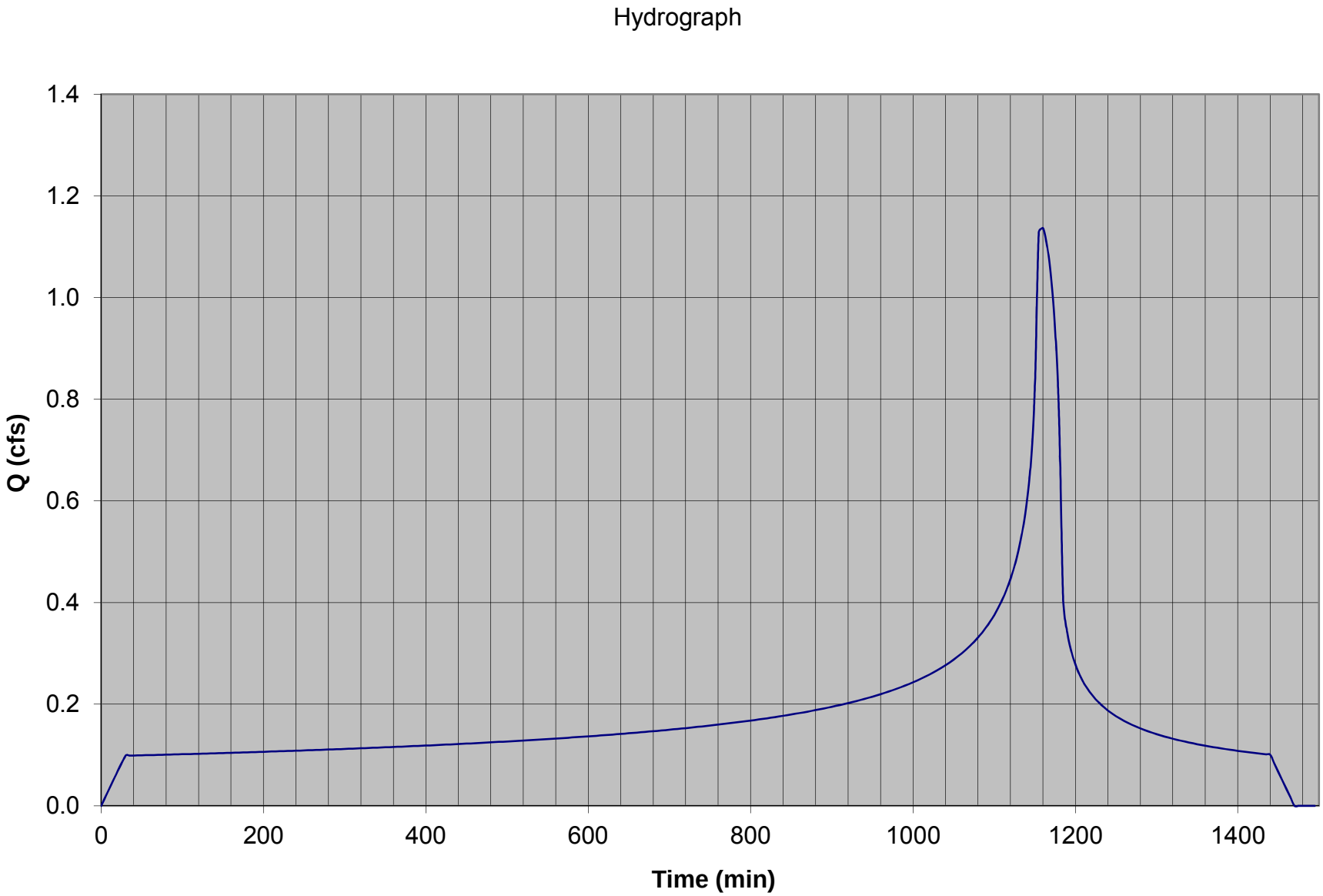
DRAINAGE AREA K 25-YEAR STORM EVENT



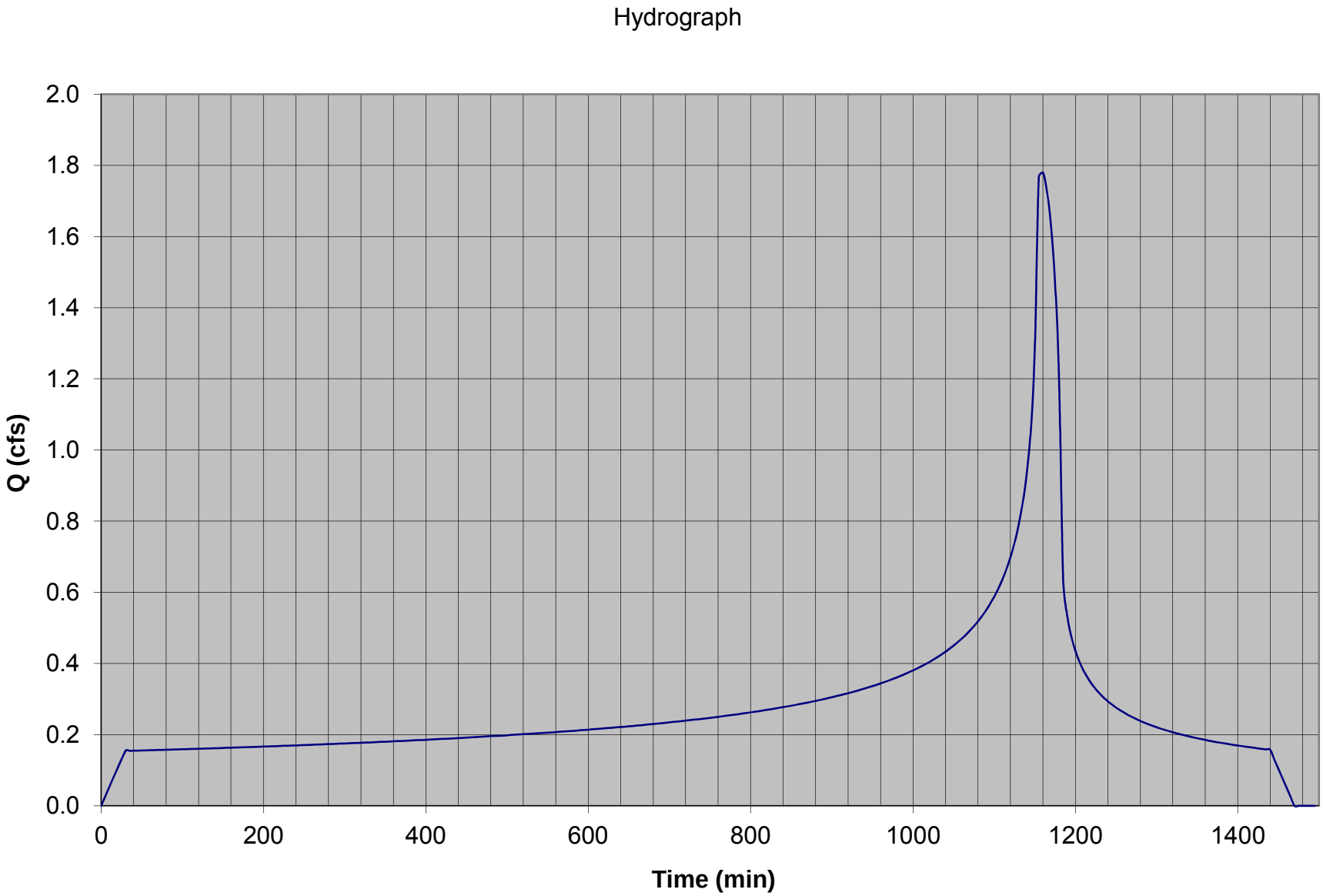
ON-SITE POST DEVELOPMENT HYDROLOGIC CALCULATIONS

ON-SITE HYDROLOGY (POST-DEVELOPMENT)																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	A	7.95	0.1	25	134	654	0.0076	3.1	30	0.80	0.10	0.18	1.14	0.34	1.68	0.36
Project 4	B	12.45	0.1	25	134	653	0.0092	3.1	30	0.80	0.10	0.18	1.79	0.34	2.64	0.57
Project 4	C	14.13	0.1	25	134	1316	0.0084	3.1	30	0.80	0.10	0.18	2.03	0.34	2.99	0.65
Project 4	D	26.72	0.1	25	120	546	0.0092	3.2	20	1.00	0.32	0.38	10.15	0.34	11.94	1.37
Project 4	E	21.18	0.1	25	120	773	0.0052	3.2	30	0.82	0.21	0.28	4.86	0.34	6.16	1.04
Project 4	F	35.55	0.1	25	120	2651	0.0075	3.2	30	0.82	0.21	0.28	8.16	0.34	10.34	1.75
Project 4	G	30.77	0.1	25	120	1797	0.0072	3.2	30	0.82	0.21	0.28	7.06	0.34	8.95	1.52
Project 4	H	21.84	0.1	25	134	1066	0.0094	3.2	30	0.82	0.10	0.18	3.22	0.34	4.75	1.03
Project 4	I	27.47	0.1	25	120	1046	0.0057	3.2	30	0.82	0.21	0.28	6.31	0.34	7.99	1.35
Project 4	J	33.62	0.1	25	134	1131	0.0119	3.2	30	0.82	0.10	0.18	4.96	0.34	7.31	1.59
Project 4	K	23.82	0.1	25	134	845	0.0095	3.2	30	0.82	0.10	0.18	3.52	0.34	5.18	1.13
Project 4	A	7.95	0.1	50	134	654	0.0076	3.5	30	0.91	0.10	0.18	1.30	0.34	1.93	0.42
Project 4	B	12.45	0.1	50	134	653	0.0092	3.5	30	0.91	0.10	0.18	2.04	0.34	3.03	0.65
Project 4	C	14.13	0.1	50	134	1316	0.0084	3.5	30	0.91	0.10	0.18	2.31	0.34	3.44	0.74
Project 4	D	26.72	0.1	50	120	546	0.0092	3.6	17	1.22	0.38	0.43	14.02	0.34	16.11	1.62
Project 4	E	21.18	0.1	50	120	773	0.0052	3.6	25	1.02	0.33	0.39	8.43	0.34	9.85	1.26
Project 4	F	35.55	0.1	50	120	2651	0.0075	3.6	30	0.94	0.29	0.35	11.70	0.34	14.01	2.06
Project 4	G	30.77	0.1	50	120	1797	0.0072	3.6	30	0.94	0.29	0.35	10.12	0.34	12.13	1.79
Project 4	H	21.84	0.1	50	134	1066	0.0094	3.6	30	0.94	0.10	0.18	3.70	0.34	5.50	1.18
Project 4	I	27.47	0.1	50	120	1046	0.0057	3.6	30	0.94	0.29	0.35	9.04	0.34	10.83	1.59
Project 4	J	33.62	0.1	50	134	1131	0.0119	3.6	30	0.94	0.10	0.18	5.69	0.34	8.46	1.81
Project 4	K	23.82	0.1	50	134	845	0.0095	3.6	30	0.94	0.10	0.18	4.03	0.34	6.00	1.29
Project 4	A	7.95	0.1	MIT.	134	654	0.0076	0.75	30	0.19	0.10	0.18	0.27	0.34	0.35	0.09
Project 4	B	12.45	0.1	MIT.	134	653	0.0092	0.75	30	0.19	0.10	0.18	0.43	0.34	0.55	0.14
Project 4	C	14.13	0.1	MIT.	134	1316	0.0084	0.75	30	0.19	0.10	0.18	0.48	0.34	0.63	0.16
Project 4	D	26.72	0.1	MIT.	120	546	0.0092	0.75	30	0.19	0.10	0.18	0.91	0.34	1.19	0.30
Project 4	E	21.18	0.1	MIT.	120	773	0.0052	0.75	30	0.19	0.10	0.18	0.72	0.34	0.94	0.24
Project 4	F	35.55	0.1	MIT.	120	2651	0.0075	0.75	30	0.19	0.10	0.18	1.22	0.34	1.58	0.39
Project 4	G	30.77	0.1	MIT.	120	1797	0.0072	0.75	30	0.19	0.10	0.18	1.05	0.34	1.37	0.34
Project 4	H	21.84	0.1	MIT.	134	1066	0.0094	0.75	30	0.19	0.10	0.18	0.75	0.34	0.97	0.24
Project 4	I	27.47	0.1	MIT.	120	1046	0.0057	0.75	30	0.19	0.10	0.18	0.94	0.34	1.22	0.31
Project 4	J	33.62	0.1	MIT.	134	1131	0.0119	0.75	30	0.19	0.10	0.18	1.15	0.34	1.50	0.37
Project 4	K	23.82	0.1	MIT.	134	845	0.0095	0.75	30	0.19	0.10	0.18	0.81	0.34	1.06	0.26

DRAINAGE AREA A 25-YEAR STORM EVENT



DRAINAGE AREA B 25-YEAR STORM EVENT



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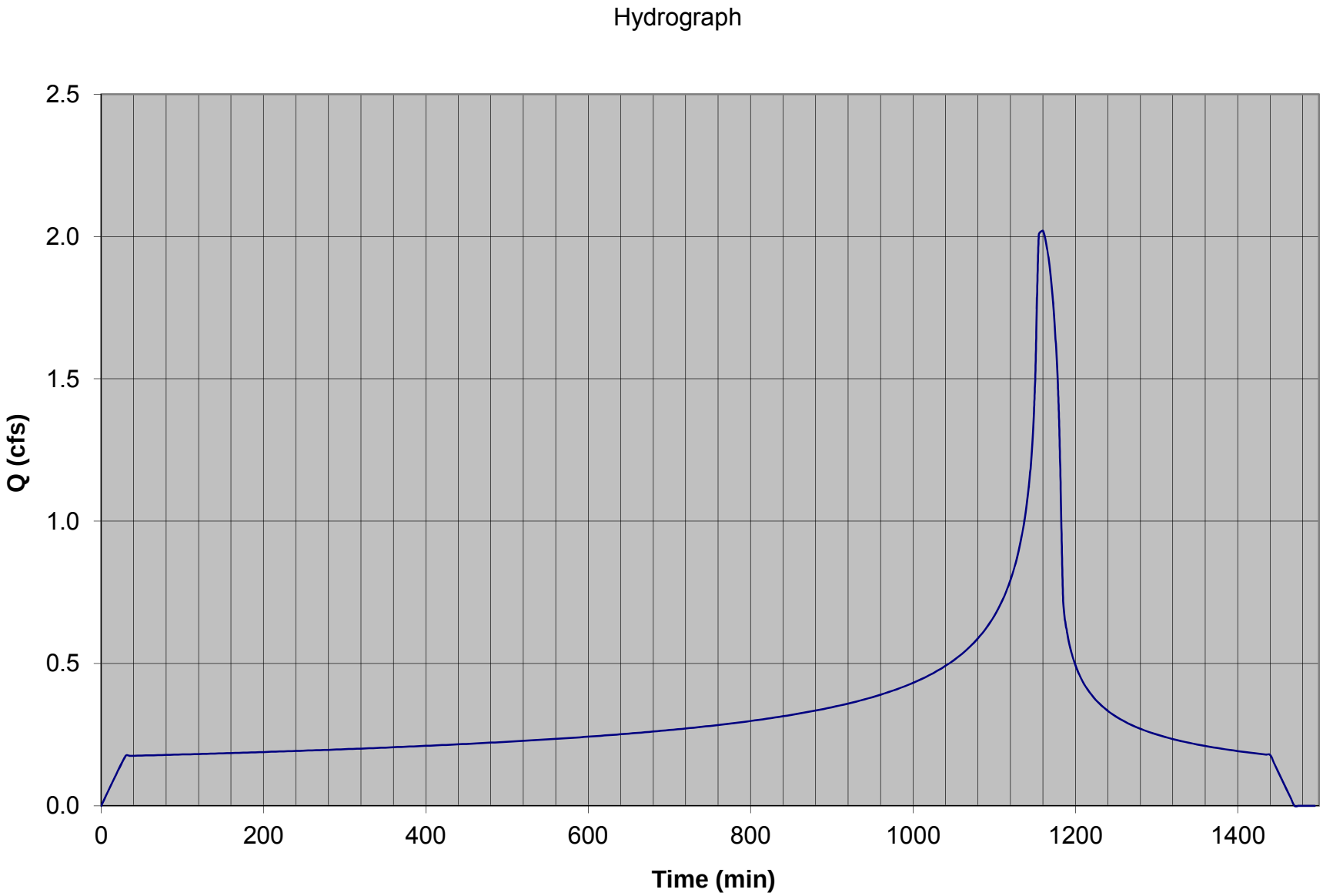

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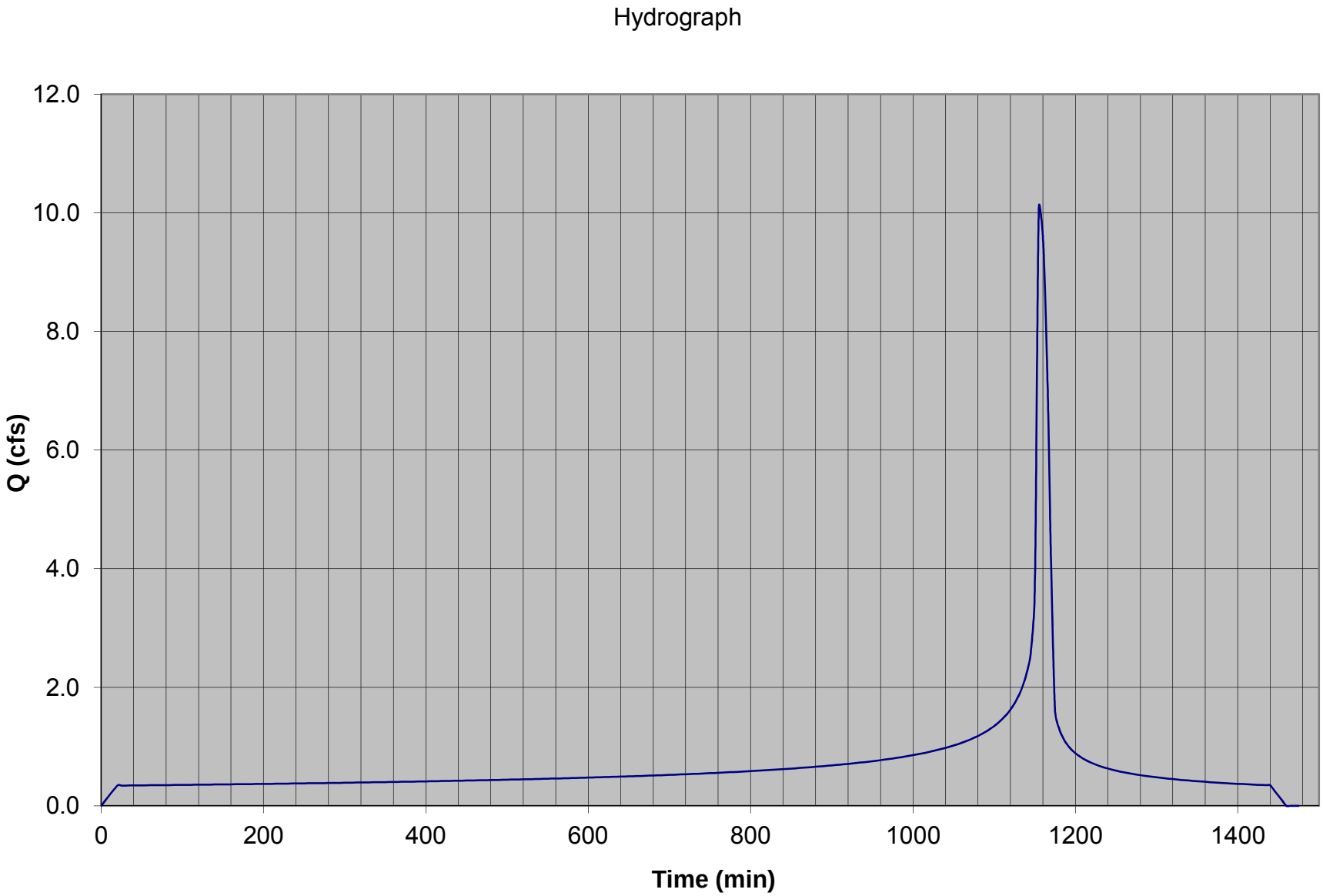

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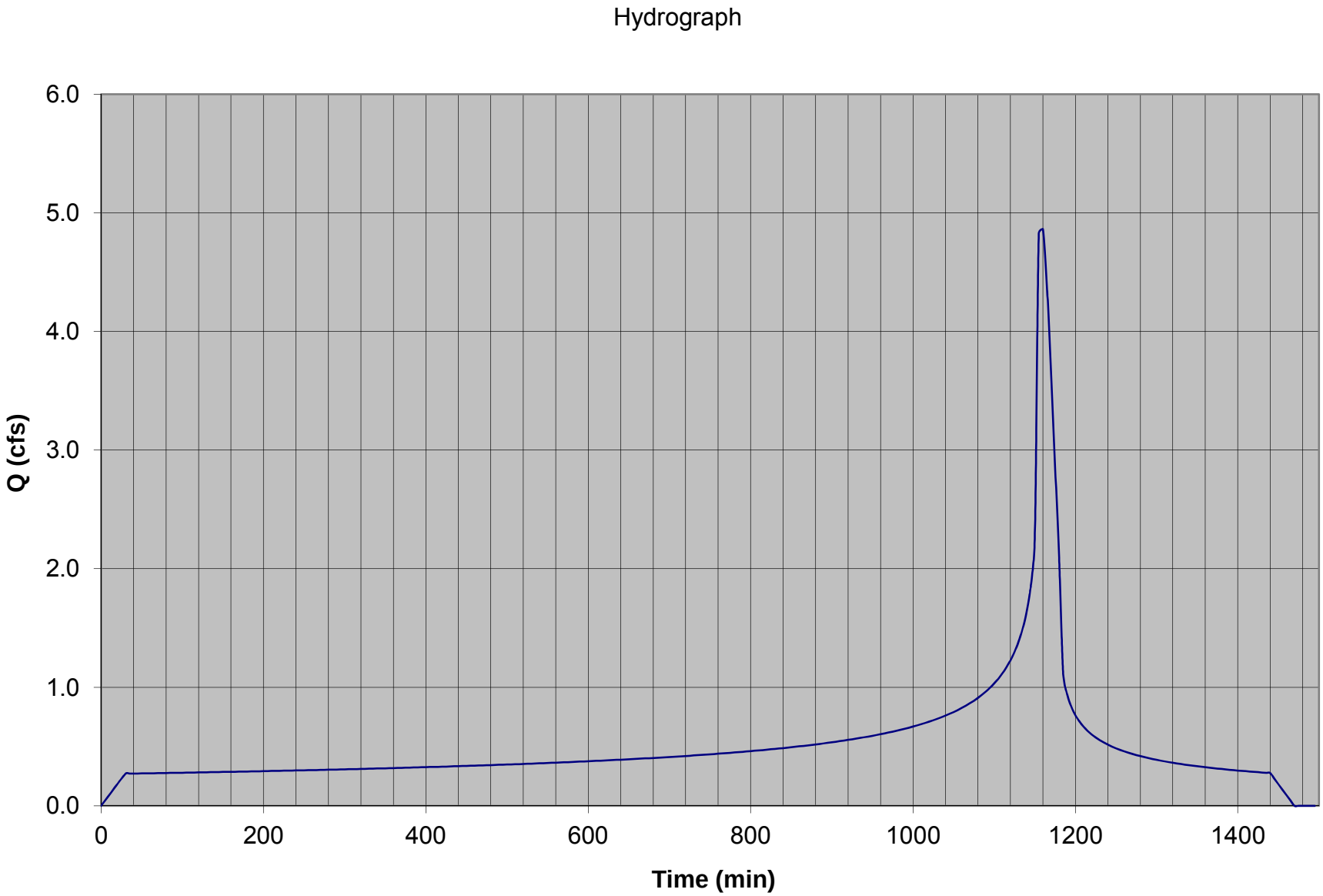

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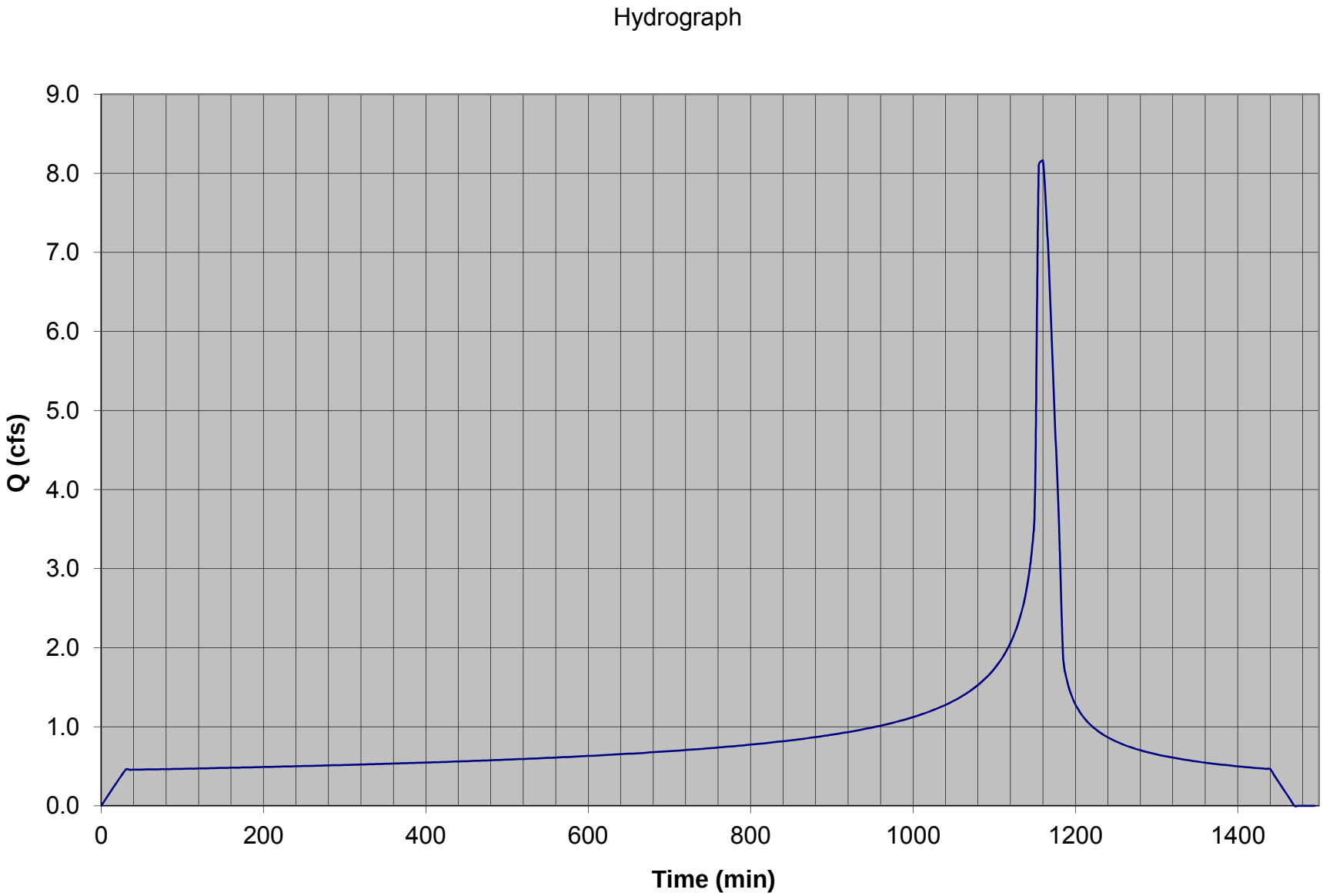

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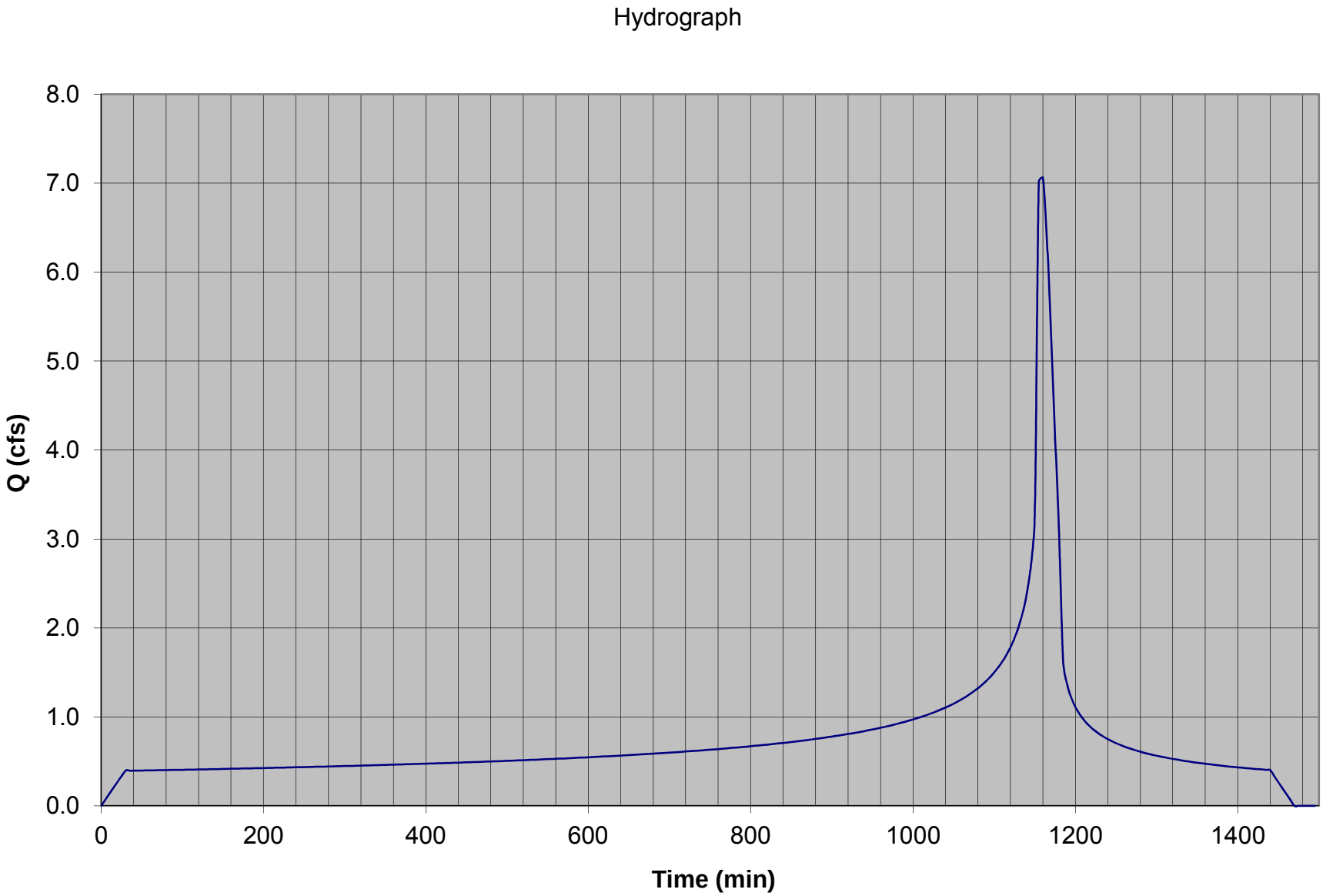

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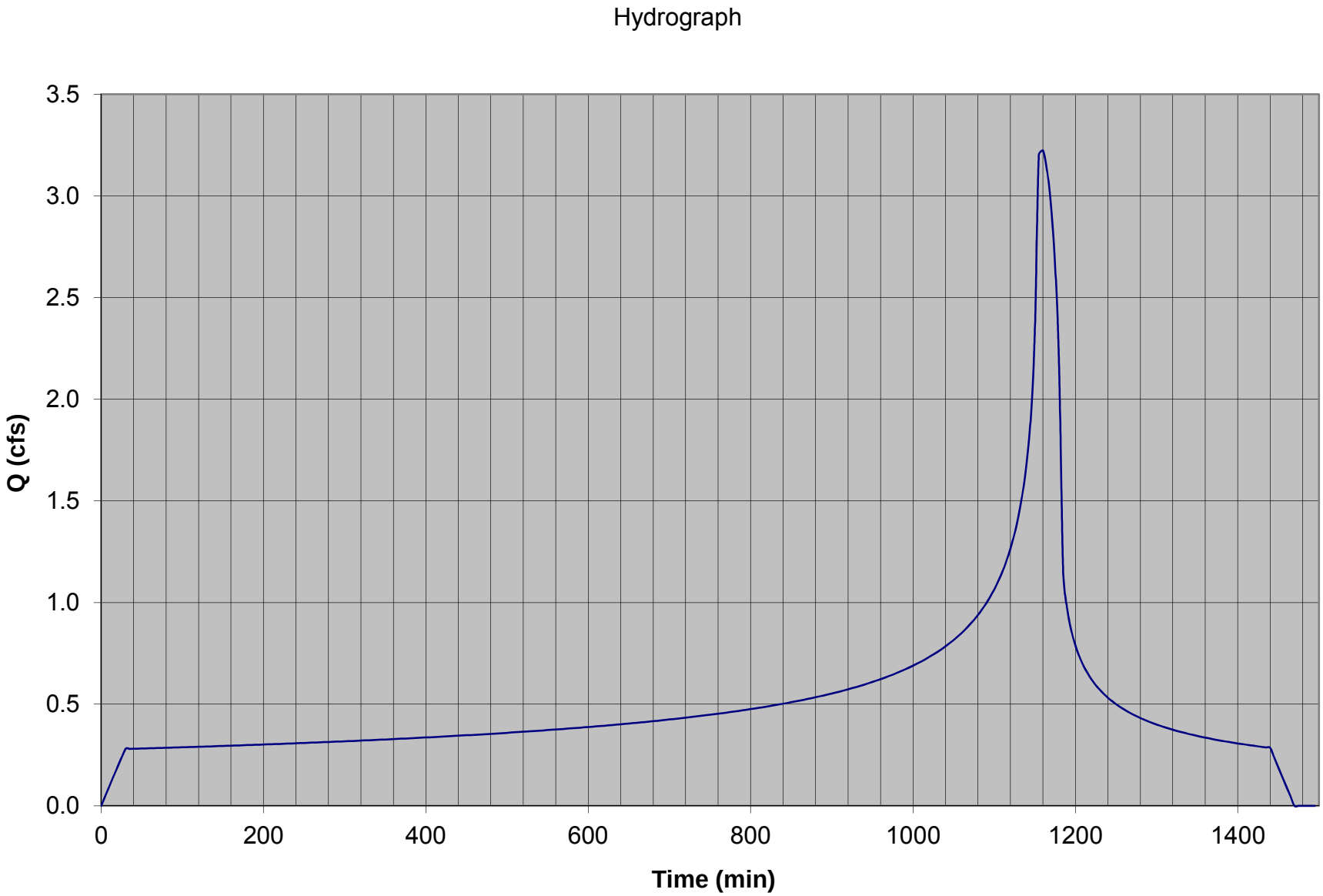

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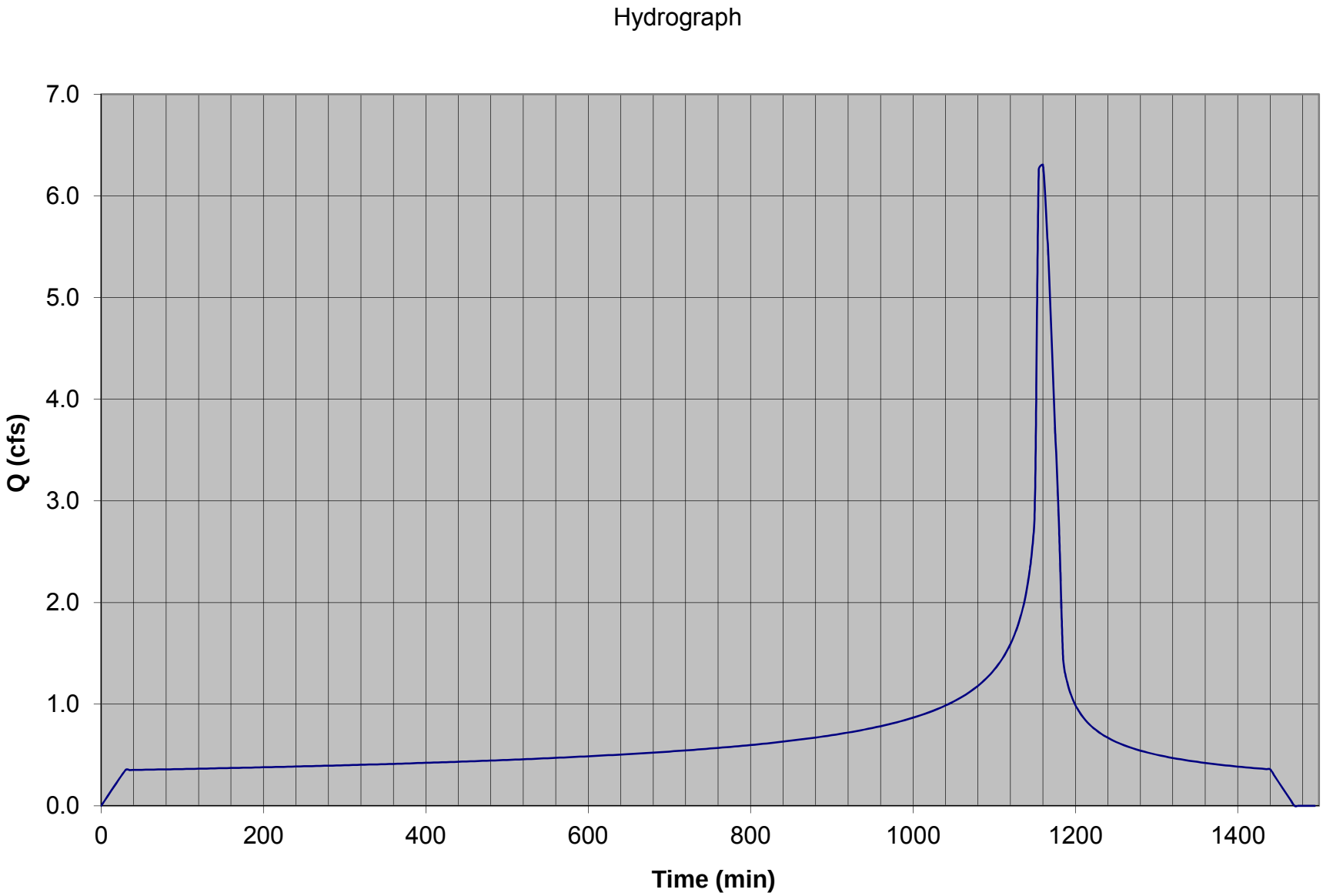

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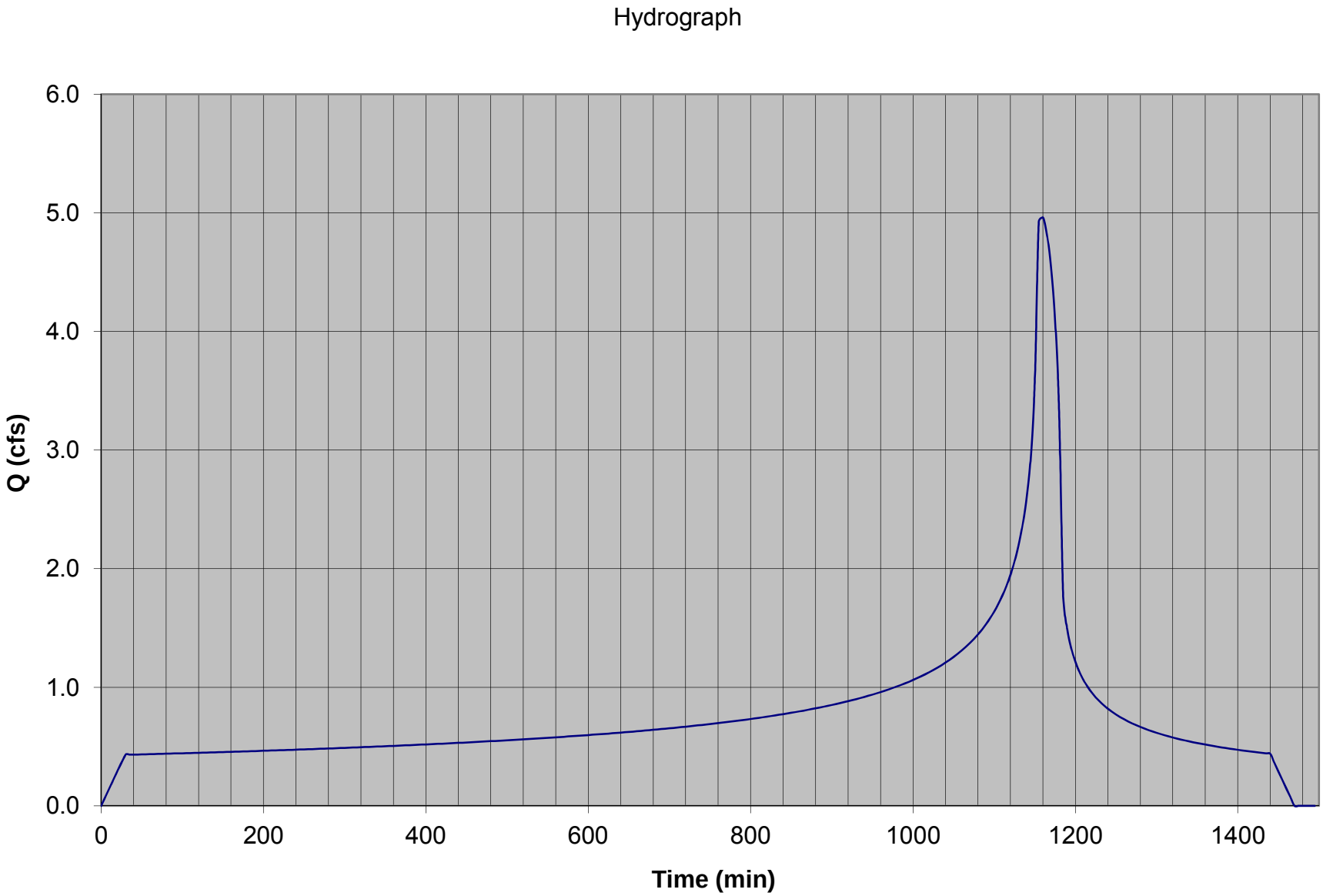

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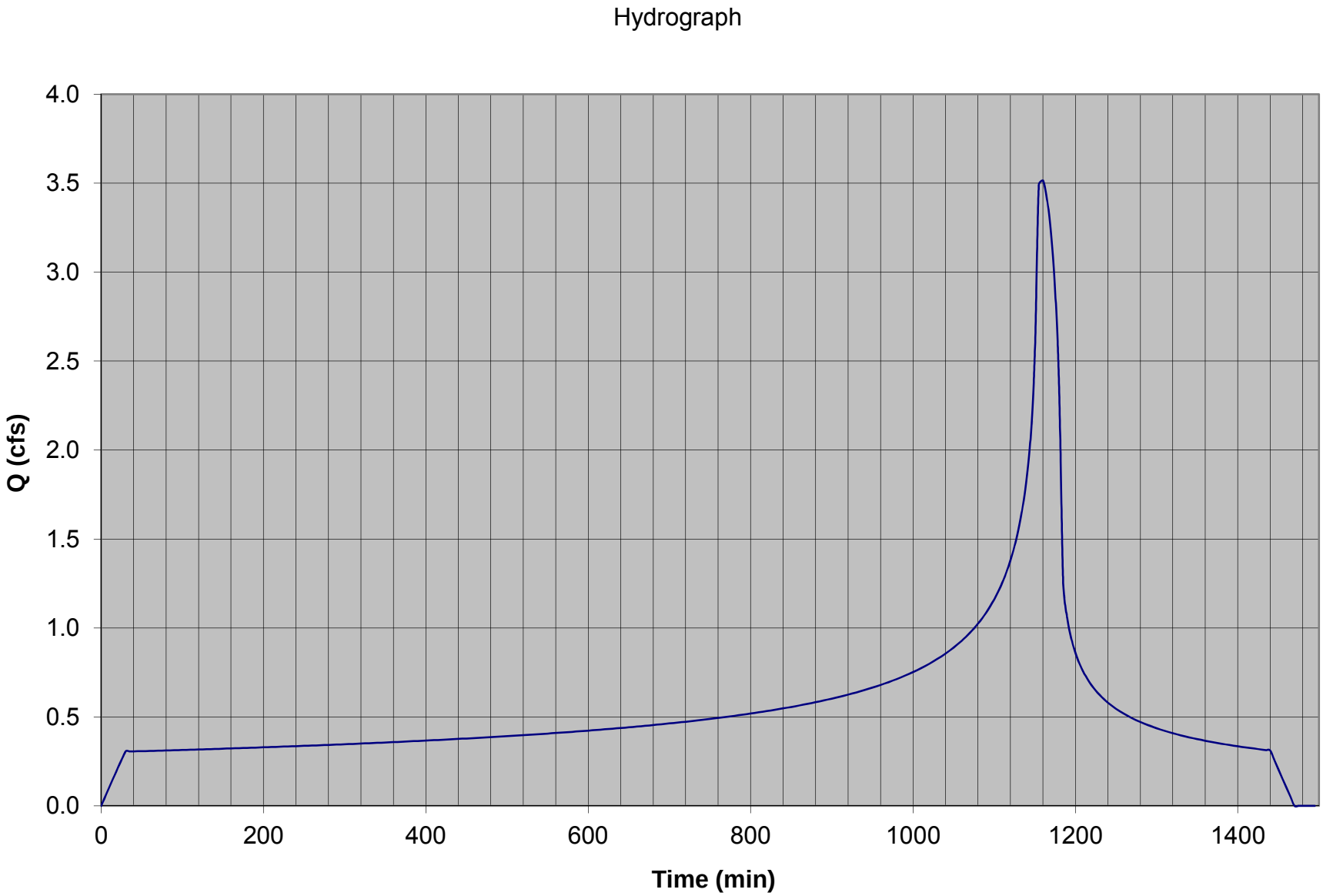

APPENDIX E:
IMPACT ANALYSIS CALCULATIONS

TETRATECH

Sheet No. 1 of 4 Date:
Checked By: Office:
Telephone:
Engineer: Job No.:
Subject: IMPACT ANALYSIS

① CHECK DEVELOPMENT'S IMPACT ON FLOW RATES & FLOW VOLUMES.

* IGNORE EFFECT OF BASINS TO BE CONSERVATIVE SINCE BASINS REDUCE POST-DEVELOPMENT FLOW RATES & VOLUMES.
* FLOW LINE NUMBERING CORRESPONDS TO OUTFLOW FLOW LINES ON ON-SITE DRAINAGE MAP, APPENDIX G. NUMBERING STARTS AT TOP-MOST OUTFLOW FLOW LINE.

FLOW LINE #1:

PRE-DEVELOPMENT:

Q_{50} = 5999.43 CFS

V_{50} = 294.07 AC·FT

POST-DEVELOPMENT:

Q_{50} = 5999.93 CFS

V_{50} = 294.24 AC·FT

% INCREASE:

$Q_{50} \Rightarrow \frac{5999.93\,CFS - 5999.43\,CFS}{5999.43\,CFS} = 0.0\% < 10\%$ OK

$V_{50} \Rightarrow \frac{294.24\,AC\cdot FT - 294.07\,AC\cdot FT}{294.07\,AC\cdot FT} = 0.1\% < 10\%$ OK

FLOW LINE #2:

PRE-DEVELOPMENT:

Q_{50} = 1412.53 CFS

V_{50} = 84.44 AC·FT

POST-DEVELOPMENT:

Q_{50} = 1413.32 CFS

V_{50} = 84.69 AC·FT

% INCREASE:

$Q_{50} \Rightarrow \frac{1413.32\,CFS - 1412.53\,CFS}{1412.53\,CFS} = 0.1\% < 10\%$ OK

$V_{50} \Rightarrow (84.69\,AC\cdot FT - 84.44\,AC\cdot FT)/84.44\,AC\cdot FT = 0.3\% < 10\%$ OK

FLOW LINE # 3:

PRE-DEVELOPMENT:

Q_{50} = 754.26 CFS

V_{50} = 53.49 AC·FT

POST-DEVELOPMENT:

Q_{50} = 755.16 CFS

V_{50} = 53.78 AC·FT

% INCREASE:

$Q_{50} \Rightarrow \frac{755.16\ CFS - 754.26\ CFS}{754.26\ CFS} = 0.1\% < 10\%$ OK

$V_{50} \Rightarrow \frac{53.78\ AC\cdot FT - 53.49\ AC\cdot FT}{53.49\ AC\cdot FT} = 0.5\% < 10\%$ OK

FLOW LINE # 4:

PRE-DEVELOPMENT:

Q_{50} = 573.98 CFS

V_{50} = 43.26 AC·FT

POST-DEVELOPMENT:

Q_{50} = 578.06 CFS

V_{50} = 44.27 AC·FT

% INCREASE:

$Q_{50} \Rightarrow \frac{578.06\ CFS - 573.98\ CFS}{573.98\ CFS} = 0.7\% < 10\%$ OK

$V_{50} \Rightarrow \frac{44.27\ AC\cdot FT - 43.26\ AC\cdot FT}{43.26\ AC\cdot FT} = 2.3\% < 10\%$ OK

FLOW LINE #5:

PRE-DEVELOPMENT:

Q_{50} = 552.11 CFS

V_{50} = 42.39 AC·FT

POST-DEVELOPMENT:

Q_{50} = 553.78 CFS

V_{50} = 43.12 AC·FT

% INCREASE:

Q_{50} ⇒ $\frac{553.78\,CFS - 552.11\,CFS}{552.11\,CFS} = 0.3\% < 10\%$ OK

V_{50} ⇒ $\frac{43.12\,AC\cdot FT - 42.39\,AC\cdot FT}{42.39\,AC\cdot FT} = 1.7\% < 10\%$ OK

FLOW LINE #6:

PRE-DEVELOPMENT:

Q_{50} = 680.55 CFS

V_{50} = 47.51 AC·FT

POST-DEVELOPMENT:

Q_{50} = 684.72 CFS

V_{50} = 49.17 AC·FT

% INCREASE:

Q_{50} ⇒ $\frac{684.72\,CFS - 680.55\,CFS}{680.55\,CFS} = 0.6\% < 10\%$ OK

V_{50} ⇒ $\frac{49.17\,AC\cdot FT - 47.51\,AC\cdot FT}{47.51\,AC\cdot FT} = 3.5\% < 10\%$ OK

FLOW LINE #7:

PRE-DEVELOPMENT:

Q_{50} = 588.99 CFS

V_{50} = 55.86 AC·FT

POST-DEVELOPMENT:

Q_{50} = 592.77 CFS

V_{50} = 57.06 AC·FT

% INCREASE:

$Q_{50} \Rightarrow \frac{592.77\,CFS - 588.99\,CFS}{588.99\,CFS} = 0.6\% < 10\%$ OK

$V_{50} \Rightarrow \frac{57.06\,AC\cdot FT - 55.86\,AC\cdot FT}{55.86\,AC\cdot FT} = 2.1\% < 10\%$ OK

∴ DEVELOPMENT'S IMPACT TO FLOW RATES & VOLUMES IS NEGLIGIBLE & REQUIRES NO FURTHER ANALYSIS.

(2.) CHECK DEVELOPMENT'S IMPACT ON FLOOD DEPTHS & VELOCITIES

∴ FLOOD DEPTHS & VELOCITIES LEAVING THE SITE ARE A FUNCTION OF THE FLOW RATES ABOVE. SINCE THE FLOW RATES EXPERIENCE NEGLIGIBLE INCREASES (< 1%) FROM THE PRE-DEVELOPMENT CONDITION, THE CORRESPONDING DEPTHS & VELOCITIES TO THESE FLOW RATES WILL ALSO SEE NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. THEREFORE, NO FURTHER ANALYSIS IS DEEMED NECESSARY.

APPENDIX F:
WATER QUALITY CALCULATIONS

OWNER'S CERTIFICATION

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID

for

PROJECT 4 ANTELOPE SOLAR GREENWORKS

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID for ANTELOPE SOLAR GREENWORKS has been prepared for the Applicant, by Tetra Tech, Inc. This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is intended to comply with the requirements of the County of Los Angeles, requiring the preparation of a project specific HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.

I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for the gathered information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Los Angeles County Stormwater Quality Management Plan (SQMP), and the intent of the stormwater and urban runoff NPDES Permit and Waste Discharge Requirements for the County of Los Angeles, Los Angeles County Flood Control District and the incorporated Cities of Los Angeles County under the jurisdiction of the Los Angeles Regional Water Quality Control Board. A copy of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID will be maintained at the project site/office.

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party having responsibility for implementing portions of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID. At least one copy of the approved and certified copy of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID shall be available on the subject property in perpetuity. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.

OWNER:	Silverado Power
BY: (Garret Bean)	
Title:	
Address:	2 Embarcadero Center, Ste. 410
	San Francisco, California 94111
Telephone:	(415) 692 - 7740
Date:	

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II. Discretionary Permit(s) and Water Quality Conditions

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V. Best Management Practices

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VII. Appendices

Appendix A: Operations and Maintenance Plan

Appendix B: Treatment BMPs Calculations

Background

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is prepared by the developer's engineer. These are documents required by the Stormwater Quality Management Program (SQMP). It requires run-off, from all new development or significant re-development, to be managed during a project's planning phase, implemented during construction and ultimately maintained for the life of the project.
The HYDROLOGY STUDY/DRAINAGE CONCEPT/LID deals with the long-term post-construction of a project and describes the commitment to installation and maintenance of appropriate structural and non-structural Best Management Practices (BMPs).

BMPs are intended to provide measures that minimize or eliminate the introduction of pollutants into the storm water system. Non-Structural and Structural BMPs include education, clean up, and facility maintenance to prevent pollutants from entering the storm water system.

Compliance is MANDATORY and severe penalties may be levied for any violations. It is the duty of the owner or his designated representative to ensure that all BMPs are followed.

Discretionary Permit(s) and Water Quality Conditions

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is intended to comply with the requirements of the County of Los Angeles.

Project Description

The name of the project is Antelope Solar Greenworks. The applicant is the owner of the property. The project is located west of 80th Street, between W Avenue J to the south and W Avenue I to the north (see Location Map, Appendix A). The property is currently a dirt lot with scarce native vegetation. Site soils consist of very silty fine to medium sand in the north-western portion of the site and silty fine to medium sand with coarse sand in the south-eastern portion of the site. The site experiences an infiltration rate of 4 min/in, which equates to 15.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 3.29 in/hr (see Geotechnical Report, Appendix H). The property is predominantly flat (1.25% slopes or less) and therefore will only be minimally graded to avoid ponding. The property will accommodate 9 foot wide arrays of solar panels spaced at approximately 11 feet (see On-Site Drainage Map, Appendix G). The post development project area is approximately 255.5 acres with 90% of the site being pervious. Construction of the solar panel arrays and other miscellaneous development accounts for the Los Angeles County approved 10% impervious surface. This combined impervious foot print equates to approximately 25.6 acres.

In the post-development condition, the majority of the runoff sheet flows off the site from west to east, therefore mimicking pre-development conditions. As calculated later in this report, the ΔQ_{25} and $\Delta V_{25,}$ which are greater than the peak mitigation flow rate (Q_{PM}) and the mitigation volume (V_M), will be collected onsite with the help of 3 reinforced elevated road sections that run north to south at various locations along the site (see On-Site Drainage Map, Appendix G). The required treatment runoff (Q_{PM} & V_M) consists of the initial 0.75 inches of rain, which will infiltrate in the existing soil and also be treated by the existing soil due to being less than the delta runoff.

The project will have a substation for utility interconnection on the site. The majority of the area within the substation fence will be soil, covered with a layer of gravel. The majority of the substation equipment will be supported on steel or concrete piers or footings, with the exception of the main step-up transformer. The transformer will be located on a reinforced concrete slab and subsurface foundation, and enclosed in a secondary containment structure. The impervious area from the transformer footprint will be covered with the secondary containment structure, and any rain falling on the transformer area will be collected and held in the containment basin until the rainstorm has passed and the water can be inspected. If the collected water shows any oil sheen it will be pumped out and disposed at a permitted, offsite treatment facility by a licensed hazardous waste contractor. If the rainwater does not exhibit any sheen it will either be allowed to evaporate, or will be manually pumped out onto the ground and allowed to infiltrate. Any transformer oil that is released into the containment will be vacuumed out and disposed at a permitted, offsite treatment facility by a licensed hazardous waste contractor.

The applicant, the property owner, is responsible for all on-site maintenance activities.

Per the U.S. Census Bureau, the 2007 Standard Industrial Classification (SIC) Code is 221119 – "Other Electric Power Generation" for solar power sites.

The Anticipated and Potential Pollutants Generated by the proposed facility may be: TSS, nutrients, heavy metals, bacteria/virus, pesticides, organic compounds, trash and debris (litter), oxygen-demanding substances, and oil and grease.

The storage of outdoor materials is not a planned activity. Car washing, auto repair and/or vehicle fueling are also not a part of this facility.

The 85th % BMP peak mitigation flow rate (Q_{PM}) is 8.73 cfs, while ΔQ_{25} is 16.82 cfs.

The mitigation volume (V_M) for the on-site watershed area of 255.5 acres is 2.84 ac-ft and ΔV_{25} is 4.67 ac-ft. The ΔV_{25} will be split among 3 infiltration basins based on their respective location on the site. Two basins will capture a mitigation volume of 1.08 ac-ft (46,900 cf) per individual mitigation area. The other basin will capture a mitigation volume of 2.52 ac-ft (109,771 cf).

Site Description

The site is approximately 255.5 acres and is located west of 80th Street, between W Avenue J to the south and W Avenue I to the north, within an unincorporated region of Los Angeles County (see Location Map, Appendix A). The site is predominantly flat (1.25% slopes or less).

The site is located within the Antelope Valley Watershed.

The site does not appear to have been previously graded. No pre–existing watershed problems seem to be present.

Per the Geotechnical Report (see Appendix H) and per LA County Hydrology Manual, the project soil type consists of the following:

- Very Silty Fine to Medium Sand (North-Western Portion of Site)
- Silty Fine to Medium Sand with Coarse Sand (South-Eastern Portion of Site)

Soil Type 100, 120, and 134 were used in the hydrology calculations.

Drainage and Permeability: Well-drained; slow runoff, good soil permeability. Infiltration rates of 4 min/in, which is equivalent to 15.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 3.29 in/hr.

The Total Maximum Daily Loads (TMDLs) have been established as “not applicable” for the Antelope Valley Watershed. The 303(d) List has no pollutants of concern for the Antelope Valley Watershed.

The Project site is not within the immediate vicinity of any known Environmentally Sensitive Areas (ESAs) and Areas of Special Biological Significance (ASBSs).

Best Management Practices

The following indicates the source control BMPs (routine non-structural and routine structural) included in this project and those that were not included.

Routine Non-Structural BMPs

Education for Property Owners, Tenants, Occupants and Employees. Best Management Practices (BMP) Fact Sheets for preventing stormwater pollution from the California Stormwater Best Management Practice Handbooks can be found at www.cabmphandbooks.com.

Activity Restrictions. The list of restrictions and guidelines for implementation and maintenance of all Best Management Practices specified herein include, but will not be limited to:

- TRASH: No rubbish, trash or other material shall be kept on site or on any street abutting the properties, except in sanitary containers located in an appropriate trash containment area.
- DRAINAGE: There shall be no interference or alteration of the established drainage pattern unless an alternative is approved by the regulatory agency.
- DUMPSTER LIDS: Dumpster lids shall be closed at all times.
- DEBRIS: No blowing or sweeping of litter anywhere at the site.

BMP Maintenance. Appendix A indicates the person(s) responsible for the implementation and maintenance of the non-structural and structural BMPs.

Title 22 CCR Compliance. Not applicable, per Title 22., Division 4.5., Chapter 11. of the California Code of Regulations definition of hazardous wastes. No Hazardous Materials are anticipated to be onsite.

Local Industrial Permit Compliance. Not applicable, there are no fuel dispensing areas and/or other areas of concern to the public proposed.

Spill Contingency Plan. A spill contingency plan will be prepared by the owner/building operator. As a minimum the Spill Contingency Plan will "mandate the stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials and documentation."

Hazardous Materials Disclosure Compliance. No hazardous materials are anticipated to be stored on-site. If deemed otherwise, a designated representative of the owner shall provide information to the Fire Authority in accordance with requirements of the Health & Safety Code.

Uniform Fire Code Implementation. A designated representative of the owner shall provide information to the Fire Authority in compliance with Article 80 of the UNIFORM FIRE CODE (UFC).

Common Area Litter Control. Site litter shall be strictly controlled by onsite maintenance personnel (not yet determined).

Employee Training. A representative of the owner will provide information available from the City/County on education regarding good housekeeping practices that contribute to the protection of storm water quality. Practical information material will be provided to employees on general good housekeeping practices. These materials will describe, but are not limited to, spill prevention and control and the use of chemicals, petroleum products, pesticides and fertilizers that should be limited to the property, with no discharge of wastes directly or indirectly to gutters, catch basins or the storm drain system. Information will be distributed directly to the employees as well as being posted in public areas. In addition to the attachments, the following resource can be contacted to obtain updated educational materials at no cost: American Oceans – www.americanoceans.org/runoff/epa-bro.htm

Routine Non-Structural BMPs

Properly Design Trash Storage Areas. Site waste receptacles shall be emptied on a weekly basis or more often if containers are overflowing. Upon inspection any debris or rubbish will be picked up and the site cleaned. The trash area/room is NOT to be cleaned by hosing down. The type of materials used to clean the area and storage of said materials will be determined by the Contractor. Signage will be posted that lids shall be kept closed at all times. The trash room(s) will be located inside the parking structures.

Protect Slopes and Channels. The protection of slopes and irrigation shall be implemented as indicated on the County of Los Angeles' approved Landscape Plans and shall be consistent with the County Water Conservation Resolution or County equivalent. Slope protection will be achieved through landscaping of the slopes. Runoff from irrigation shall be kept to a minimum. A designated representative of the owner will be responsible for continual maintenance of landscaped areas.

Site Design BMPs

The following table shows the site design BMPs that are included in this project. A description of each BMPs follows:

Technique	Included		Brief Description of Method
	Yes	No	
Minimize Impervious Area/Maximize Permeability (C-Factor Reduction)		√	
Minimize Directly Connected Impervious Areas (DCIAs) (C-Factor Reduction)		√	
Create Reduced or "Zero Discharge" Areas (Runoff Volume Reduction)	√		Infiltration basins
Conserve Natural Areas (C-Factor Reduction)		√	

The site design BMPs that were used extensively in this design were to create "Runoff Volume Reduction" by utilizing the infiltration basin system design concept. The mitigation volume is captured behind the reinforced elevated roads and is allowed to infiltrate in the ground.

Treatment BMPs

The following table shows the treatment BMPs that are included in this project. A description of each BMPs follows:

Name	Included		If not applicable, state brief description
	Yes	No	
Vegetated (Grass) Strips		√	Not proposed.
Vegetated (Grass) Swales		√	Not proposed.
Proprietary Control Measures		√	Not proposed.
Dry Detention Basin		√	Not proposed.
Wet Detention Basin		√	Not proposed.
Constructed Wetland		√	Not proposed.
Detention Basin/Sand Filter		√	Not proposed.
Porous Pavement Detention		√	Not proposed.
Porous Landscape Detention		√	Not proposed.
Infiltration Basin	√		
Infiltration Trench		√	Not proposed.
Media Filter		√	Not proposed.
Proprietary Control Measures		√	Not proposed.

This Project is considered a Priority Project. This section of the HYDROLOGY STUDY/DRAINAGE CONCEPT/LID addresses Treatment Control BMPs. The primary control strategy for design Treatment Control BMPs is to treat the frequent, low-flow storm events. The selected treatment controls for this project is the Infiltration Basins. Appendix B – Verification Calculations for Treatment BMPs has the Calculations and Detail Drawings for these Treatment BMPs.

Implementation, Maintenance and Inspection Responsibility for BMPs

A schedule will be established for all maintenance and a log for all cleanups shall be recorded (see Appendix A – Operations and Maintenance Plan). All documents relating to site maintenance and Best Management Practices (BMP) will be kept for a minimum of 5 years and be made available to Federal, State, County, or City Inspectors upon request.

The party responsible for all structural and non-structural BMPs and contact information for site maintenance records is as follows:

SILVERADO POWER

2 Embarcadero Center, STE. 410
SAN FRANCISCO, CA 94111
(415) 692 - 7740

Contact Person: Garret Bean

Appendices

APPENDIX A

Operations and Maintenance Plan

OPERATIONS AND MAINTENANCE PLAN

BMP Applicable? Yes/No	BMP Name and Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	Non-Structural Source Control BMPs		
Yes	Education for Property Owners, Tenants and Occupants Applicant will educate all onsite occupants. Education shall be given using the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.	New onsite employees to be educated within 2 weeks of hire. Each onsite employee shall receive an annual review	Applicant is responsible for educating all onsite occupants.
Yes	Activity Restrictions Ensure all users are adhering to activity restrictions as outlined in the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID and the County of Los Angeles' zoning ordinance and standards.	If a user is observed engaging in activity that may adverse impacts on stormwater, the authorized representative shall take corrective actions as necessary. Ongoing basis.	Applicant is responsible for educating all onsite employees.
Yes	Spill Containment Plan A spill contingency plan is not available. As a minimum the spill contingency plan will "mandate the stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials and documentation."	When spill occurs.	Through a maintenance firm that will be contracted with applicant.
Yes	Common Area Litter Control Perform parking lot/common area maintenance that will include the removal of litter from around the trash storage receptacles, drive aisles, parking lot and outdoor areas. All litter shall be placed in appropriate trash receptacles.	Weekly	Through a maintenance firm that will be contracted with applicant.
Yes	Employee Training Applicant will educate all onsite employees. Education shall be given using the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.	New onsite employees to be educated within 2 weeks of hire. Each onsite employee shall receive an annual review	Applicant is responsible for educating all onsite employees.
Yes	Design and Construct Trash and Waste Storage Areas to Reduce Pollution Introduction Site waste receptacles shall be emptied on a weekly basis or more often if overflowing. Signage will be posted that lids shall be kept closed at all times. Inspect the waste receptacles area for any loose trash on the ground. Inspect for damage to the structural elements of the waste receptacles.	Daily and weekly basis. Replace/Repair structural elements as needed.	Applicant through a maintenance firm.

BMP Applicable? Yes/No	BMP Name and Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	Non-Structural Source Control BMPs		
Yes	Protect Slopes and Channels The protection of slopes shall be implemented as indicated on the County of Los Angeles' approved Landscape Plans and shall be consistent with the County Water Conservation Resolution or County equivalent.	After each major storm event	Applicant through a maintenance firm.
	Treatment BMPs		
Yes	Infiltration Basin Infiltration basins shall be constructed concurrently with the solar arrays and shall be inspected of and cleaned from heavy silt deposits.	After each major storm event	Applicant through a maintenance firm.

APPENDIX B
Verification Calculations for Treatment BMPs

1.0 HYDROLOGIC ANALYSIS

The project size is 255.5 acres. Utilizing Appendix A of the Los Angeles County Department of Public Works- Hydrology Manual and a Geotechnical Report for the site (see Appendix H), predominating soil types of 100, 120, and 134 and an infiltration rate of 4 min/in were found, which is equivalent to 15.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 3.29 in/hr. A small portion of the site, amounting to the Los Angeles County approved value of 10%, is impervious with the remaining balance being pervious.

On-Site Hydrology Maps showing the drainage area, BMP and Drainage Structures are found in Appendix G. The peak mitigation flow rate (Q_{PM}) and the mitigation volume (V_M) found in Appendix D of this report are based on 0.75-inches of rainfall.

2.0 BMP SIZING

Infiltration Basins

Using the LA County Modified Rational Method TC Calculator, the Peak Mitigation Flow Rate (Q_{PM}) based on 0.75-inches of rainfall is 8.73 cfs and the total Mitigation Volume (V_M) 2.84 ac-ft (see Post-Development On-Site Hydrologic Calculation, Appendix D). Since ΔV_{25} exceeds the mitigation volume (see Appendix D), it will be captured in 3 infiltration basins designed per the 2009 Los Angeles County LID Manual and Los Angeles County Stormwater BMP Design and Maintenance Manual; therefore the required individual basin capacity is 1.08 ac-ft (46,900 cf) for two basins and 2.52 ac-ft (109,771 cf) for the other basin. By infiltrating the ΔV_{25}, the V_M will also infiltrate and be treated by the existing soils.

The proposed LID infiltration basins span north to south in various locations along the site. The basins are created by constructing reinforced elevated road sections. The first road section spans 650 feet and is raised by 7.5 inches. The flood width is approximately 84 feet. The second road section spans 525 feet and is raised by 8.5 inches. The flood width is approximately 100 feet. The last road section spans 1,220 feet and is raised by 10.6 inches. Its flood width is approximately 91 feet. The infiltration areas created are 54,325 square feet, 52,230 square feet, and 110,948 square feet respectively. The mitigation volume will infiltrate in a maximum 3.6 hours at a Los Angeles County approved rate of 3.29 in/hr.

Treatment BMPs Calculations

TETRA TECH, INC.

CLIENT SILVERADO POWER JOB NO. 135-04546-12001 PAGE 1 OF 3

PROJECT PROJECT 4 DATE CHECKED DATE DECEMBER 2013

DETAIL INFILTRATION BASIN CHECKED BY JD COMPUTED BY JS

LINE ID	DESCRIPTION	VALUE	COMMENTS:
A	MITIGATION VOLUME (AC-FT)	2.84	PER POST DEVELOPMENT ON-SITE HYDROLOGIC CALCS, APPENDIX D
B	ΔV25 (AC*FT)	4.67	PER PRE/POST DEVELOPMENT ON-SITE HYDROLOGIC CALCS, APPENDIX D
C	NUMBER OF BASINS	3	PER ON-SITE DRAINAGE MAP, APPENDIX F

SINCE ΔV25>MITIGATION VOLUME, ΔV25 TO BE MITIGATED BY 3 INFILTRATION BASINS CREATED BY 3 N-S REINFORCED ELEVATED ROADS

BASIN #1

D	INFILTRATION RATE (IN/HR)	3.29	PER GEOTECHNICAL REPORT, APPENDIX H (4 MIN/IN = 15 IN/HR) * FACTORS
E	BASIN LENGTH (FT)	650	PER ON-SITE DRAINAGE MAP, APPENDIX F
F	VOLUME OF BASIN (CF)	46827	(F) = ΔV25(AREAS A,B,C,D,E,&F)/2

BASIN SIZED ACCORDING TO THE LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL

G	REQUIRED DRAIN TIME (HR)	72	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
H	MAX. PONDING DEPTH (FT)	19.74	PER EQUATION 6-3, (H) = (D) / 12 * (G)
I	BASIN PONDING DEPTH (IN)	3.76	INITIAL ASSUMED AVERAGE PONDING DEPTH CREATED BY RAISED ROAD SECTION

SINCE THE BASIN HAS A TRIANGULAR CROSS-SECTION, THE AVERAGE PONDING DEPTH OF THE BASIN WILL BE USED TO FIND THE INFILTRATING SURFACE AREA. IN ORDER TO USE THE AVERAGE PONDING DEPTH OF 3.76 IN., THE REINFORCED ROAD SECTION WILL NEED TO BE RAISED BY 7.5 IN.

J	MAX. BASIN FILL TIME (HR)	2	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
K	BASIN SURFACE AREA (SF)	54325.0	PER EQUATION 6-6, (K) = (F) / ((J) * (D) / 12 + (I) / 12)
L	FLOOD WIDTH (FT)	83.6	(L) = (K) / (E)

CHECK TO SEE IF INFILTRATION BASIN SLOPE MATCHES EXISTING AVERAGE SLOPE OF SITE.

M	SITE SLOPE (%)	0.75	PER ON-SITE DRAINAGE MAP, APPENDIX F
N	INFIL. BASIN SLOPE (%)	0.75	(N) = ((I) * 2 / (L) * 12) * 100
O	TOTAL DRAINAGE TIME (HR)	3.14	(O) = (F) / ((K) * (D) /12), MAX = 72 HRS

BASIN #2

Da	INFILTRATION RATE (IN/HR)	3.29	PER GEOTECHNICAL REPORT, APPENDIX H (4 MIN/IN = 15 IN/HR) * FACTORS
Ea	BASIN LENGTH (FT)	525	PER ON-SITE DRAINAGE MAP, APPENDIX F
Fa	VOLUME OF BASIN (CF)	46827	(Fa) = ΔV25(AREAS A,B,C,D,E,&F)/2

BASIN SIZED ACCORDING TO THE LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL

Ga	REQUIRED DRAIN TIME (HR)	72	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
Ha	MAX. PONDING DEPTH (FT)	19.74	PER EQUATION 6-3, (Ha) = (Da) / 12 * (Ga)
Ia	BASIN PONDING DEPTH (IN)	4.18	INITIAL ASSUMED AVERAGE PONDING DEPTH CREATED BY RAISED ROAD SECTION

SINCE THE BASIN HAS A TRIANGULAR CROSS-SECTION, THE AVERAGE PONDING DEPTH OF THE BASIN WILL BE USED TO FIND THE INFILTRATING SURFACE AREA. IN ORDER TO USE THE AVERAGE PONDING DEPTH OF 4.18 IN., THE REINFORCED ROAD SECTION WILL NEED TO BE RAISED BY 8.5 IN.

Ja	MAX. BASIN FILL TIME (HR)	2	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
Ka	BASIN SURFACE AREA (SF)	52229.8	PER EQUATION 6-6, (Ka) = (Fa) / ((Ja) * (Da) / 12 + (Ia) / 12)
La	FLOOD WIDTH (FT)	99.5	(La) = (Ka) / (Ea)

CHECK TO SEE IF INFILTRATION BASIN SLOPE MATCHES EXISTING AVERAGE SLOPE OF SITE.

Ma	SITE SLOPE (%)	0.70	PER ON-SITE DRAINAGE MAP, APPENDIX F
Na	INFIL. BASIN SLOPE (%)	0.70	(Na) = ((Ia) * 2 / (La) * 12) * 100
Oa	TOTAL DRAINAGE TIME (HR)	3.27	(Oa) = (Fa) / ((Ka) * (Da) /12), MAX = 72 HRS

TETRA TECH, INC.

CLIENT SILVERADO POWER JOB NO. 135-04546-12001 PAGE 2 OF 3

PROJECT PROJECT 4 DATE CHECKED DATE DECEMBER 2013

DETAIL INFILTRATION BASIN CHECKED BY JD COMPUTED BY JS

BASIN #3

Db	INFILTRATION RATE (IN/HR)	3.29	PER GEOTECHNICAL REPORT, APPENDIX H (4 MIN/IN = 15 IN/HR) * FACTORS
Eb	BASIN LENGTH (FT)	1220	PER ON-SITE DRAINAGE MAP, APPENDIX F
Fb	VOLUME OF BASIN (CF)	109771.2	(Fb) = ΔV25(AREAS G,H,I,J,&K)

BASIN SIZED ACCORDING TO THE LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL

Gb	REQUIRED DRAIN TIME (HR)	72	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
Hb	MAX. PONDING DEPTH (FT)	19.74	PER EQUATION 6-3, (Hb) = (Db) / 12 * (Gb)
Ib	BASIN PONDING DEPTH (IN)	5.29	INITIAL ASSUMED AVERAGE PONDING DEPTH CREATED BY RAISED ROAD SECTION

SINCE THE BASIN HAS A TRIANGULAR CROSS-SECTION, THE AVERAGE PONDING DEPTH OF THE BASIN WILL BE USED TO FIND THE INFILTRATING SURFACE AREA. IN ORDER TO USE THE AVERAGE PONDING DEPTH OF 5.29 IN., THE REINFORCED ROAD SECTION WILL NEED TO BE RAISED BY 10.6 IN.

Jb	MAX. BASIN FILL TIME (HR)	2	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
Kb	BASIN SURFACE AREA (SF)	110948.3	PER EQUATION 6-6, (Kb) = (Fb) / ((Jb) * (Db) / 12 + (Ib) / 12)
Lb	FLOOD WIDTH (FT)	90.9	(Lb) = (Kb) / (Eb)

CHECK TO SEE IF INFILTRATION BASIN SLOPE MATCHES EXISTING AVERAGE SLOPE OF SITE.

Mb	SITE SLOPE (%)	0.97	PER ON-SITE DRAINAGE MAP, APPENDIX F
Nb	INFIL. BASIN SLOPE (%)	0.97	(Nb) = ((Ib) * 2 / (Lb) * 12) * 100
Ob	TOTAL DRAINAGE TIME (HR)	3.61	(Ob) = (Fb) / ((Kb) * (Db) /12), MAX = 72 HRS

Conclusion:

ΔV25 INFILTRATED BY 3 INFILTRATION BASINS WITH VARIABLE LENGTH (650FT, 525FT, & 1220 FT) AND VARIABLE FLOOD WIDTH (84FT, 100 FT, & 91FT) CREATED BY 3 REINFORCED ELEVATED ROAD SECTIONS WITH VARIABLE HEIGHT (7.5 IN, 8.5 IN, & 10.6 IN).

APPENDIX G:
DRAINAGE MAPS (ON-/OFF-SITE)

OFF-SITE DRAINAGE MAP

NOTE:
FOR SUBAREA FLOWLINE LENGTHS AND SLOPES, SEE OFF-SITE TC CALCULATOR RESULTS TABLES ON SHEET H-3

SUBAREAS J THROUGH M
Q_{25}=986.99 CFS
V=46.98 AC*FT

SUBAREAS A THROUGH F
Q_{25}=1,103.20 CFS
V=54.22 AC*FT

SUBAREAS B THROUGH E
Q_{25}=879.89 CFS
V=39.33 AC*FT

SUBAREAS A THROUGH N
Q_{25}=3,536.28 CFS
V=182.9 AC*FT

SUBAREAS R THROUGH S
Q_{25}=930.28 CFS
V=58.03 AC*FT

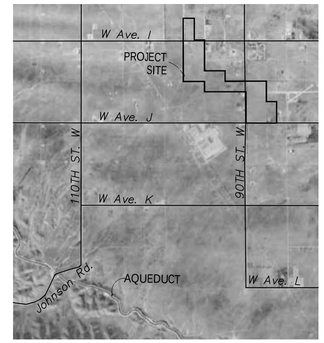
SUBAREAS A THROUGH P
Q_{25}=4,480.07 CFS
V=234.83 AC*FT

SUBAREAS C THROUGH D
Q_{25}=269.52 CFS
V=12.01 AC*FT

SUBAREAS J THROUGH K
Q_{25}=288.69 CFS
V=12.74 AC*FT

Muntz Ranch Rd.
Elizabeth Lake Rd.
Johnson Rd.
W Ave. I
W Ave. J
120TH ST. W

MATCHLINE: SEE SHEET H-2



LOCATION MAP
NOT TO SCALE
(THOMAS GUIDE PAGE 4013, GRIDS G5, G6, H5, H6, J6, & J7)

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- SUB-AREA BOUNDARY
- PROJECT BOUNDARY
- FLOW LINE

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{BF25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = 112,283 CY

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY: _____ RCE NO: _____ DATE _____
CHECKED BY: _____ DATE _____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

0 500' 1000' 2000'
SCALE: 1"=1000'

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) WITHIN A FEMA ZONE A, FEMA ZONE X - UNSHADED, AND FEMA ZONE X - SHADED.
9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.

R2011-00807 (RCUP201100076) H-1

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System
APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks
Project Address:
90th St. W & W Ave. J
Los Angeles County, CA
SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100076 OFF-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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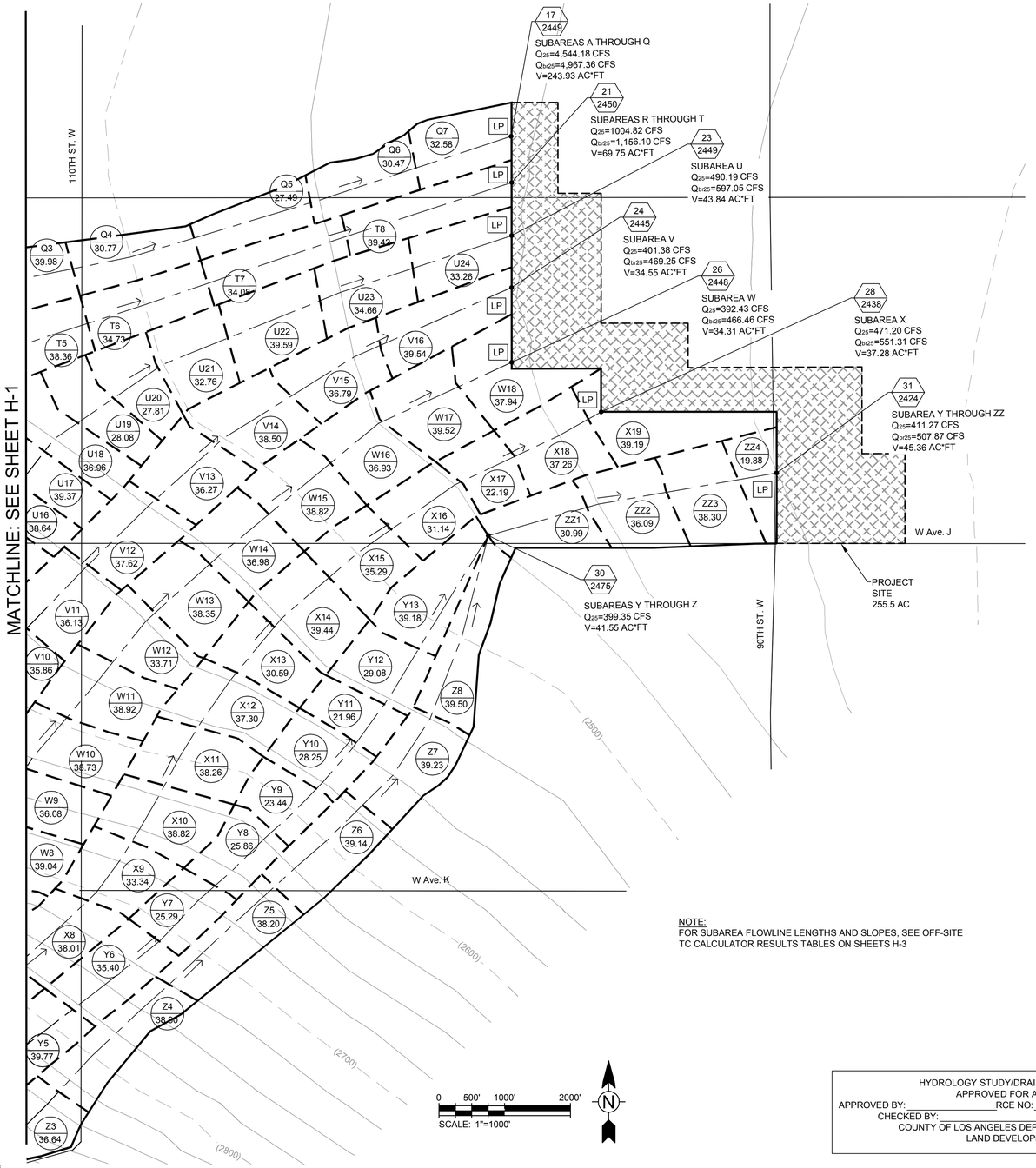

NOTE:
FOR SUBAREA FLOWLINE LENGTHS AND SLOPES, SEE OFF-SITE TC CALCULATOR RESULTS TABLES ON SHEETS H-3

LEGEND:

XX / XX.X	SUBAREA ID / ACREAGE
XX / XXX	NODE ID / ELEVATION
HP	HIGH POINT
LP	LOW POINT
	WATERSHED BOUNDARY
	SUB-AREA BOUNDARY
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HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY: _____ RCE NO: _____ DATE _____
CHECKED BY: _____ DATE _____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) H-2

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
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3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100076
OFF-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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PLOTTED: Dec 16, 2013 - 11:18am

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

OFF-SITE HYDROLOGY

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	A1	22.98	0.01	25	120	2126	0.0887	6.5	15	2.31	0.58	0.58	30.79	0.34	33.65	2.01
Project 4	A2	37.57	0.01	25	134	1314	0.0674	6.3	17	2.12	0.33	0.34	27.08	0.34	33.74	2.52
Project 4	A3	39.59	0.01	25	134	1072	0.1039	6.2	12	2.46	0.39	0.40	38.96	0.34	46.54	2.69
Project 4	A4	39.43	0.01	25	120	1849	0.0541	6.2	15	2.22	0.57	0.57	49.89	0.34	54.69	3.25
Project 4	B1	34.99	0.01	25	100	1657	0.0919	7.0	12	2.78	0.60	0.60	58.36	0.34	63.51	3.40
Project 4	B2	37.08	0.01	25	100	1066	0.1408	6.8	8	3.28	0.64	0.64	77.84	0.34	83.78	3.53
Project 4	B3	38.05	0.01	25	120	716	0.1745	6.8	6	3.70	0.69	0.69	97.14	0.34	103.17	3.54
Project 4	B4	34.47	0.01	25	120	807	0.1240	6.7	7	3.40	0.68	0.68	79.69	0.34	84.81	3.25
Project 4	B5	24.01	0.01	25	120	750	0.0994	6.6	7	3.35	0.67	0.67	53.89	0.34	57.50	2.22
Project 4	B6	38.98	0.01	25	120	1814	0.0829	6.5	13	2.47	0.60	0.60	57.77	0.34	62.77	3.47
Project 4	C1	23.39	0.01	25	100	1802	0.1067	7.0	12	2.78	0.60	0.60	39.01	0.34	42.46	2.27
Project 4	C2	30.22	0.01	25	100	674	0.2954	6.9	5	4.14	0.69	0.69	86.33	0.34	91.77	2.88
Project 4	C3	27.48	0.01	25	100	1170	0.0642	6.9	10	2.99	0.62	0.62	50.94	0.34	55.12	2.58
Project 4	D1	23.83	0.01	25	100	818	0.1638	6.8	7	3.44	0.65	0.65	53.28	0.34	57.21	2.23
Project 4	D2	22.51	0.01	25	100	853	0.0277	6.8	10	2.91	0.61	0.61	39.96	0.34	43.36	2.05
Project 4	E1	39.11	0.01	25	100	1053	0.0717	6.6	10	2.84	0.60	0.60	66.64	0.34	72.54	3.42
Project 4	E2	25.41	0.01	25	120	518	0.1933	6.5	5	3.88	0.70	0.70	69.01	0.34	73.13	2.26
Project 4	E3	25.07	0.01	25	120	948	0.1057	6.4	8	3.07	0.65	0.65	50.03	0.34	53.65	2.23
Project 4	F1	28.59	0.01	25	120	1745	0.0573	6.3	14	2.32	0.58	0.58	38.47	0.34	42.05	2.42
Project 4	F2	24.70	0.01	25	120	1052	0.0476	6.1	11	2.53	0.61	0.61	38.12	0.34	41.29	2.00
Project 4	G1	39.58	0.01	25	120	1061	0.0527	6.1	11	2.50	0.60	0.60	59.37	0.34	64.52	3.15
Project 4	G2	38.83	0.01	25	120	1063	0.0532	6.0	11	2.46	0.60	0.60	57.31	0.34	62.27	3.01
Project 4	G3	39.03	0.01	25	120	972	0.0495	5.9	11	2.42	0.59	0.59	55.73	0.34	60.74	2.98
Project 4	G4	38.06	0.01	25	120	701	0.0417	5.9	9	2.66	0.62	0.62	62.77	0.34	67.82	2.96
Project 4	G5	33.89	0.01	25	120	629	0.0390	5.8	8	2.77	0.63	0.63	59.14	0.34	63.73	2.61
Project 4	G6	35.37	0.01	25	120	492	0.0379	5.7	7	2.91	0.64	0.64	65.87	0.34	70.81	2.68
Project 4	G7	32.81	0.01	25	120	792	0.0378	5.6	10	2.42	0.59	0.59	46.85	0.34	51.06	2.36
Project 4	G8	30.05	0.01	25	120	1127	0.0239	5.6	14	2.07	0.55	0.55	34.21	0.34	37.74	2.17
Project 4	G9	30.28	0.01	25	120	3877	0.0155	5.4	30	1.38	0.43	0.43	17.97	0.34	20.76	1.97
Project 4	H1	35.93	0.01	25	120	869	0.0173	5.3	14	1.94	0.54	0.54	37.64	0.34	41.64	2.37
Project 4	H2	36.52	0.01	25	120	1498	0.0164	5.2	22	1.54	0.47	0.47	26.43	0.34	30.00	2.33
Project 4	H3	30.80	0.01	25	120	1387	0.0143	5.1	21	1.55	0.47	0.47	22.44	0.34	25.47	1.90
Project 4	H4	34.53	0.01	25	120	1605	0.0156	5.0	25	1.40	0.43	0.43	20.79	0.34	24.02	2.07
Project 4	I1	38.22	0.01	25	100	1935	0.1206	6.6	13	2.51	0.58	0.58	55.64	0.34	60.88	3.39
Project 4	I2	38.42	0.01	25	120	912	0.0978	6.4	8	3.07	0.65	0.65	76.67	0.34	82.21	3.42
Project 4	I3	36.92	0.01	25	120	1121	0.1212	6.3	9	2.86	0.63	0.63	66.52	0.34	71.71	3.16
Project 4	I4	32.95	0.01	25	120	1148	0.0950	6.2	10	2.69	0.62	0.62	54.95	0.34	59.39	2.74
Project 4	I5	34.51	0.01	25	120	944	0.0700	6.1	9	2.78	0.63	0.63	60.44	0.34	65.14	2.85
Project 4	I6	37.79	0.01	25	120	1054	0.0470	6.1	11	2.50	0.60	0.60	56.69	0.34	61.60	3.00
Project 4	I7	39.67	0.01	25	120	1105	0.0455	6.1	12	2.40	0.59	0.59	56.17	0.34	61.21	3.20
Project 4	I8	32.66	0.01	25	120	988	0.0414	5.9	11	2.42	0.59	0.59	46.63	0.34	50.82	2.49
Project 4	I9	33.40	0.01	25	120	853	0.0401	5.9	10	2.53	0.61	0.61	51.55	0.34	55.84	2.57
Project 4	I10	31.70	0.01	25	120	941	0.0339	5.8	12	2.29	0.58	0.58	42.10	0.34	46.01	2.41
Project 4	I11	26.12	0.01	25	120	917	0.0346	5.5	12	2.19	0.57	0.57	32.61	0.34	35.73	1.86
Project 4	I12	26.81	0.01	25	120	1151	0.0213	5.4	16	1.88	0.53	0.53	26.71	0.34	29.65	1.82
Project 4	I13	18.03	0.01	25	120	2163	0.0170	5.2	30	1.33	0.41	0.41	9.83	0.34	11.48	1.12
Project 4	J1	33.46	0.01	25	100	1081	0.0796	6.6	10	2.84	0.60	0.60	57.02	0.34	62.06	2.93
Project 4	J2	20.47	0.01	25	100	1223	0.0933	6.6	10	2.84	0.60	0.60	34.88	0.34	37.97	1.79
Project 4	K1	39.41	0.01	25	100	638	0.0870	6.6	6	3.61	0.66	0.66	93.90	0.34	100.56	3.45
Project 4	K2	37.15	0.01	25	100	1150	0.0963	6.6	10	2.84	0.60	0.60	63.30	0.34	68.91	3.25
Project 4	K3	15.23	0.01	25	100	517	0.1620	6.5	5	3.88	0.67	0.67	39.59	0.34	42.30	1.32
Project 4	L1	30.11	0.01	25	100	883	0.1037	6.5	8	3.11	0.62	0.62	58.06	0.34	62.85	2.66
Project 4	L2	27.64	0.01	25	120	915	0.0847	6.4	8	3.07	0.65	0.65	55.16	0.34	59.14	2.46
Project 4	L3	28.98	0.01	25	120	879	0.0770	6.3	8	3.02	0.65	0.65	56.89	0.34	60.99	2.53
Project 4	L4	33.97	0.01	25	120	1044	0.0967	6.2	9	2.82	0.63	0.63	60.35	0.34	65.05	2.86
Project 4	L5	22.21	0.01	25	120	675	0.0926	6.1	7	3.13	0.65	0.65	45.19	0.34	48.46	1.87
Project 4	L6	22.37	0.01	25	120	697	0.0719	6.1	8	2.90	0.64	0.64	41.52	0.34	44.63	1.83
Project 4	L7	26.08	0.01	25	120	1126	0.0444	6.1	12	2.40	0.59	0.59	36.93	0.34	40.24	2.11
Project 4	M1	38.00	0.01	25	100	1654	0.1240	6.5	12	2.57	0.58	0.58	56.64	0.34	62.00	3.32
Project 4	M2	33.36	0.01	25	100	948	0.1621	6.4	8	3.07	0.62	0.62	63.50	0.34	68.73	2.90
Project 4	M3	35.68	0.01	25	100	1027	0.1713	6.4	8	3.07	0.62	0.62	67.91	0.34	73.51	3.10
Project 4	M4	38.71	0.01	25	120	1228	0.1223	6.3	10	2.72	0.62	0.62	65.28	0.34	70.55	3.28
Project 4	M5	29.99	0.01	25	120	1262	0.0983	6.2	11	2.57	0.61	0.61	47.02	0.34	50.94	2.48
Project 4	M6	35.13	0.01	25	120	1909	0.0719	6.1	15	2.19	0.57	0.57	43.85	0.34	48.06	2.84
Project 4	N1	31.97	0.01	25	120	842	0.0454	6.0	10	2.57	0.61	0.61	50.12	0.34	54.30	2.50
Project 4	N2	36.82	0.01	25	120	1142	0.0321	5.9	13	2.24	0.57	0.57	47.01	0.34	51.54	2.86
Project 4	N3	36.86	0.01	25	120	1001	0.0296	5.8	12	2.29	0.58	0.58	48.96	0.34	53.50	2.80
Project 4	N4	36.20	0.01	25	120	1124	0.0299	5.6	14	2.07	0.55	0.55	41.21	0.34	45.46	2.61
Project 4	N5	29.70	0.01	25	120	1026	0.0282	5.4	14	1.97	0.54	0.54	31.59	0.34	34.96	2.01
Project 4	N6	37.04	0.01	25	120	1808	0.0181	5.2	25	1.45	0.45	0.45	24.17	0.34	27.66	2.33
Project 4	O1	35.28	0.01	25	134	1035	0.0164	4.7	30	1.22	0.11	0.12	5.16	0.34	9.49	1.51
Project 4	O2	37.38	0.01	25	120	1302	0.0157	4.6	24	1.30	0.41	0.41	19.92	0.34	23.24	1.99
Project 4	O3	24.53	0.01	25	120	1105	0.0113	4.3	24	1.23	0.39	0.40	12.07	0.34	14.14	1.20
Project 4	P1	33.21	0.01	25	100	986	0.0754	6.4	9	2.90	0.61	0.61	58.75	0.34	63.75	2.84
Project 4	P2	30.73	0.01	25	100	688	0.2561	6.4	6	3.51	0.66	0.66	71.19	0.34	76.22	2.58
Project 4	P3	38.75	0.01	25	100	815	0.2142	6.3	7	3.22	0.63	0.63	78.61	0.34	84.86	3.31
Project 4	P4	32.71	0.01	25	120	687	0.1583	6.2	6	3.41	0.68	0.68	75.85	0.34	80.72	2.70
Project 4	P5	37.46	0.01	25	120	1344	0.1060	6.2	11	2.57	0.61	0.61	58.73	0.34	63.63	3.10
Project 4	P6	34.72	0.01	25	120	701	0.1782	6.1	6	3.37	0.67	0.67	78.39	0.34	83.65	2.82
Project 4	P7	37.23	0.01	25	120	524	0.1088	6.1	6	3.32	0.67	0.67	82.81	0.34	88.36	2.97
Project 4	P8	39.37	0.01	25	120	615	0.0897	6.1	7	3.09	0.65	0.65	79.07	0.34	84.80	3.25
Project 4	P9	37.35	0.01	25	120	1086	0.0462	6.1	11	2.50	0.59	0.59	55.09	0.34	60.04	2.97
Project 4	P10	39.70	0.01	25	120	1230	0.0406	6.0	13	2.27	0.58	0.58	52.27	0.34	57.11	3.14
Project 4	P11	36.59	0.01	25	120	782	0.0358	5.8	10	2.50	0.60	0.60	54.89	0.34	59.64	2.75
Project 4	P12	33.16	0.01	25	120	763	0.0304	5.6	11	2.31	0.58	0.58	44.43	0.34	48.56	2.38
Project 4	P13	38.23	0.01	25	120	879	0.0287	5.5	12	2.19	0.57	0.57	47.72	0.34	52.30	2.73
Project 4	P14	39.76	0.01	25	134	925	0.0255	5.4	28	1.42	0.17	0.18	10.16	0.34	15.64	2.01
Project 4	P15	39.93	0.01	25	134	916	0.0217	5.2	30	1.33	0.14	0.15	7.97	0.34	13.22	1.91
Project 4	P16	36.68	0.01	25	134	884	0.0180	4.9	30	1.26	0.12	0.13	6.01	0.34	10.63	1.65
Project 4	P17	39.67	0.01	25	120	1149	0.0174	4.7	20	1.47	0.45	0.45	26.24	0.34	30.04	2.24
Project 4	P18	34.63	0.01	25	120	1357	0.0142	4.7	25	1.30	0.41	0.41	18.46	0.34	21.53	1.88
Project 4	Q1	39.01	0.01	25	120	1059	0.0102	4.3	24	1.23	0.39	0.40	19.19	0.34	22.49	1.91
Project 4	Q2	36.04	0.01	25	120	1187	0.0105	4.1	29	1.08	0.35	0.36	14.01	0.34	16.79	1.65
Project 4	Q3	39.98	0.01	25	120	1792	0.0102	4.0	30	1.02	0.33	0.34	13.87	0.34	16.83	1.70
Project 4	Q4	30.77	0.01	25	120	1903	0.0088	3.7	30	0.95	0.29	0.30	8.77	0.34	10.99	1.18
Project 4	Q5	27.49	0.01	25	134	1849	0.0084	3.4	30	0.88	0.10	0.11	2.66	0.34	4.96	0.85
Project 4	Q6	30.47	0.01	25	134	1683	0.0075	3.2	30	0.83	0.10	0.11	2.78	0.34	5.15	0.90
Project 4	Q7	32.58	0.01	25	134	1526	0.0073	3.1	30	0.79	0.10	0.11	2.83	0.34	5.22	0.91
Project 4	R1	32.09	0.01	25	100	2577	0.1628	6.3	16	2.18	0.54	0.54	37.78	0.34	41.87	2.62
Project 4	R2	35.87	0.01	25	100	1059	0.1716	6.2	9	2.82	0.60	0.60	60.69	0.34	66.06	2.95
Project 4	R3	39.66	0.01	25	120	963	0.1497	6.1	8	2.94	0.64	0.64	74.62	0.34	80.22	3.33
Project 4	R4	38.16	0.01	25	120	963	0.1024	6.1	9	2.74	0.62	0.62	64.83	0.34	70.07	3.08
Project 4	R5	33.31	0.01	25	120	751	0.0849	6.1	8	2.90	0.64	0.64	61.82	0.34	66.45	2.73
Project 4	R6	37.01	0.01	25	120	757	0.0757	6.0	8	2.86	0.63	0.63	66.68	0.34	71.89	2.98
Project 4	R7	35.37	0.01	25	120	1058	0.0475	5.9	12	2.33	0.58	0.58	47.80	0.34	52.25	2.75
Project 4	R8	37.83	0.01	25	120	1044	0.0386	5.8	12	2.29	0.58	0.58	50.25	0.34	54.91	2.87
Project 4	R9	33.08	0.01	25	134	973	0.0289	5.6	21	1.71	0.25	0.26	14.71	0.34	19.81	1.83
Project 4	R10	25.89	0.01	25	134	829	0.0285	5.4	20	1.67	0.24	0.25	10.81	0.34	14.75	1.36
Project 4	R11	28.59	0.01	25	134	1022	0.0245	5.2	30	1.33	0.14	0.15	5.70	0.34	9.46	1.37
Project 4	S1	37.15	0.01	25	100	1736	0.1383	6.4	12	2.53	0.58	0.58	54.51	0.34	59.66	3.17
Project 4	S2	35.17	0.01	25	100	1178	0.1728	6.2	9	2.82	0.60	0.60	59.51	0.34	64.77	2.89
Project 4	S3	30.64	0.01	25	120	967	0.1624	6.2	8	2.98	0.64	0.64	58.44	0.34	62.83	2.61
Project 4	S4	35.99	0.01	25	120	1010	0.1608	6.1	8	2.90	0.64	0.64	66.80	0.34	71.80	2.95
Project 4	S5	32.25	0.01	25	134	834	0.1161	6.1	11	2.50	0.39	0.40	32.25	0.34	38.55	2.08
Project 4	S6	37.34	0.01	25	134	958	0.0690	6.1	13	2.31	0.36	0.37	31.91	0.34	38.89	2.43
Project 4	S7	33.26	0.01	25	134	789	0.0738	6.0	12	2.36	0.37	0.38	29.83	0.34	36.10	2.13

OFF-SITE HYDROLOGY

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	S8	38.79	0.01	25	134	1109	0.0368	5.8	21	1.76	0.27	0.28	19.12	0.34	25.14	2.24
Project 4	S9	32.99	0.01	25	134	724	0.0279	5.6	15	2.00	0.31	0.32	21.11	0.34	26.74	1.90
Project 4	S10	35.39	0.01	25	134	569	0.0279	5.5	12	2.19	0.34	0.35	27.13	0.34	33.54	2.06
Project 4	S11	38.16	0.01	25	134	693	0.0271	5.4	17	1.80	0.27	0.28	19.23	0.34	25.32	2.06
Project 4	S12	39.34	0.01	25	134	865	0.0265	5.2	30	1.33	0.14	0.15	7.85	0.34	13.02	1.88
Project 4	S13	37.63	0.01	25	134	1077	0.0256	5.1	30	1.31	0.13	0.14	6.90	0.34	11.82	1.76
Project 4	T1	38.70	0.01	25	134	1036	0.0177	4.7	30	1.20	0.10	0.11	5.11	0.34	9.82	1.63
Project 4	T2	39.37	0.01	25	134	1021	0.0203	4.5	30	1.15	0.10	0.11	4.98	0.34	9.53	1.60
Project 4	T3	34.64	0.01	25	120	1063	0.0170	4.3	22	1.28	0.40	0.41	18.18	0.34	21.20	1.72
Project 4	T4	34.97	0.01	25	120	1303	0.0121	4.1	30	1.06	0.34	0.35	12.97	0.34	15.65	1.58
Project 4	T5	38.36	0.01	25	120	1772	0.0105	3.9	30	0.99	0.32	0.33	12.53	0.34	15.32	1.58
Project 4	T6	34.73	0.01	25	120	1920	0.0089	3.6	30	0.93	0.28	0.29	9.37	0.34	11.84	1.28
Project 4	T7	34.08	0.01	25	120	2228	0.0084	3.4	30	0.88	0.25	0.26	7.80	0.34	10.16	1.17
Project 4	T8	39.42	0.01	25	134	2639	0.0078	3.2	30	0.83	0.10	0.11	3.60	0.34	6.66	1.16
Project 4	U1	38.54	0.01	25	100	2361	0.1424	6.2	16	2.15	0.54	0.54	44.74	0.34	49.58	3.10
Project 4	U2	31.64	0.01	25	120	814	0.2145	6.1	7	3.13	0.65	0.65	64.37	0.34	69.04	2.66
Project 4	U3	34.70	0.01	25	120	1053	0.1165	6.1	9	2.74	0.62	0.62	58.95	0.34	63.72	2.80
Project 4	U4	31.48	0.01	25	134	979	0.1062	6.0	12	2.36	0.37	0.38	28.23	0.34	34.17	2.02
Project 4	U5	35.79	0.01	25	134	969	0.1220	5.9	12	2.33	0.37	0.38	31.69	0.34	38.34	2.25
Project 4	U6	39.16	0.01	25	134	962	0.0832	5.9	13	2.24	0.35	0.36	31.58	0.34	38.75	2.45
Project 4	U7	37.63	0.01	25	134	751	0.0563	5.8	12	2.29	0.36	0.37	31.88	0.34	38.85	2.33
Project 4	U8	36.35	0.01	25	134	1300	0.0208	5.7	30	1.47	0.18	0.19	10.15	0.34	15.28	1.97
Project 4	U9	31.01	0.01	25	134	1060	0.0254	5.5	30	1.42	0.17	0.18	7.93	0.34	12.19	1.61
Project 4	U10	31.05	0.01	25	134	787	0.0379	5.4	17	1.80	0.27	0.28	15.65	0.34	20.60	1.68
Project 4	U11	39.07	0.01	25	134	649	0.0406	5.2	15	1.84	0.28	0.29	20.85	0.34	27.15	2.02
Project 4	U12	36.94	0.01	25	134	657	0.0282	5.0	20	1.56	0.21	0.22	12.68	0.34	18.07	1.78
Project 4	U13	38.36	0.01	25	134	762	0.0198	4.8	30	1.24	0.11	0.12	5.71	0.34	10.51	1.68
Project 4	U14	38.56	0.01	25	134	639	0.0197	4.7	30	1.22	0.11	0.12	5.65	0.34	10.38	1.65
Project 4	U15	38.12	0.01	25	134	610	0.0195	4.6	30	1.17	0.10	0.11	4.91	0.34	9.41	1.57
Project 4	U16	38.64	0.01	25	134	605	0.0185	4.4	30	1.13	0.10	0.11	4.80	0.34	9.18	1.53
Project 4	U17	39.37	0.01	25	120	626	0.0198	4.2	14	1.55	0.47	0.47	28.68	0.34	32.55	1.94
Project 4	U18	36.96	0.01	25	120	671	0.0183	4.1	15	1.47	0.45	0.45	24.45	0.34	27.99	1.75
Project 4	U19	28.08	0.01	25	120	663	0.0124	4.0	18	1.29	0.40	0.41	14.85	0.34	17.32	1.26
Project 4	U20	27.81	0.01	25	120	815	0.0103	3.9	23	1.13	0.36	0.37	11.63	0.34	13.85	1.19
Project 4	U21	32.76	0.01	25	120	1153	0.0091	3.8	30	0.97	0.31	0.32	10.17	0.34	12.52	1.30
Project 4	U22	39.59	0.01	25	120	1513	0.0084	3.6	30	0.93	0.28	0.29	10.68	0.34	13.50	1.46
Project 4	U23	34.66	0.01	25	120	1493	0.0087	3.4	30	0.88	0.25	0.26	7.93	0.34	10.34	1.19
Project 4	U24	22.26	0.01	25	134	1580	0.0081	3.2	30	0.83	0.10	0.11	2.03	0.34	3.76	0.65
Project 4	V1	38.16	0.01	25	100	2701	0.0408	6.4	22	1.91	0.50	0.50	36.44	0.34	40.97	3.18
Project 4	V2	39.48	0.01	25	100	1998	0.0754	6.2	16	2.15	0.54	0.54	45.84	0.34	50.79	3.17
Project 4	V3	37.65	0.01	25	120	2921	0.1486	6.1	18	2.01	0.55	0.55	41.62	0.34	45.89	3.07
Project 4	V4	39.78	0.01	25	134	1430	0.1214	5.9	18	1.92	0.29	0.30	22.91	0.34	29.57	2.42
Project 4	V5	37.86	0.01	25	120	999	0.0990	5.9	9	2.66	0.62	0.62	62.44	0.34	67.46	2.95
Project 4	V6	37.87	0.01	25	120	1036	0.0397	5.8	12	2.29	0.58	0.58	50.30	0.34	54.97	2.88
Project 4	V7	36.34	0.01	25	120	982	0.0369	5.6	12	2.22	0.57	0.57	45.98	0.34	50.41	2.65
Project 4	V8	39.43	0.01	25	120	1263	0.0341	5.4	15	1.91	0.53	0.53	39.91	0.34	44.31	2.64
Project 4	V9	31.35	0.01	25	134	1105	0.0345	5.2	30	1.33	0.14	0.15	6.25	0.34	10.38	1.50
Project 4	V10	35.86	0.01	25	134	1264	0.0244	4.8	30	1.24	0.11	0.12	5.34	0.34	9.82	1.57
Project 4	V11	36.13	0.01	25	134	1337	0.0188	4.7	30	1.20	0.10	0.11	4.77	0.34	9.17	1.52
Project 4	V12	37.62	0.01	25	134	1443	0.0183	4.3	30	1.11	0.10	0.11	4.59	0.34	8.76	1.46
Project 4	V13	36.27	0.01	25	134	1239	0.0160	4.0	30	1.02	0.10	0.11	4.07	0.34	7.70	1.30
Project 4	V14	38.50	0.01	25	120	1348	0.0128	3.8	30	0.97	0.31	0.32	11.95	0.34	14.72	1.53
Project 4	V15	36.79	0.01	25	120	1557	0.0093	3.6	30	0.93	0.28	0.29	9.92	0.34	12.54	1.35
Project 4	V16	39.54	0.01	25	120	2190	0.0089	3.4	30	0.88	0.25	0.26	9.05	0.34	11.79	1.36
Project 4	W1	36.18	0.01	25	100	603	0.0300	6.3	8	3.02	0.62	0.62	67.74	0.34	73.31	3.08
Project 4	W2	35.88	0.01	25	100	2847	0.1033	6.2	20	1.94	0.51	0.51	35.50	0.34	39.75	2.87
Project 4	W3	31.27	0.01	25	120	1839	0.1342	6.1	13	2.31	0.58	0.58	41.90	0.34	45.79	2.53
Project 4	W4	29.31	0.01	25	134	1588	0.0757	5.9	24	1.68	0.24	0.25	12.31	0.34	16.80	1.72
Project 4	W5	27.28	0.01	25	120	1064	0.0696	5.7	11	2.35	0.59	0.59	37.82	0.34	41.21	1.99
Project 4	W6	27.58	0.01	25	120	819	0.0772	5.5	9	2.50	0.60	0.60	41.37	0.34	44.96	1.97
Project 4	W7	35.38	0.01	25	120	1120	0.0623	5.5	12	2.19	0.57	0.57	44.16	0.34	48.40	2.52
Project 4	W8	39.04	0.01	25	120	1006	0.0437	5.4	12	2.12	0.56	0.56	46.35	0.34	50.96	2.66
Project 4	W9	36.08	0.01	25	134	879	0.0428	5.2	23	1.51	0.20	0.21	11.44	0.34	16.59	1.79
Project 4	W10	38.73	0.01	25	134	1000	0.0364	5.0	30	1.29	0.13	0.14	6.99	0.34	11.96	1.77
Project 4	W11	38.92	0.01	25	134	1091	0.0288	4.8	30	1.24	0.11	0.12	5.79	0.34	10.66	1.71
Project 4	W12	33.71	0.01	25	134	987	0.0180	4.6	30	1.17	0.10	0.11	4.34	0.34	8.32	1.39
Project 4	W13	38.35	0.01	25	134	1115	0.0172	4.4	30	1.13	0.10	0.11	4.77	0.34	9.11	1.52
Project 4	W14	36.98	0.01	25	134	1171	0.0160	4.1	30	1.06	0.10	0.11	4.31	0.34	8.19	1.38
Project 4	W15	38.82	0.01	25	134	1218	0.0166	4.0	30	1.02	0.10	0.11	4.36	0.34	8.24	1.39
Project 4	W16	36.93	0.01	25	134	1011	0.0141	3.8	30	0.97	0.10	0.11	3.94	0.34	7.41	1.26
Project 4	W17	39.52	0.01	25	120	1275	0.0106	3.6	30	0.93	0.28	0.29	10.66	0.34	13.48	1.46
Project 4	W18	37.94	0.01	25	120	890	0.0096	3.4	30	0.88	0.25	0.26	8.68	0.34	11.32	1.30
Project 4	X1	37.91	0.01	25	100	1722	0.1279	6.2	13	2.37	0.56	0.56	50.31	0.34	55.41	3.11
Project 4	X2	38.21	0.01	25	120	1012	0.1517	6.1	8	2.90	0.64	0.64	70.92	0.34	76.23	3.13
Project 4	X3	39.02	0.01	25	120	924	0.1347	6.1	8	2.90	0.64	0.64	72.42	0.34	77.84	3.20
Project 4	X4	36.08	0.01	25	120	913	0.1370	6.1	8	2.90	0.64	0.64	66.96	0.34	71.98	2.96
Project 4	X5	35.00	0.01	25	134	872	0.1052	5.9	12	2.33	0.37	0.38	30.99	0.34	37.49	2.20
Project 4	X6	37.32	0.01	25	120	1762	0.0384	5.8	18	1.89	0.53	0.53	37.38	0.34	41.50	2.80
Project 4	X7	32.37	0.01	25	120	1475	0.0490	5.5	15	1.97	0.54	0.54	34.44	0.34	38.10	2.27
Project 4	X8	38.01	0.01	25	120	1512	0.0478	5.4	17	1.80	0.51	0.51	34.89	0.34	39.02	2.57
Project 4	X9	33.34	0.01	25	134	1127	0.0434	5.3	30	1.35	0.14	0.15	6.75	0.34	11.21	1.63
Project 4	X10	38.82	0.01	25	134	983	0.0409	5.1	30	1.31	0.13	0.14	7.12	0.34	12.19	1.82
Project 4	X11	38.26	0.01	25	134	1014	0.0405	4.8	30	1.24	0.11	0.12	5.69	0.34	10.48	1.68
Project 4	X12	37.30	0.01	25	134	1024	0.0324	4.7	30	1.20	0.10	0.11	4.92	0.34	9.46	1.57
Project 4	X13	30.59	0.01	25	134	897	0.0191	4.3	30	1.11	0.10	0.11	3.74	0.34	7.12	1.19
Project 4	X14	39.44	0.01	25	134	1126	0.0164	4.1	30	1.06	0.10	0.11	4.60	0.34	8.73	1.47
Project 4	X15	35.29	0.01	25	134	1193	0.0155	4.0	30	1.02	0.10	0.11	3.96	0.34	7.49	1.26
Project 4	X16	31.14	0.01	25	134	1280	0.0133	3.8	30	0.97	0.10	0.11	3.32	0.34	6.25	1.06
Project 4	X17	22.19	0.01	25	134	906	0.0163	3.5	30	0.90	0.10	0.11	2.20	0.34	4.10	0.71
Project 4	X18	37.26	0.01	25	120	1255	0.0111	3.4	30	0.88	0.25	0.26	8.53	0.34	11.11	1.28
Project 4	X19	39.19	0.01	25	120	223	0.0080	3.2	11	1.34	0.42	0.42	22.06	0.34	25.60	1.37
Project 4	Y1	36.50	0.01	25	100	2414	0.1078	6.2	17	2.09	0.53	0.53	40.43	0.34	44.96	2.97
Project 4	Y2	37.67	0.01	25	100	2217	0.0734	6.1	18	2.01	0.52	0.52	39.37	0.34	43.93	3.00
Project 4	Y3	37.93	0.01	25	120	1673	0.1114	6.1	13	2.31	0.58	0.58	50.82	0.34	55.54	3.07
Project 4	Y4	38.51	0.01	25	120	1651	0.0945	5.9	14	2.16	0.56	0.56	46.58	0.34	51.23	2.95
Project 4	Y5	39.77	0.01	25	120	1868	0.0479	5.6	18	1.84	0.52	0.52	38.05	0.34	42.39	2.85
Project 4	Y6	35.40	0.01	25	134	1673	0.0431	5.4	30	1.38	0.15	0.16	7.82	0.34	12.62	1.77
Project 4	Y7	25.29	0.01	25	134	1195	0.0396	5.2	30	1.33	0.14	0.15	5.05	0.34	8.37	1.21
Project 4	Y8	25.86	0.01	25	134	1207	0.0361	5.0	30	1.29	0.13	0.14	4.67	0.34	7.99	1.18
Project 4	Y9	23.44	0.01	25	134	927	0.0390	4.7	30	1.22	0.11	0.12	3.43	0.34	6.31	1.01
Project 4	Y10	28.25	0.01	25	134	922	0.0375	4.6	30	1.17	0.10	0.11	3.64	0.34	6.97	1.17
Project 4	Y11	21.96	0.01	25	134	725	0.0258	4.3	30	1.11	0.10	0.11	2.68	0.34	5.11	0.85
Project 4	Y12	29.08	0.01	25	134	992	0.0179	4.1	30	1.06	0.10	0.11	3.39	0.34	6.44	1.09
Project 4	Y13	39.18	0.01	25	134	2017	0.0174	4.0	30	1.02	0.10	0.11	4.40	0.34	8.31	1.40
Project 4	Z1	35.69	0.01	25	134	2395	0.0988	6.1	30	1.58	0.21	0.22	12.41	0.34	17.69	2.14
Project 4	Z2	37.32	0.01	25	120	1900	0.0986	6.0	15	2.13	0.56	0.56	44.52	0.34	48.94	2.90
Project 4	Z3	36.64	0.01	25	120	1786	0.0632	5.7	16	1.97	0.54	0.54	38.98	0.34	43.13	2.67
Project 4	Z4	38.90	0.01	25	120	2341	0.0479	5.5	22	1.64	0.48	0.48	30.62	0.34	34.63	2.72
Project 4	Z5	38.20	0.01	25	134	2182	0.0385	5.1	30	1.31	0.13	0.14	7.01	0.34	12.00	1.79
Project 4	Z6	39.14	0.01	25	134	1824	0.0388	4.8	30	1.24	0.11	0.12	5.82	0.34	10.72	1.72
Project 4	Z7	39.23	0.01	25	134	1734	0.0271	4.6	30	1.17	0.10	0.11	5.05	0.34	9.68	1.62
Project 4	Z8	39.50	0.01	25	134	2862	0.0169	4.1	30	1.06	0.10	0.11	4.61	0.34	8.74	1.47
Project 4	ZZ1	30.99	0.01	25	134	1558	0.0146	3.5	30	0.90	0.10	0.11	3.07	0.34	5.73	0.98
Project 4	ZZ2	36.09	0.01	25	134	1233	0.0104	3.3	30	0.86	0.10	0.11	3.41	0.34	6.35	1.09
Project 4	ZZ3	38.30	0.01	25	134	1104	0.0085	3.3	30	0.86	0.10	0.11	3.62	0.34	6.73	1.16
Project 4	ZZ4	19.88	0.01	25	134	592	0.0084	3.2	30	0.83	0.10	0.11	1.82	0.34	3.36	0.58

OFF-SITE HYDROLOGY

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	A1	22.98	0.01	50	120	2126	0.0887	7.4	13	2.82	0.63	0.63	40.83	0.34	44.00	2.46
Project 4	A2	37.57	0.01	50	134	1314	0.0674	7.2	13	2.74	0.42	0.42	43.24	0.34	51.12	3.05
Project 4	A3	39.59	0.01	50	134	1072	0.1039	7.1	11	2.92	0.45	0.45	52.02	0.34	60.50	3.11
Project 4	A4	39.43	0.01	50	120	1849	0.0541	7.1	13	2.70	0.62	0.62	66.01	0.34	71.33	3.98
Project 4	B1	34.99	0.01	50	100	1657	0.0919	8.0	10	3.45	0.65	0.65	78.47	0.34	84.24	4.05
Project 4	B2	37.08	0.01	50	100	1066	0.1408	7.8	7	3.97	0.68	0.68	100.10	0.34	106.68	4.25
Project 4	B3	38.05	0.01	50	120	716	0.1745	7.7	5	4.59	0.74	0.74	129.24	0.34	135.71	4.30
Project 4	B4	34.47	0.01	50	120	807	0.1240	7.6	6	4.16	0.72	0.72	103.24	0.34	108.88	3.78
Project 4	B5	24.01	0.01	50	120	750	0.0994	7.5	6	4.11	0.72	0.72	71.05	0.34	74.92	2.59
Project 4	B6	38.98	0.01	50	120	1814	0.0829	7.4	12	2.93	0.64	0.64	73.10	0.34	78.58	4.18
Project 4	C1	23.39	0.01	50	100	1802	0.1067	8.0	11	3.29	0.64	0.64	49.25	0.34	53.01	2.69
Project 4	C2	30.22	0.01	50	100	674	0.2954	7.9	5	4.71	0.71	0.71	101.06	0.34	106.96	3.46
Project 4	C3	27.48	0.01	50	100	1170	0.0642	7.9	9	3.58	0.66	0.66	64.93	0.34	69.53	3.15
Project 4	D1	23.83	0.01	50	100	818	0.1638	7.7	6	4.22	0.69	0.69	69.39	0.34	73.78	2.60
Project 4	D2	22.51	0.01	50	100	853	0.0277	7.7	8	3.68	0.66	0.66	54.67	0.34	58.56	2.52
Project 4	E1	39.11	0.01	50	100	1053	0.0717	7.5	8	3.59	0.66	0.66	92.67	0.34	99.23	4.24
Project 4	E2	25.41	0.01	50	120	518	0.1933	7.4	5	4.42	0.73	0.73	81.99	0.34	86.28	2.71
Project 4	E3	25.07	0.01	50	120	948	0.1057	7.3	7	3.72	0.70	0.70	65.28	0.34	69.15	2.69
Project 4	F1	28.59	0.01	50	120	1745	0.0573	7.2	12	2.85	0.63	0.63	51.33	0.34	55.34	2.95
Project 4	F2	24.70	0.01	50	120	1052	0.0476	7.0	9	3.17	0.66	0.66	51.68	0.34	55.27	2.45
Project 4	G1	39.58	0.01	50	120	1061	0.0527	6.9	9	3.12	0.65	0.65	80.27	0.34	86.09	3.84
Project 4	G2	38.83	0.01	50	120	1063	0.0532	6.8	10	2.93	0.64	0.64	72.81	0.34	78.28	3.65
Project 4	G3	39.03	0.01	50	120	972	0.0495	6.7	9	3.03	0.65	0.65	76.87	0.34	82.42	3.64
Project 4	G4	38.06	0.01	50	120	701	0.0417	6.7	8	3.21	0.66	0.66	80.63	0.34	86.25	3.60
Project 4	G5	33.89	0.01	50	120	629	0.0390	6.6	7	3.36	0.67	0.67	76.29	0.34	81.41	3.15
Project 4	G6	35.37	0.01	50	120	492	0.0379	6.5	6	3.56	0.69	0.69	86.88	0.34	92.24	3.11
Project 4	G7	32.81	0.01	50	120	792	0.0378	6.4	9	2.90	0.64	0.64	60.90	0.34	65.46	2.87
Project 4	G8	30.05	0.01	50	120	1127	0.0239	6.4	12	2.53	0.61	0.61	46.38	0.34	50.24	2.62
Project 4	G9	30.28	0.01	50	120	3877	0.0155	6.1	30	1.57	0.47	0.47	22.34	0.34	25.37	2.38
Project 4	H1	35.93	0.01	50	120	869	0.0173	6.0	12	2.37	0.59	0.59	50.24	0.34	54.74	2.87
Project 4	H2	36.52	0.01	50	120	1498	0.0164	5.9	18	1.93	0.53	0.53	37.36	0.34	41.48	2.80
Project 4	H3	30.80	0.01	50	120	1387	0.0143	5.8	18	1.90	0.53	0.53	31.02	0.34	34.43	2.31
Project 4	H4	34.53	0.01	50	120	1605	0.0156	5.7	20	1.77	0.51	0.51	31.17	0.34	34.84	2.50
Project 4	I1	38.22	0.01	50	100	1935	0.1206	7.5	12	2.97	0.61	0.61	69.24	0.34	75.16	4.07
Project 4	I2	38.42	0.01	50	120	912	0.0978	7.3	7	3.72	0.70	0.70	100.05	0.34	105.97	4.11
Project 4	I3	36.92	0.01	50	120	1121	0.1212	7.2	8	3.44	0.68	0.68	86.36	0.34	91.92	3.86
Project 4	I4	32.95	0.01	50	120	1148	0.0950	7.1	9	3.21	0.66	0.66	69.81	0.34	74.67	3.32
Project 4	I5	34.51	0.01	50	120	944	0.0700	7.0	8	3.35	0.67	0.67	77.46	0.34	82.65	3.47
Project 4	I6	37.79	0.01	50	120	1054	0.0470	6.9	10	2.97	0.64	0.64	71.83	0.34	77.23	3.62
Project 4	I7	39.67	0.01	50	120	1105	0.0455	6.9	10	2.97	0.64	0.64	75.40	0.34	81.07	3.80
Project 4	I8	32.66	0.01	50	120	988	0.0414	6.7	10	2.89	0.64	0.64	60.41	0.34	64.93	3.00
Project 4	I9	33.40	0.01	50	120	853	0.0401	6.7	9	3.03	0.65	0.65	65.78	0.34	70.53	3.11
Project 4	I10	31.70	0.01	50	120	941	0.0339	6.6	10	2.84	0.63	0.63	56.72	0.34	61.14	2.85
Project 4	I11	26.12	0.01	50	120	917	0.0346	6.3	10	2.71	0.62	0.62	43.89	0.34	47.43	2.21
Project 4	I12	26.81	0.01	50	120	1151	0.0213	6.2	13	2.36	0.59	0.59	37.33	0.34	40.67	2.23
Project 4	I13	18.03	0.01	50	120	2163	0.0170	5.9	24	1.68	0.49	0.49	14.84	0.34	16.72	1.37
Project 4	J1	33.46	0.01	50	100	1081	0.0796	7.5	8	3.59	0.66	0.66	79.28	0.34	84.90	3.62
Project 4	J2	20.47	0.01	50	100	1223	0.0933	7.5	9	3.39	0.65	0.65	45.11	0.34	48.42	2.18
Project 4	K1	39.41	0.01	50	100	638	0.0870	7.5	6	4.11	0.69	0.69	111.76	0.34	118.81	4.14
Project 4	K2	37.15	0.01	50	100	1150	0.0963	7.5	8	3.59	0.66	0.66	88.02	0.34	94.26	4.02
Project 4	K3	15.23	0.01	50	100	517	0.1620	7.4	5	4.42	0.70	0.70	47.12	0.34	49.98	1.58
Project 4	L1	30.11	0.01	50	100	883	0.1037	7.4	7	3.77	0.67	0.67	76.05	0.34	81.24	3.21
Project 4	L2	27.64	0.01	50	120	915	0.0847	7.3	7	3.72	0.70	0.70	71.97	0.34	76.24	2.96
Project 4	L3	28.98	0.01	50	120	879	0.0770	7.2	7	3.67	0.69	0.69	73.39	0.34	77.93	3.05
Project 4	L4	33.97	0.01	50	120	1044	0.0967	7.1	8	3.40	0.68	0.68	78.54	0.34	83.58	3.49
Project 4	L5	22.21	0.01	50	120	675	0.0926	7.0	6	3.83	0.70	0.70	59.55	0.34	63.09	2.17
Project 4	L6	22.37	0.01	50	120	697	0.0719	6.9	7	3.51	0.68	0.68	53.39	0.34	56.84	2.21
Project 4	L7	26.08	0.01	50	120	1126	0.0444	6.9	10	2.97	0.64	0.64	49.57	0.34	53.30	2.50
Project 4	M1	38.00	0.01	50	100	1654	0.1240	7.4	11	3.05	0.62	0.62	71.86	0.34	77.77	3.91
Project 4	M2	33.36	0.01	50	100	948	0.1621	7.3	7	3.72	0.67	0.67	83.15	0.34	88.81	3.48
Project 4	M3	35.68	0.01	50	100	1027	0.1713	7.3	7	3.72	0.67	0.67	88.93	0.34	94.99	3.72
Project 4	M4	38.71	0.01	50	120	1228	0.1223	7.2	9	3.26	0.66	0.66	83.29	0.34	89.10	3.99
Project 4	M5	29.99	0.01	50	120	1262	0.0983	7.1	9	3.21	0.66	0.66	63.54	0.34	67.96	3.03
Project 4	M6	35.13	0.01	50	120	1909	0.0719	7.0	13	2.67	0.62	0.62	58.15	0.34	62.84	3.48
Project 4	N1	31.97	0.01	50	120	842	0.0454	6.8	8	3.25	0.66	0.66	68.58	0.34	73.36	3.08
Project 4	N2	36.82	0.01	50	120	1142	0.0321	6.7	11	2.76	0.62	0.62	63.01	0.34	68.11	3.36
Project 4	N3	36.86	0.01	50	120	1001	0.0296	6.6	11	2.72	0.62	0.62	62.16	0.34	67.18	3.29
Project 4	N4	36.20	0.01	50	120	1124	0.0299	6.4	12	2.53	0.61	0.61	55.87	0.34	60.52	3.16
Project 4	N5	29.70	0.01	50	120	1026	0.0282	6.1	12	2.41	0.59	0.59	42.23	0.34	46.02	2.43
Project 4	N6	37.04	0.01	50	120	1808	0.0181	5.9	21	1.79	0.51	0.51	33.81	0.34	37.80	2.80
Project 4	O1	35.28	0.01	50	134	1035	0.0164	5.4	30	1.39	0.16	0.17	8.34	0.34	13.11	1.78
Project 4	O2	37.38	0.01	50	120	1302	0.0157	5.2	19	1.66	0.49	0.49	30.40	0.34	34.24	2.41
Project 4	O3	24.53	0.01	50	120	1105	0.0113	4.9	20	1.52	0.46	0.46	17.15	0.34	19.55	1.44
Project 4	P1	33.21	0.01	50	100	986	0.0754	7.3	8	3.49	0.65	0.65	75.34	0.34	80.89	3.46
Project 4	P2	30.73	0.01	50	100	688	0.2561	7.3	5	4.36	0.70	0.70	93.79	0.34	99.47	3.14
Project 4	P3	38.75	0.01	50	100	815	0.2142	7.2	6	3.94	0.68	0.68	103.82	0.34	110.63	3.84
Project 4	P4	32.71	0.01	50	120	687	0.1583	7.1	5	4.24	0.72	0.72	99.86	0.34	105.33	3.29
Project 4	P5	37.46	0.01	50	120	1344	0.1060	7.1	9	3.21	0.66	0.66	79.36	0.34	84.89	3.78
Project 4	P6	34.72	0.01	50	120	701	0.1782	7.0	6	3.83	0.70	0.70	93.08	0.34	98.62	3.39
Project 4	P7	37.23	0.01	50	120	524	0.1088	6.9	5	4.12	0.72	0.72	110.44	0.34	116.46	3.60
Project 4	P8	39.37	0.01	50	120	615	0.0897	6.9	6	3.78	0.70	0.70	104.17	0.34	110.36	3.77
Project 4	P9	37.35	0.01	50	120	1086	0.0462	6.9	10	2.97	0.64	0.64	70.99	0.34	76.33	3.58
Project 4	P10	39.70	0.01	50	120	1230	0.0406	6.8	11	2.80	0.63	0.63	70.03	0.34	75.48	3.70
Project 4	P11	36.59	0.01	50	120	782	0.0358	6.6	9	2.99	0.64	0.64	70.02	0.34	75.29	3.33
Project 4	P12	33.16	0.01	50	120	763	0.0304	6.4	9	2.90	0.64	0.64	61.54	0.34	66.15	2.90
Project 4	P13	38.23	0.01	50	120	879	0.0287	6.3	10	2.71	0.62	0.62	64.23	0.34	69.42	3.23
Project 4	P14	39.76	0.01	50	134	925	0.0255	6.1	17	2.05	0.32	0.33	26.90	0.34	33.77	2.55
Project 4	P15	39.93	0.01	50	134	916	0.0217	5.9	19	1.88	0.29	0.30	22.52	0.34	29.04	2.41
Project 4	P16	36.68	0.01	50	134	884	0.0180	5.6	23	1.63	0.23	0.24	14.35	0.34	19.84	2.03
Project 4	P17	39.67	0.01	50	120	1149	0.0174	5.4	17	1.81	0.51	0.51	36.62	0.34	40.95	2.70
Project 4	P18	34.63	0.01	50	120	1357	0.0142	5.3	20	1.65	0.49	0.49	28.00	0.34	31.53	2.27
Project 4	Q1	39.01	0.01	50	120	1059	0.0102	4.9	20	1.52	0.46	0.46	27.28	0.34	31.09	2.30
Project 4	Q2	36.04	0.01	50	120	1187	0.0105	4.7	23	1.37	0.43	0.43	21.23	0.34	24.52	2.00
Project 4	Q3	39.98	0.01	50	120	1792	0.0102	4.5	30	1.16	0.37	0.38	17.62	0.34	20.88	2.04
Project 4	Q4	30.77	0.01	50	120	1903	0.0088	4.2	30	1.08	0.35	0.36	11.96	0.34	14.33	1.43
Project 4	Q5	27.49	0.01	50	134	1849	0.0084	3.9	30	1.00	0.10	0.11	3.02	0.34	5.71	0.97
Project 4	Q6	30.47	0.01	50	134	1683	0.0075	3.7	30	0.95	0.10	0.11	3.18	0.34	5.98	1.02
Project 4	Q7	32.58	0.01	50	134	1526	0.0073	3.5	30	0.90	0.10	0.11	3.23	0.34	6.02	1.03
Project 4	R1	32.09	0.01	50	100	2577	0.1628	7.2	14	2.65	0.59	0.59	50.17	0.34	54.75	3.19
Project 4	R2	35.87	0.01	50	100	1059	0.1716	7.1	8	3.40	0.65	0.65	79.27	0.34	85.10	3.59
Project 4	R3	39.66	0.01	50	120	963	0.1497	7.0	7	3.57	0.69	0.69	97.69	0.34	103.72	4.00
Project 4	R4	38.16	0.01	50	120	963	0.1024	6.9	8	3.30	0.67	0.67	84.37	0.34	90.02	3.76
Project 4	R5	33.31	0.01	50	120	751	0.0849	6.9	7	3.51	0.68	0.68	79.50	0.34	84.63	3.29
Project 4	R6	37.01	0.01	50	120	757	0.0757	6.8	7	3.46	0.68	0.68	87.08	0.34	92.68	3.58
Project 4	R7	35.37	0.01	50	120	1058	0.0475	6.7	10	2.89	0.64	0.64	65.42	0.34	70.32	3.25
Project 4	R8	37.83	0.01	50	120	1044	0.0386	6.6	11	2.72	0.62	0.62	63.80	0.34	68.95	3.38
Project 4	R9	33.08	0.01	50	134	973	0.0289	6.4	15	2.28	0.36	0.37	27.91	0.34	34.00	2.26
Project 4	R10	25.89	0.01	50	134	829	0.0285	6.1	14	2.24	0.35	0.36	20.88	0.34	25.62	1.68
Project 4	R11	28.59	0.01	50	134	1022	0.0245	5.9	20	1.83	0.28	0.29	15.17	0.34	19.76	1.71
Project 4	S1	37.15	0.01	50	100	1736	0.1383	7.3	11	3.01	0.62	0.62	69.33	0.34	75.02	3.74
Project 4	S2	35.17	0.01	50	100	1178	0.1728	7.1	8	3.40	0.65	0.65	77.73	0.34	83.44	3.52
Project 4	S3	30.64	0.01	50	120	967	0.1624	7.1	7	3.62	0.69	0.69	76.53	0.34	81.27	3.15
Project 4	S4	35.99	0.01	50	120	1010	0.1608	6.9	7	3.51	0.68	0.68	85.90	0.34	91.44	3.55
Project 4	S5	32.25	0.01	50	134	834	0.1161	6.9	9	3.12	0.47	0.47	47.29	0.34	54.48	2.51
Project 4	S6	37.34	0.01	50	134	958	0.0690	6.9	11	2.84	0.44	0.44	46.66	0.34	54.55	2.83
Project 4	S7	33.26	0.01	50	134	789	0.0738	6.8	10	2.93	0.45	0.45	43.85	0.34	51.01	2.50

OFF-SITE HYDROLOGY

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	S8	38.79	0.01	50	134	1109	0.0368	6.6	15	2.35	0.37	0.38	34.64	0.34	41.92	2.75
Project 4	S9	32.99	0.01	50	134	724	0.0279	6.4	12	2.53	0.40	0.41	34.22	0.34	40.64	2.32
Project 4	S10	35.39	0.01	50	134	569	0.0279	6.3	10	2.71	0.42	0.42	40.28	0.34	47.62	2.41
Project 4	S11	38.16	0.01	50	134	693	0.0271	6.1	12	2.41	0.38	0.39	35.87	0.34	43.12	2.52
Project 4	S12	39.34	0.01	50	134	865	0.0265	5.9	17	1.98	0.30	0.31	24.15	0.34	30.87	2.41
Project 4	S13	37.63	0.01	50	134	1077	0.0256	5.8	22	1.72	0.26	0.27	17.48	0.34	23.24	2.19
Project 4	T1	38.70	0.01	50	134	1036	0.0177	5.3	30	1.36	0.15	0.16	8.42	0.34	13.58	1.91
Project 4	T2	39.37	0.01	50	134	1021	0.0203	5.1	30	1.31	0.13	0.14	7.22	0.34	12.36	1.84
Project 4	T3	34.64	0.01	50	120	1063	0.0170	4.9	18	1.60	0.48	0.48	26.60	0.34	30.07	2.07
Project 4	T4	34.97	0.01	50	120	1303	0.0121	4.7	24	1.34	0.42	0.42	19.68	0.34	22.84	1.93
Project 4	T5	38.36	0.01	50	120	1772	0.0105	4.4	30	1.13	0.36	0.37	16.04	0.34	19.11	1.90
Project 4	T6	34.73	0.01	50	120	1920	0.0089	4.1	30	1.05	0.34	0.35	12.76	0.34	15.39	1.56
Project 4	T7	34.08	0.01	50	120	2228	0.0084	3.9	30	1.00	0.32	0.33	11.25	0.34	13.75	1.42
Project 4	T8	39.42	0.01	50	134	2639	0.0078	3.7	30	0.95	0.10	0.11	4.12	0.34	7.74	1.32
Project 4	U1	38.54	0.01	50	100	2361	0.1424	7.1	14	2.61	0.59	0.59	59.35	0.34	64.75	3.76
Project 4	U2	31.64	0.01	50	120	814	0.2145	7.0	6	3.83	0.70	0.70	84.83	0.34	89.87	3.09
Project 4	U3	34.70	0.01	50	120	1053	0.1165	6.9	8	3.30	0.67	0.67	76.72	0.34	81.85	3.42
Project 4	U4	31.48	0.01	50	134	979	0.1062	6.8	11	2.80	0.43	0.43	37.90	0.34	44.56	2.34
Project 4	U5	35.79	0.01	50	134	969	0.1220	6.7	10	2.89	0.44	0.44	45.51	0.34	53.23	2.64
Project 4	U6	39.16	0.01	50	134	962	0.0832	6.7	11	2.76	0.43	0.43	46.48	0.34	54.62	2.86
Project 4	U7	37.63	0.01	50	134	751	0.0563	6.6	10	2.84	0.44	0.44	47.02	0.34	54.97	2.72
Project 4	U8	36.35	0.01	50	134	1300	0.0208	6.5	22	1.93	0.30	0.31	21.75	0.34	27.78	2.48
Project 4	U9	31.01	0.01	50	134	1060	0.0254	6.3	18	2.06	0.32	0.33	21.08	0.34	26.47	2.06
Project 4	U10	31.05	0.01	50	134	787	0.0379	6.1	13	2.32	0.36	0.37	26.65	0.34	32.49	2.04
Project 4	U11	39.07	0.01	50	134	649	0.0406	5.9	12	2.33	0.37	0.38	34.59	0.34	41.85	2.46
Project 4	U12	36.94	0.01	50	134	657	0.0282	5.7	13	2.17	0.34	0.35	28.06	0.34	34.68	2.22
Project 4	U13	38.36	0.01	50	134	762	0.0198	5.5	19	1.75	0.26	0.27	18.13	0.34	24.12	2.11
Project 4	U14	38.56	0.01	50	134	639	0.0197	5.4	16	1.86	0.28	0.29	20.80	0.34	27.10	2.08
Project 4	U15	38.12	0.01	50	134	610	0.0195	5.2	17	1.75	0.26	0.27	18.01	0.34	23.97	1.98
Project 4	U16	38.64	0.01	50	134	605	0.0185	5.0	22	1.49	0.19	0.20	11.51	0.34	16.99	1.84
Project 4	U17	39.37	0.01	50	120	626	0.0198	4.8	12	1.90	0.53	0.53	39.65	0.34	44.01	2.33
Project 4	U18	36.96	0.01	50	120	671	0.0183	4.7	13	1.79	0.51	0.51	33.74	0.34	37.72	2.12
Project 4	U19	28.08	0.01	50	120	663	0.0124	4.5	15	1.60	0.48	0.48	21.57	0.34	24.38	1.49
Project 4	U20	27.81	0.01	50	120	815	0.0103	4.4	19	1.40	0.43	0.43	16.74	0.34	19.35	1.43
Project 4	U21	32.76	0.01	50	120	1153	0.0091	4.3	27	1.16	0.37	0.38	14.44	0.34	17.11	1.60
Project 4	U22	39.59	0.01	50	120	1513	0.0084	4.1	30	1.05	0.34	0.35	14.55	0.34	17.54	1.78
Project 4	U23	34.66	0.01	50	120	1493	0.0087	3.9	30	1.00	0.32	0.33	11.44	0.34	13.98	1.44
Project 4	U24	22.26	0.01	50	134	1580	0.0081	3.7	30	0.95	0.10	0.11	2.33	0.34	4.37	0.75
Project 4	V1	38.16	0.01	50	100	2701	0.0408	7.3	19	2.33	0.56	0.56	49.79	0.34	54.82	3.83
Project 4	V2	39.48	0.01	50	100	1998	0.0754	7.1	14	2.61	0.59	0.59	60.80	0.34	66.33	3.85
Project 4	V3	37.65	0.01	50	120	2921	0.1486	7.0	15	2.49	0.60	0.60	56.25	0.34	61.12	3.65
Project 4	V4	39.78	0.01	50	134	1430	0.1214	6.7	14	2.46	0.39	0.40	39.14	0.34	46.76	2.91
Project 4	V5	37.86	0.01	50	120	999	0.0990	6.7	8	3.21	0.66	0.66	80.21	0.34	85.80	3.58
Project 4	V6	37.87	0.01	50	120	1036	0.0397	6.6	10	2.84	0.63	0.63	67.76	0.34	73.04	3.41
Project 4	V7	36.34	0.01	50	120	982	0.0369	6.4	10	2.76	0.62	0.62	62.19	0.34	67.22	3.13
Project 4	V8	39.43	0.01	50	120	1263	0.0341	6.1	13	2.32	0.58	0.58	53.06	0.34	57.99	3.21
Project 4	V9	31.35	0.01	50	134	1105	0.0345	5.9	20	1.83	0.28	0.29	16.64	0.34	21.66	1.87
Project 4	V10	35.86	0.01	50	134	1264	0.0244	5.5	30	1.41	0.16	0.17	8.60	0.34	13.53	1.85
Project 4	V11	36.13	0.01	50	134	1337	0.0188	5.3	30	1.36	0.15	0.16	7.86	0.34	12.68	1.78
Project 4	V12	37.62	0.01	50	134	1443	0.0183	4.9	30	1.26	0.12	0.13	6.16	0.34	10.91	1.68
Project 4	V13	36.27	0.01	50	134	1239	0.0160	4.5	30	1.16	0.10	0.11	4.63	0.34	8.87	1.48
Project 4	V14	38.50	0.01	50	120	1348	0.0128	4.3	29	1.12	0.36	0.37	15.95	0.34	19.00	1.86
Project 4	V15	36.79	0.01	50	120	1557	0.0093	4.1	30	1.05	0.34	0.35	13.52	0.34	16.30	1.65
Project 4	V16	39.54	0.01	50	120	2190	0.0089	3.9	30	1.00	0.32	0.33	13.05	0.34	15.95	1.65
Project 4	W1	36.18	0.01	50	100	603	0.0300	7.2	7	3.67	0.66	0.66	87.64	0.34	93.87	3.71
Project 4	W2	35.88	0.01	50	100	2847	0.1033	7.1	17	2.38	0.56	0.56	47.82	0.34	52.67	3.50
Project 4	W3	31.27	0.01	50	120	1839	0.1342	6.9	12	2.73	0.62	0.62	52.93	0.34	57.21	3.04
Project 4	W4	29.31	0.01	50	134	1588	0.0757	6.7	17	2.25	0.35	0.36	23.74	0.34	29.14	2.12
Project 4	W5	27.28	0.01	50	120	1064	0.0696	6.5	10	2.80	0.63	0.63	48.12	0.34	51.86	2.40
Project 4	W6	27.58	0.01	50	120	819	0.0772	6.3	8	3.01	0.64	0.64	53.13	0.34	57.13	2.40
Project 4	W7	35.38	0.01	50	120	1120	0.0623	6.3	11	2.59	0.61	0.61	55.90	0.34	60.57	2.97
Project 4	W8	39.04	0.01	50	120	1006	0.0437	6.1	11	2.51	0.61	0.61	59.77	0.34	64.75	3.13
Project 4	W9	36.08	0.01	50	134	879	0.0428	5.9	15	2.10	0.33	0.34	25.76	0.34	32.08	2.21
Project 4	W10	38.73	0.01	50	134	1000	0.0364	5.7	19	1.82	0.28	0.29	20.44	0.34	26.61	2.23
Project 4	W11	38.92	0.01	50	134	1091	0.0288	5.5	30	1.41	0.16	0.17	9.33	0.34	14.69	2.01
Project 4	W12	33.71	0.01	50	134	987	0.0180	5.2	30	1.34	0.14	0.15	6.78	0.34	11.25	1.62
Project 4	W13	38.35	0.01	50	134	1115	0.0172	5.0	30	1.29	0.13	0.14	6.93	0.34	11.84	1.75
Project 4	W14	36.98	0.01	50	134	1171	0.0160	4.7	30	1.21	0.10	0.11	4.92	0.34	9.47	1.57
Project 4	W15	38.82	0.01	50	134	1218	0.0166	4.5	30	1.16	0.10	0.11	4.95	0.34	9.49	1.58
Project 4	W16	36.93	0.01	50	134	1011	0.0141	4.3	30	1.11	0.10	0.11	4.51	0.34	8.60	1.44
Project 4	W17	39.52	0.01	50	120	1275	0.0106	4.1	30	1.05	0.34	0.35	14.52	0.34	17.51	1.77
Project 4	W18	37.94	0.01	50	120	890	0.0096	3.9	25	1.09	0.35	0.36	14.89	0.34	17.84	1.61
Project 4	X1	37.91	0.01	50	100	1722	0.1279	7.1	11	2.92	0.61	0.61	67.53	0.34	73.28	3.67
Project 4	X2	38.21	0.01	50	120	1012	0.1517	6.9	7	3.51	0.68	0.68	91.20	0.34	97.08	3.77
Project 4	X3	39.02	0.01	50	120	924	0.1347	6.9	7	3.51	0.68	0.68	93.13	0.34	99.14	3.85
Project 4	X4	36.08	0.01	50	120	913	0.1370	6.9	7	3.51	0.68	0.68	86.12	0.34	91.67	3.56
Project 4	X5	35.00	0.01	50	134	872	0.1052	6.7	10	2.89	0.44	0.44	44.51	0.34	52.05	2.58
Project 4	X6	37.32	0.01	50	120	1762	0.0384	6.6	15	2.35	0.59	0.59	51.74	0.34	56.37	3.34
Project 4	X7	32.37	0.01	50	120	1475	0.0490	6.3	13	2.40	0.59	0.59	45.84	0.34	49.95	2.76
Project 4	X8	38.01	0.01	50	120	1512	0.0478	6.1	14	2.24	0.57	0.57	48.53	0.34	53.21	3.06
Project 4	X9	33.34	0.01	50	134	1127	0.0434	6.0	18	1.96	0.30	0.31	20.26	0.34	25.89	2.08
Project 4	X10	38.82	0.01	50	134	983	0.0409	5.8	17	1.95	0.30	0.31	23.47	0.34	29.99	2.34
Project 4	X11	38.26	0.01	50	134	1014	0.0405	5.5	21	1.67	0.24	0.25	15.97	0.34	21.79	2.06
Project 4	X12	37.30	0.01	50	134	1024	0.0324	5.3	30	1.36	0.15	0.16	8.12	0.34	13.09	1.84
Project 4	X13	30.59	0.01	50	134	897	0.0191	4.9	30	1.26	0.12	0.13	5.01	0.34	8.87	1.37
Project 4	X14	39.44	0.01	50	134	1126	0.0164	4.7	30	1.21	0.10	0.11	5.25	0.34	10.10	1.68
Project 4	X15	35.29	0.01	50	134	1193	0.0155	4.5	30	1.16	0.10	0.11	4.50	0.34	8.63	1.44
Project 4	X16	31.14	0.01	50	134	1280	0.0133	4.3	30	1.11	0.10	0.11	3.80	0.34	7.25	1.21
Project 4	X17	22.19	0.01	50	134	906	0.0163	4.0	30	1.03	0.10	0.11	2.51	0.34	4.76	0.80
Project 4	X18	37.26	0.01	50	120	1255	0.0111	3.9	30	1.00	0.32	0.33	12.30	0.34	15.03	1.55
Project 4	X19	39.19	0.01	50	120	223	0.0080	3.7	9	1.67	0.49	0.49	32.07	0.34	36.12	1.65
Project 4	Y1	36.50	0.01	50	100	2414	0.1078	7.1	15	2.53	0.58	0.58	53.56	0.34	58.61	3.52
Project 4	Y2	37.67	0.01	50	100	2217	0.0734	7.0	15	2.49	0.58	0.58	54.40	0.34	59.52	3.58
Project 4	Y3	37.93	0.01	50	120	1673	0.1114	6.9	11	2.84	0.63	0.63	67.86	0.34	73.15	3.61
Project 4	Y4	38.51	0.01	50	120	1651	0.0945	6.7	12	2.65	0.62	0.62	63.27	0.34	68.36	3.59
Project 4	Y5	39.77	0.01	50	120	1868	0.0479	6.4	16	2.21	0.57	0.57	50.10	0.34	54.91	3.39
Project 4	Y6	35.40	0.01	50	134	1673	0.0431	6.1	28	1.62	0.23	0.24	13.76	0.34	19.02	2.14
Project 4	Y7	25.29	0.01	50	134	1195	0.0396	5.9	21	1.79	0.27	0.28	12.68	0.34	16.68	1.50
Project 4	Y8	25.86	0.01	50	134	1207	0.0361	5.7	25	1.60	0.22	0.23	9.52	0.34	13.35	1.44
Project 4	Y9	23.44	0.01	50	134	927	0.0390	5.4	21	1.64	0.23	0.24	9.23	0.34	12.76	1.23
Project 4	Y10	28.25	0.01	50	134	922	0.0375	5.2	26	1.43	0.17	0.18	7.27	0.34	11.18	1.38
Project 4	Y11	21.96	0.01	50	134	725	0.0258	4.9	30	1.26	0.12	0.13	3.60	0.34	6.37	0.98
Project 4	Y12	29.08	0.01	50	134	992	0.0179	4.7	30	1.21	0.10	0.11	3.87	0.34	7.44	1.24
Project 4	Y13	39.18	0.01	50	134	2017	0.0174	4.5	30	1.16	0.10	0.11	5.00	0.34	9.58	1.60
Project 4	Z1	35.69	0.01	50	134	2395	0.0988	7.0	22	2.08	0.32	0.33	24.50	0.34	30.77	2.68
Project 4	Z2	37.32	0.01	50	120	1900	0.0986	6.8	12	2.69	0.62	0.62	62.24	0.34	67.26	3.54
Project 4	Z3	36.64	0.01	50	120	1786	0.0632	6.5	14	2.39	0.59	0.59	51.67	0.34	56.30	3.23
Project 4	Z4	38.90	0.01	50	120	2341	0.0479	6.3	19	2.01	0.55	0.55	43.00	0.34	47.41	3.25
Project 4	Z5	38.20	0.01	50	134	2182	0.0385	5.8	30	1.49	0.19	0.20	11.38	0.34	16.80	2.12
Project 4	Z6	39.14	0.01	50	134	1824	0.0388	5.5	30	1.41	0.16	0.17	9.38	0.34	14.77	2.02
Project 4	Z7	39.23	0.01	50	134	1734	0.0271	5.2	30	1.34	0.14	0.15	7.89	0.34	13.09	1.89
Project 4	Z8	39.50	0.01	50	134	2862	0.0169	4.7	30	1.21	0.10	0.11	5.26	0.34	10.11	1.68
Project 4	ZZ1	30.99	0.01	50	134	1558	0.0146	4.0	30	1.03	0.10	0.11	3.51	0.34	6.65	1.12
Project 4	ZZ2	36.09	0.01	50	134	1233	0.0104	3.8	30	0.98	0.10	0.11	3.89	0.34	7.33	1.24
Project 4	ZZ3	38.30	0.01	50	134	1104	0.0085	3.8	30	0.98	0.10	0.11	4.13	0.34	7.78	1.32
Project 4	ZZ4	19.88	0.01	50	134	592	0.0084	3.7	30	0.95	0.10	0.11	2.08	0.34	3.90	0.67

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:______________RCE NO:__________DATE__________
CHECKED BY:______________DATE__________
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) H-3

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PLOT/UPDATE: Sep 9, 2013 12:12:21 PM

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER
JOSEPH E. DIETZ
No. 67032
EXP: 9-30-14
CIVIL
STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

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IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System
APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks
Project Address:
90th St. W & W Ave. J
Los Angeles County, CA
SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100076
OFF-SITE DRAINAGE MAP

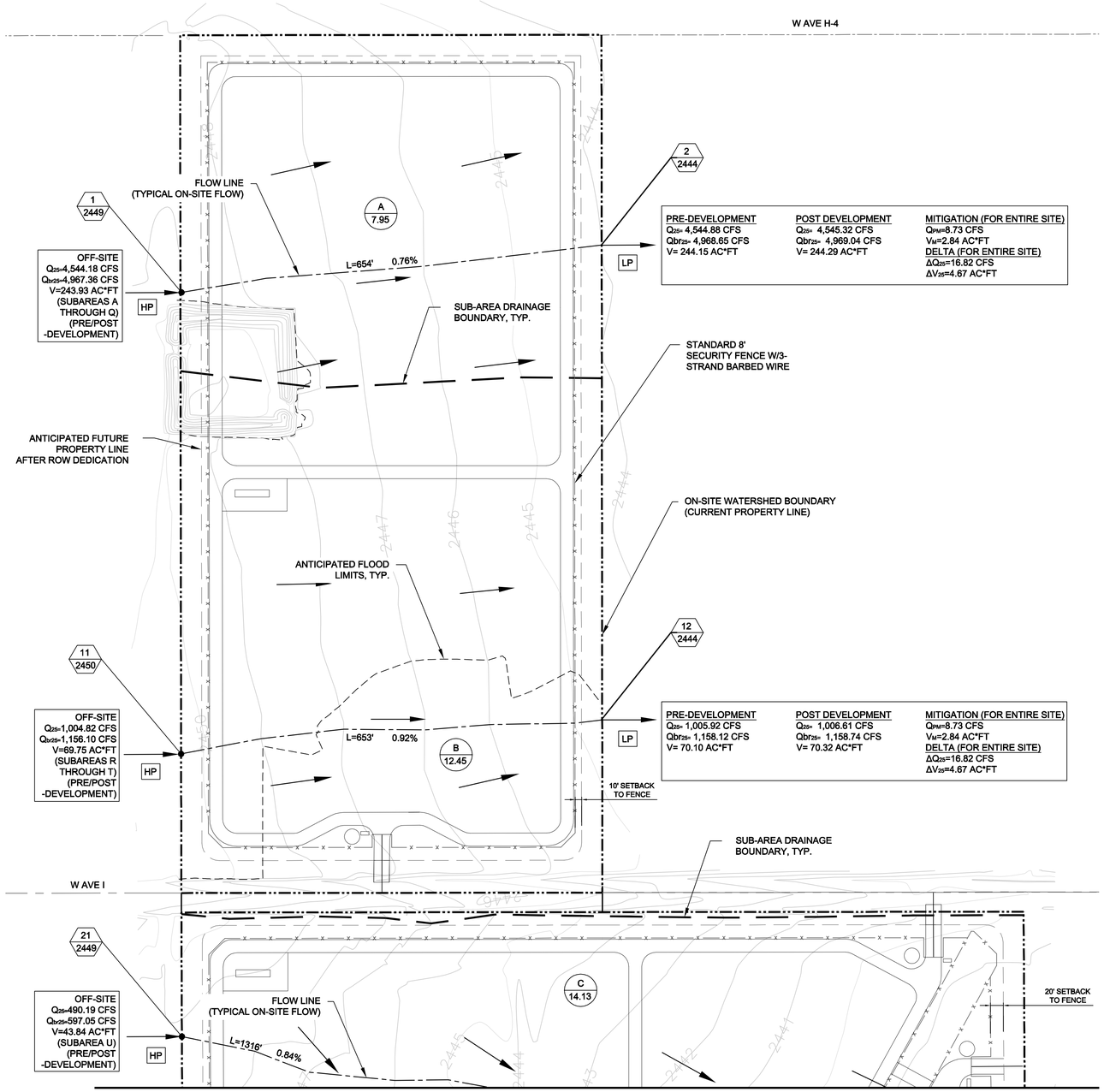
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

ON-SITE DRAINAGE MAP



MATCHLINE: SEE SHEET C-06

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{bf25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = 112,283 CY

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
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11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 0.7%, AND THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 3.5%. SIMILAR INCREASES ARE ANTICIPATED FOR THE DEPTHS AND VELOCITIES DUE TO THE SMALL INCREASE IN PEAK FLOW RATES (<1%). THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. THE POST-DEVELOPMENT DOES NOT INCLUDE THE MITIGATION EFFECTS OF THE BASINS. SEE IMPACT ANALYSIS CALCULATIONS.

0 50 100 200
SCALE: 1"=100'

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY: _____ RCE NO: _____ DATE _____
CHECKED BY: _____ DATE _____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) C-05

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System
APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks
Project Address:
90th St. W & W Ave. J
Los Angeles County, CA
SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100076 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power
PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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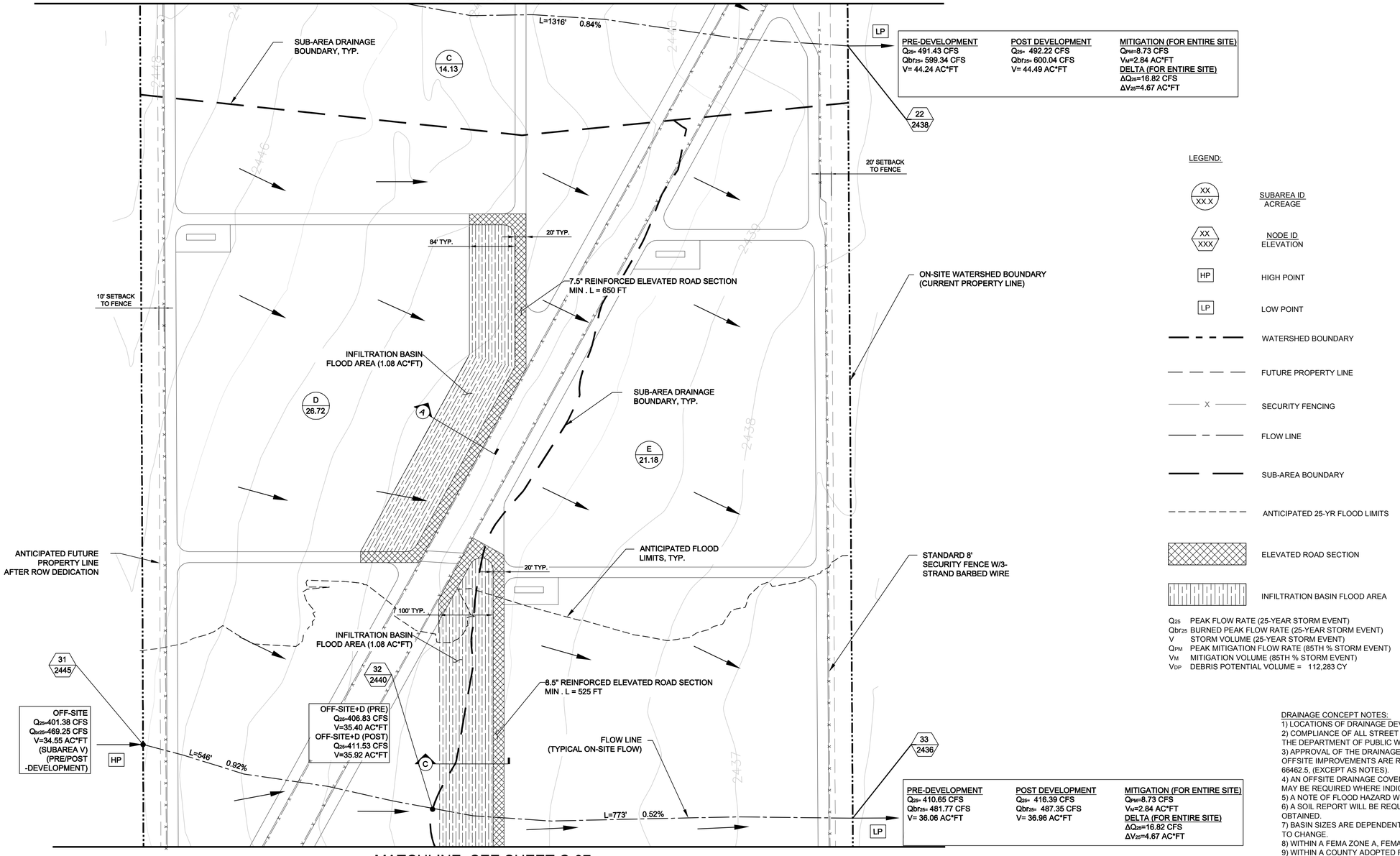
PLOT APPLIED: Dec 12, 2013 - 10:44:48 AM

MATCHLINE: SEE SHEET C-05



MATCHLINE: SEE SHEET C-07

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
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- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

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Q_{br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = 112,283 CY

DRAINAGE CONCEPT NOTES:
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0 50 100 200
SCALE: 1"=100'

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) C-06

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System

APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100076
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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MATCHLINE: SEE SHEET C-06

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 398.84 CFS	Q_{25}= 400.59 CFS	Q_{PM}=8.73 CFS
Q_{br25}= 475.26 CFS	Q_{br25}= 476.80 CFS	V_M=2.84 AC*FT
V= 35.42 AC*FT	V= 36.06 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=16.82 CFS
		ΔV_{25}=4.67 AC*FT

8.5" REINFORCED ELEVATED ROAD SECTION MIN . L = 525 FT

INFILTRATION BASIN FLOOD AREA (1.08 AC*FT)

100' TYP.

20' TYP.

C

D 26.72

E 21.18

F 35.55

G 30.77

SUB-AREA DRAINAGE BOUNDARY, TYP.

SUBSTATION AREA

ANTICIPATED FLOOD LIMITS, TYP.

FLOW LINE (TYPICAL ON-SITE FLOW)

L=2651' 0.75%

L=1797' 0.72%

42 2428

LP

41 2448

OFF-SITE
Q_{25}=392.43 CFS
Q_{br25}=466.46 CFS
V=34.31 AC*FT
(SUBAREA W)
(PRE/POST
-DEVELOPMENT)

HP

10' SETBACK TO FENCE

OFF-SITE
Q_{25}=471.20 CFS
Q_{br25}=551.31 CFS
V=37.28 AC*FT
(SUBAREA X)
(PRE/POST
-DEVELOPMENT)

HP

51 2438

ANTICIPATED FUTURE PROPERTY LINE AFTER ROW DEDICATION

STANDARD 8' SECURITY FENCE W/3-STRAND BARBED WIRE

ON-SITE WATERSHED BOUNDARY (CURRENT PROPERTY LINE)

95TH STREET WEST

MATCHLINE: SEE SHEET C-08

LEGEND:

XX / XX.X	SUBAREA ID / ACREAGE
XX / XXX	NODE ID / ELEVATION
HP	HIGH POINT
LP	LOW POINT
	WATERSHED BOUNDARY
	FUTURE PROPERTY LINE
X	SECURITY FENCING
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	ANTICIPATED 25-YR FLOOD LIMITS
	ELEVATED ROAD SECTION
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V_{DP} DEBRIS POTENTIAL VOLUME = 112,283 CY

0 50 100 200
SCALE: 1"=100'

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APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) C-07

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

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FOR CUP 201100076
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SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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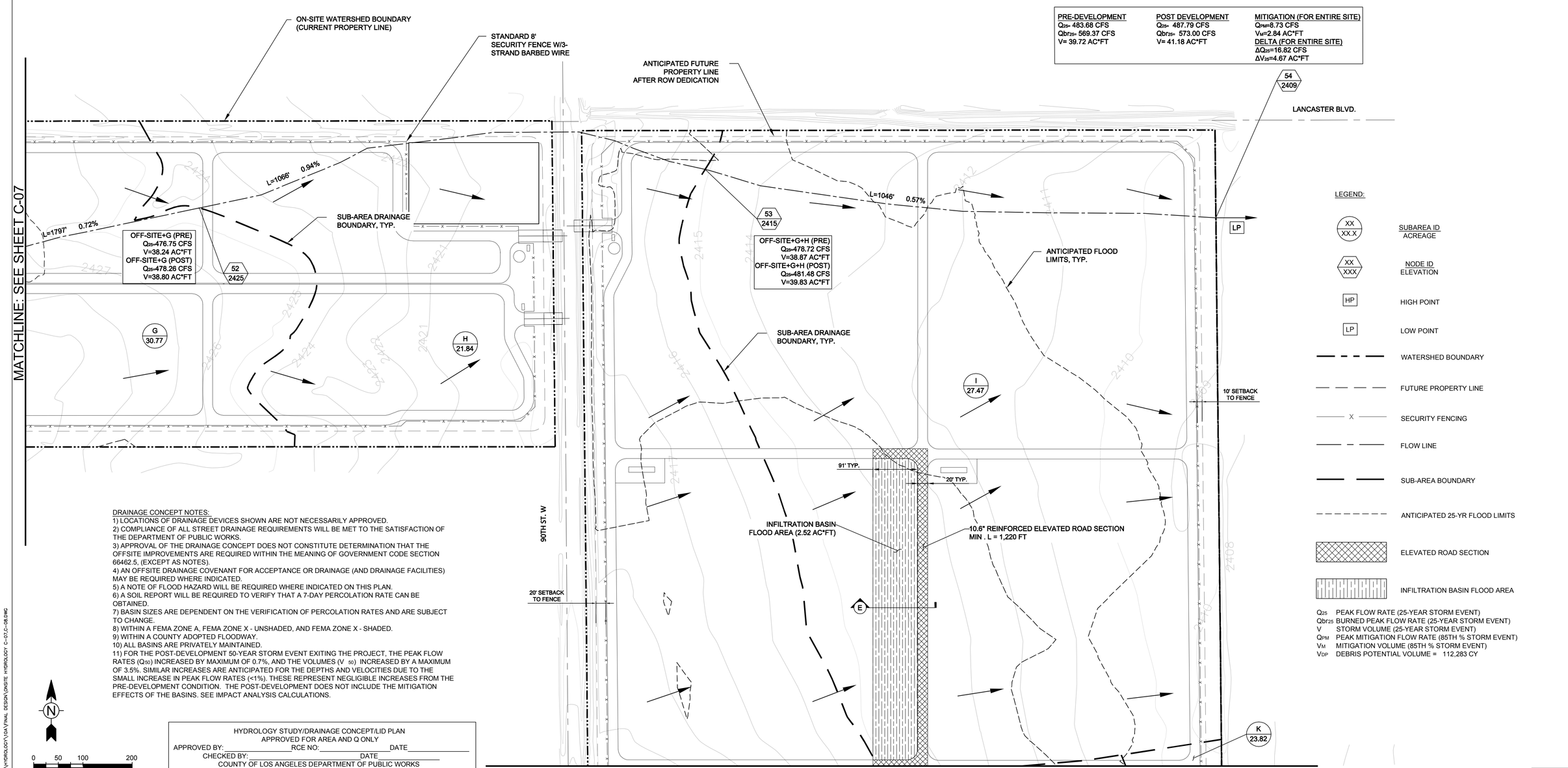

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 483.68 CFS	Q_{25}= 487.79 CFS	Q_{PM}=8.73 CFS
Qbr_{25}= 569.37 CFS	Qbr_{25}= 573.00 CFS	V_M=2.84 AC*FT
V= 39.72 AC*FT	V= 41.18 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=16.82 CFS
		ΔV_{25}=4.67 AC*FT

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Qbr_{25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = 112,283 CY

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) WITHIN A FEMA ZONE A, FEMA ZONE X - UNSHADED, AND FEMA ZONE X - SHADED.
9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 0.7%, AND THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 3.5%. SIMILAR INCREASES ARE ANTICIPATED FOR THE DEPTHS AND VELOCITIES DUE TO THE SMALL INCREASE IN PEAK FLOW RATES (<1%). THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. THE POST-DEVELOPMENT DOES NOT INCLUDE THE MITIGATION EFFECTS OF THE BASINS. SEE IMPACT ANALYSIS CALCULATIONS.

N

0 50 100 200
SCALE: 1"=100'

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY: _____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System
APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks
Project Address:
90th St. W & W Ave. J
Los Angeles County, CA
SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100076 - ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

R2011-00807 (RCUP201100076) C-08

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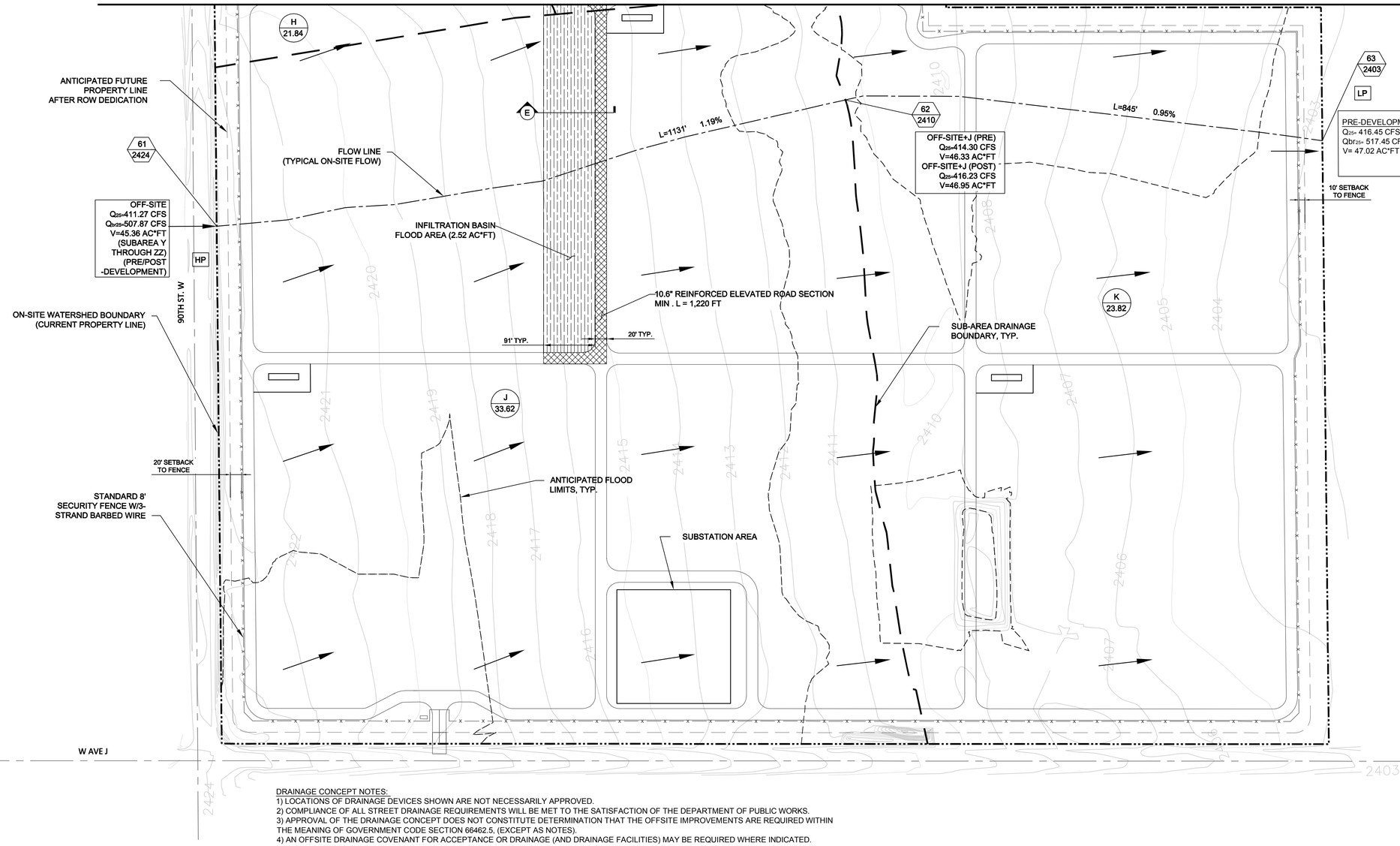
Plotted: Dec 6, 2013 - 1:24:54 PM

MATCHLINE: SEE SHEET C-08



PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 416.45 CFS	Q_{25}= 419.75 CFS	Q_{PM}=8.73 CFS
Qbr_{25}= 517.45 CFS	Qbr_{25}= 520.36 CFS	V_M=2.84 AC*FT
V= 47.02 AC*FT	V= 48.08 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=16.82 CFS
		ΔV_{25}=4.67 AC*FT

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
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- FUTURE PROPERTY LINE
- X — SECURITY FENCING
- FLOW LINE
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- ANTICIPATED 25-YR FLOOD LIMITS
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- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Qbr_{25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = 112,283 CY

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N
0 50 100 200
SCALE: 1"=100'

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) C-09

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

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TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System

APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100076 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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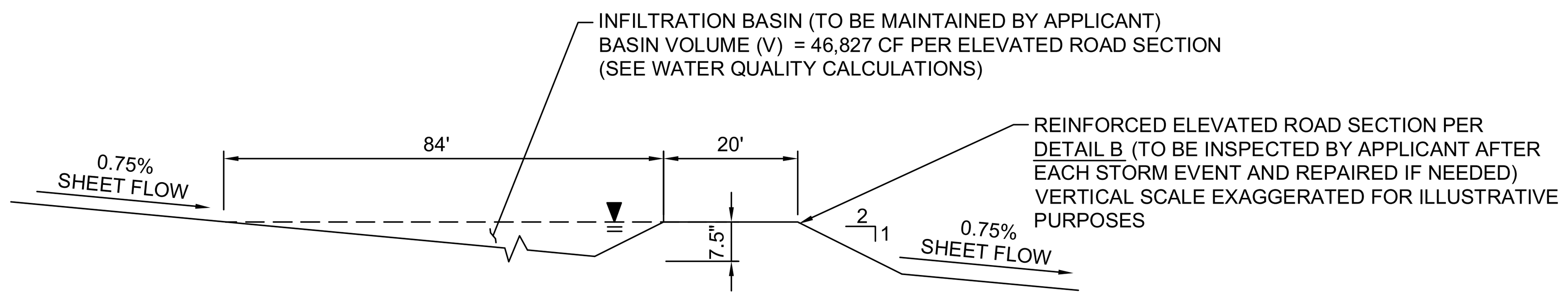
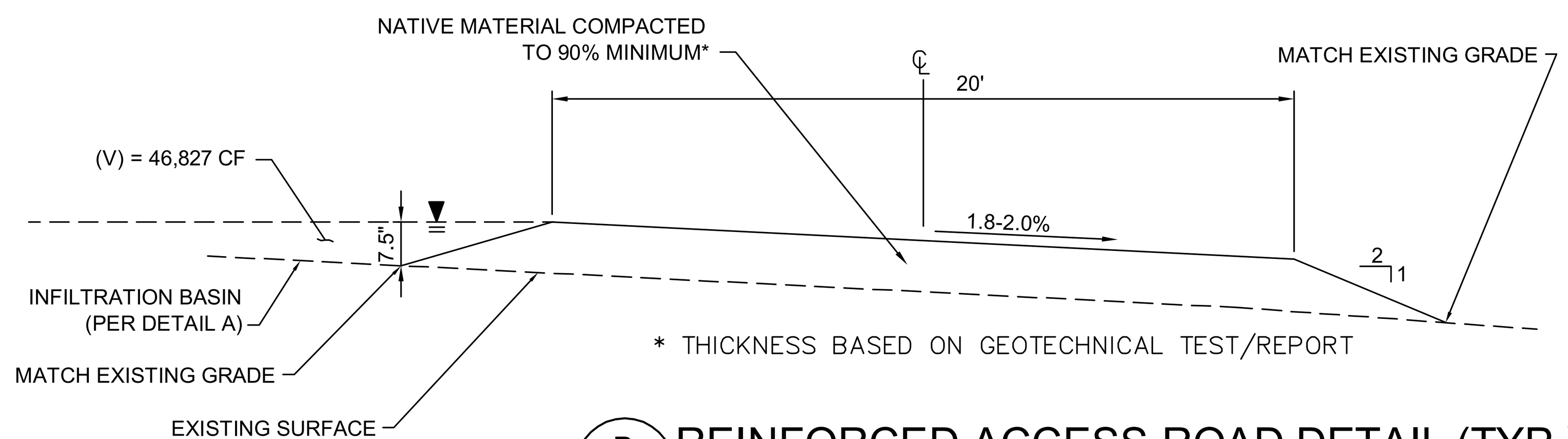


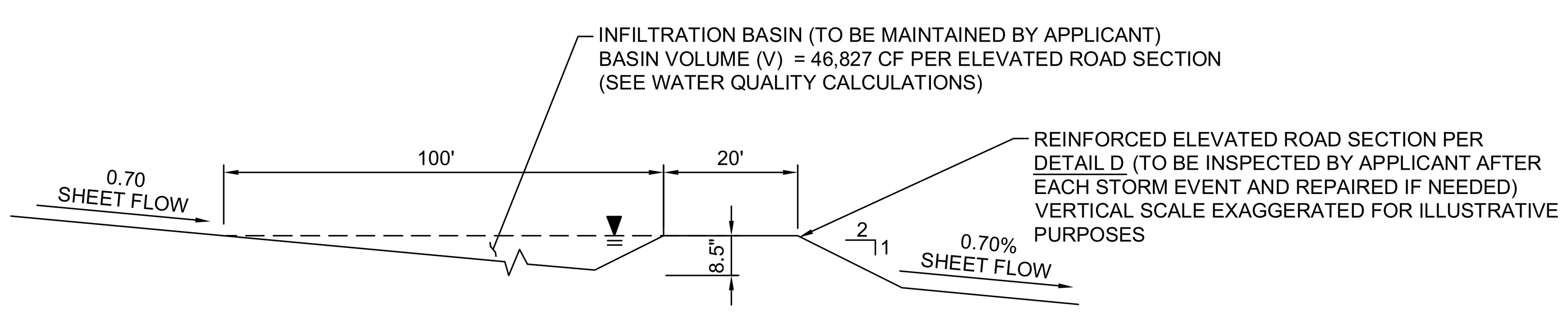
A INFILTRATION BASIN DETAIL

SCALE: NTS



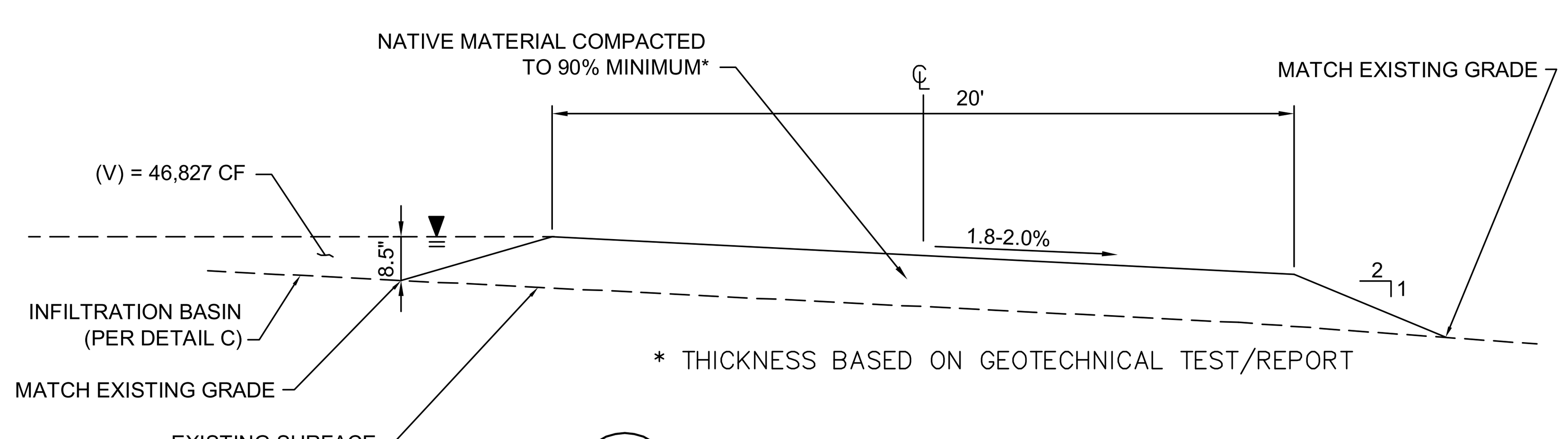
B REINFORCED ACCESS ROAD DETAIL (TYP.)

SCALE: NTS



C INFILTRATION BASIN DETAIL

SCALE: NTS



D REINFORCED ACCESS ROAD DETAIL (TYP.)

SCALE: NTS

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	A	7.95	0.01	25	134	654	0.0076	3.1	30	0.80	0.10	0.11	0.70	0.34	1.29	0.22
Project 4	B	12.45	0.01	25	134	653	0.0092	3.1	30	0.80	0.10	0.11	1.10	0.34	2.02	0.35
Project 4	C	14.13	0.01	25	134	1316	0.0084	3.1	30	0.80	0.10	0.11	1.24	0.34	2.29	0.40
Project 4	D	26.72	0.01	25	120	546	0.0092	3.2	28	0.85	0.23	0.24	5.45	0.34	7.28	0.85
Project 4	E	21.18	0.01	25	120	773	0.0052	3.2	30	0.82	0.21	0.22	3.82	0.34	5.24	0.66
Project 4	F	35.55	0.01	25	120	2651	0.0075	3.2	30	0.82	0.21	0.22	6.41	0.34	8.80	1.11
Project 4	G	30.77	0.01	25	120	1797	0.0072	3.2	30	0.82	0.21	0.22	5.55	0.34	7.62	0.96
Project 4	H	21.84	0.01	25	134	1066	0.0094	3.2	30	0.82	0.10	0.11	1.97	0.34	3.64	0.63
Project 4	I	27.47	0.01	25	120	1046	0.0057	3.2	30	0.82	0.21	0.22	4.96	0.34	6.80	0.85
Project 4	J	33.62	0.01	25	134	1131	0.0119	3.2	30	0.82	0.10	0.11	3.03	0.34	5.61	0.97
Project 4	K	23.82	0.01	25	134	845	0.0095	3.2	30	0.82	0.10	0.11	2.15	0.34	3.97	0.69
Project 4	A	7.95	0.01	50	134	654	0.0076	3.5	30	0.91	0.10	0.11	0.80	0.34	1.49	0.25
Project 4	B	12.45	0.01	50	134	653	0.0092	3.5	30	0.91	0.10	0.11	1.25	0.34	2.33	0.40
Project 4	C	14.13	0.01	50	134	1316	0.0084	3.5	30	0.91	0.10	0.11	1.41	0.34	2.64	0.45
Project 4	D	26.72	0.01	50	120	546	0.0092	3.6	18	1.19	0.38	0.39	12.40	0.34	14.61	1.08
Project 4	E	21.18	0.01	50	120	773	0.0052	3.6	30	0.94	0.29	0.30	5.97	0.34	7.48	0.79
Project 4	F	35.55	0.01	50	120	2651	0.0075	3.6	30	0.94	0.29	0.30	10.03	0.34	12.56	1.33
Project 4	G	30.77	0.01	50	120	1797	0.0072	3.6	30	0.94	0.29	0.30	8.68	0.34	10.87	1.15
Project 4	H	21.84	0.01	50	134	1066	0.0094	3.6	30	0.94	0.10	0.11	2.26	0.34	4.24	0.72
Project 4	I	27.47	0.01	50	120	1046	0.0057	3.6	30	0.94	0.29	0.30	7.75	0.34	9.70	1.03
Project 4	J	33.62	0.01	50	134	1131	0.0119	3.6	30	0.94	0.10	0.11	3.48	0.34	6.52	1.11
Project 4	K	23.82	0.01	50	134	845	0.0095	3.6	30	0.94	0.10	0.11	2.46	0.34	4.62	0.79

ON-SITE HYDROLOGY (POST-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	A	7.95	0.1	25	134	654	0.0076	3.1	30	0.80	0.10	0.18	1.14	0.34	1.68	0.36
Project 4	B	12.45	0.1	25	134	653	0.0092	3.1	30	0.80	0.10	0.18	1.79	0.34	2.64	0.57
Project 4	C	14.13	0.1	25	134	1316	0.0084	3.1	30	0.80	0.10	0.18	2.03	0.34	2.99	0.65
Project 4	D	26.72	0.1	25	120	546	0.0092	3.2	20	1.00	0.32	0.38	10.15	0.34	11.94	1.37
Project 4	E	21.18	0.1	25	120	773	0.0052	3.2	30	0.82	0.21	0.28	4.86	0.34	6.16	1.04
Project 4	F	35.55	0.1	25	120	2651	0.0075	3.2	30	0.82	0.21	0.28	8.16	0.34	10.34	1.75
Project 4	G	30.77	0.1	25	120	1797	0.0072	3.2	30	0.82	0.21	0.28	7.06	0.34	8.95	1.52
Project 4	H	21.84	0.1	25	134	1066	0.0094	3.2	30	0.82	0.10	0.18	3.22	0.34	4.75	1.03
Project 4	I	27.47	0.1	25	120	1046	0.0057	3.2	30	0.82	0.21	0.28	6.31	0.34	7.99	1.35
Project 4	J	33.62	0.1	25	134	1131	0.0119	3.2	30	0.82	0.10	0.18	4.96	0.34	7.31	1.59
Project 4	K	23.82	0.1	25	134	845	0.0095	3.2	30	0.82	0.10	0.18	3.52	0.34	5.18	1.13
Project 4	A	7.95	0.1	50	134	654	0.0076	3.5	30	0.91	0.10	0.18	1.30	0.34	1.93	0.42
Project 4	B	12.45	0.1	50	134	653	0.0092	3.5	30	0.91	0.10	0.18	2.04	0.34	3.03	0.65
Project 4	C	14.13	0.1	50	134	1316	0.0084	3.5	30	0.91	0.10	0.18	2.31	0.34	3.44	0.74
Project 4	D	26.72	0.1	50	120	546	0.0092	3.6	17	1.22	0.38	0.43	14.02	0.34	16.11	1.62
Project 4	E	21.18	0.1	50	120	773	0.0052	3.6	25	1.02	0.33	0.39	8.43	0.34	9.85	1.26
Project 4	F	35.55	0.1	50	120	2651	0.0075	3.6	30	0.94	0.29	0.35	11.70	0.34	14.01	2.06
Project 4	G	30.77	0.1	50	120	1797	0.0072	3.6	30	0.94	0.29	0.35	10.12	0.34	12.13	1.79
Project 4	H	21.84	0.1	50	134	1066	0.0094	3.6	30	0.94	0.10	0.18	3.70	0.34	5.50	1.18
Project 4	I	27.47	0.1	50	120	1046	0.0057	3.6	30	0.94	0.29	0.35	9.04	0.34	10.83	1.59
Project 4	J	33.62	0.1	50	134	1131	0.0119	3.6	30	0.94	0.10	0.18	5.69	0.34	8.46	1.81
Project 4	K	23.82	0.1	50	134	845	0.0095	3.6	30	0.94	0.10	0.18	4.03	0.34	6.00	1.29
Project 4	A	7.95	0.1	MIT.	134	654	0.0076	0.75	30	0.19	0.10	0.18	0.27	0.34	0.35	0.09
Project 4	B	12.45	0.1	MIT.	134	653	0.0092	0.75	30	0.19	0.10	0.18	0.43	0.34	0.55	0.14
Project 4	C	14.13	0.1	MIT.	134	1316	0.0084	0.75	30	0.19	0.10	0.18	0.48	0.34	0.63	0.16
Project 4	D	26.72	0.1	MIT.	120	546	0.0092	0.75	30	0.19	0.10	0.18	0.91	0.34	1.19	0.30
Project 4	E	21.18	0.1	MIT.	120	773	0.0052	0.75	30	0.19	0.10	0.18	0.72	0.34	0.94	0.24
Project 4	F	35.55	0.1	MIT.	120	2651	0.0075	0.75	30	0.19	0.10	0.18	1.22	0.34	1.58	0.39
Project 4	G	30.77	0.1	MIT.	120	1797	0.0072	0.75	30	0.19	0.10	0.18	1.05	0.34	1.37	0.34
Project 4	H	21.84	0.1	MIT.	134	1066	0.0094	0.75	30	0.19	0.10	0.18	0.75	0.34	0.97	0.24
Project 4	I	27.47	0.1	MIT.	120	1046	0.0057	0.75	30	0.19	0.10	0.18	0.94	0.34	1.22	0.31
Project 4	J	33.62	0.1	MIT.	134	1131	0.0119	0.75	30	0.19	0.10	0.18	1.15	0.34	1.50	0.37
Project 4	K	23.82	0.1	MIT.	134	845	0.0095	0.75	30	0.19	0.10	0.18	0.81	0.34	1.06	0.26

NOTE: FOR INFILTRATION BASIN MITIGATION VOLUME, SUM MIT. FREQUENCY VOLUMES UNDER POST-DEVELOPMENT TABLE. V_{PM}=2.84 AC*FT.

DELTA QUANTITIES FOR DRAINAGE AREA A:
ΔQ25 = 1.14 - 0.70 = 0.44 CFS
ΔV25 = 0.36 - 0.22 = 0.14 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA B:
ΔQ25 = 1.79 - 1.10 = 0.69 CFS
ΔV25 = 0.57 - 0.35 = 0.22 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA C
ΔQ25 = 2.03 - 1.24 = 0.79 CFS
ΔV25 = 0.65 - 0.40 = 0.25 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA D
ΔQ25 = 10.15 - 5.45 = 4.70 CFS
ΔV25 = 1.37 - 0.85 = 0.52 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA E
ΔQ25 = 4.86 - 3.82 = 1.04 CFS
ΔV25 = 1.04 - 0.66 = 0.38 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA F
ΔQ25 = 8.16 - 6.41 = 1.75 CFS
ΔV25 = 1.75 - 1.11 = 0.64 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA G
ΔQ25 = 7.06 - 5.55 = 1.51 CFS
ΔV25 = 1.52 - 0.96 = 0.56 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA H
ΔQ25 = 3.22 - 1.97 = 1.25 CFS
ΔV25 = 1.03 - 0.63 = 0.40 AC*FT

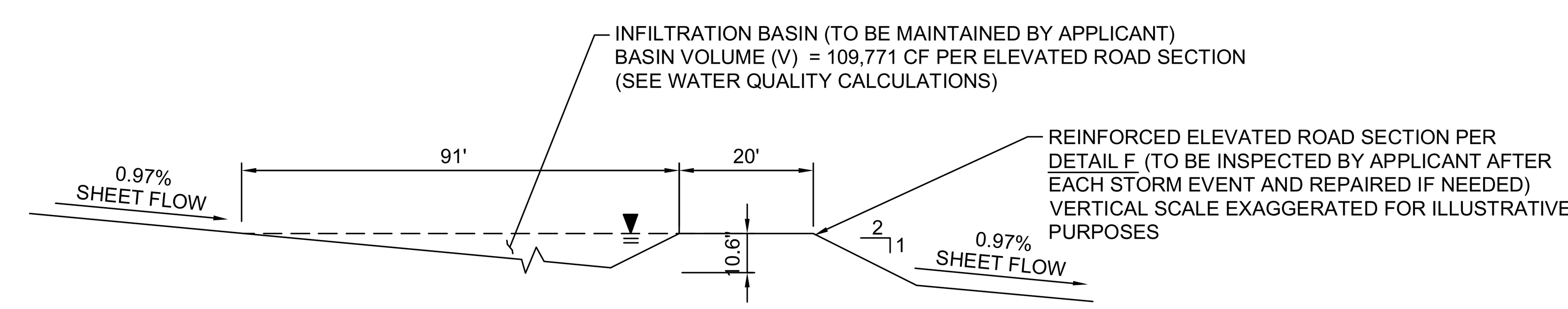
DELTA QUANTITIES FOR DRAINAGE AREA I
ΔQ25 = 6.31 - 4.96 = 1.35 CFS
ΔV25 = 1.35 - 0.85 = 0.50 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA J
ΔQ25 = 4.96 - 3.03 = 1.93 CFS
ΔV25 = 1.59 - 0.97 = 0.62 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA K
ΔQ25 = 3.52 - 2.15 = 1.37 CFS
ΔV25 = 1.13 - 0.69 = 0.44 AC*FT

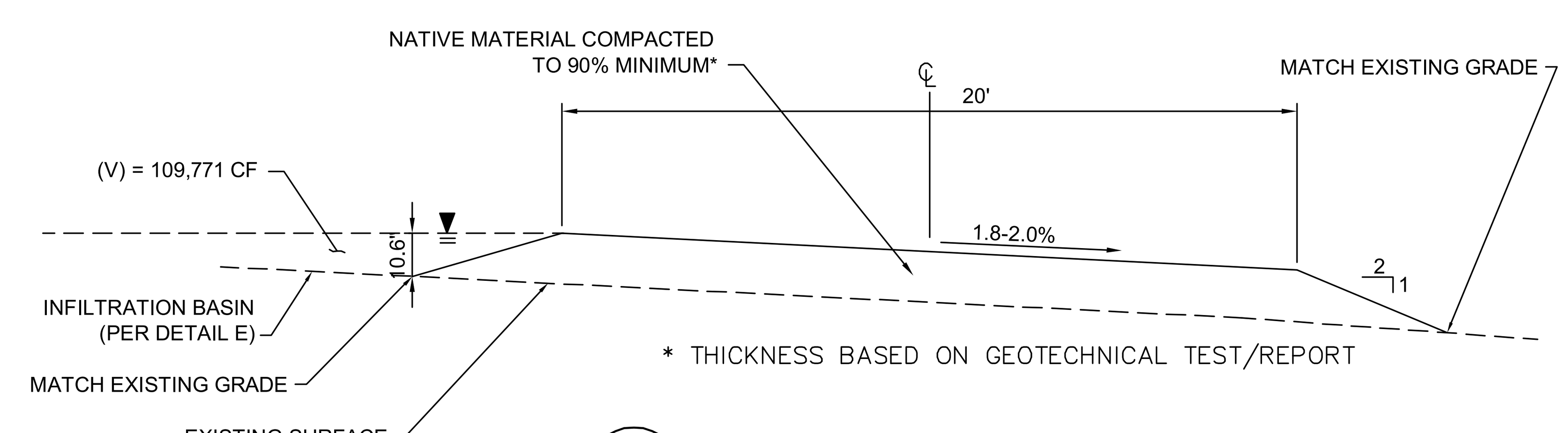
TOTAL DELTA QUANTITIES
ΔQ25 = 16.82 CFS
ΔV25 = 4.67 AC*FT

NOTE: DUE TO THE LID Δ QUANTITIES ABOVE BEING GREATER THAN THE MITIGATION QUANTITIES (Q_{PM} AND V_{PM}) THEY REPRESENT THE WORST CASE SCENARIO BETWEEN THE PRE-/POST DEVELOPMENT CONDITIONS AND THEREFORE SHALL BE USED FOR SIZING THE INFILTRATION BASINS.



E INFILTRATION BASIN DETAIL

SCALE: NTS



F REINFORCED ACCESS ROAD DETAIL (TYP.)

SCALE: NTS

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:________________RCE NO:________________DATE_______________
CHECKED BY:____________________________DATE______________
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) C-10

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary
52MW AC Solar Photovoltaic Generation System
APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks
Project Address:
90th St. W & W Ave. J
Los Angeles County, CA
SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100076 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\04546\135-04546-12001\SUPPORTDOCS\CALCS\HYDROLOGY\10A\FINAL DESIGN\ONSITE HYDROLOGY C-10.DWG
PLOT/UPDATE: Dec 2, 2013 8:54 AM

APPENDIX H:
GEOTECHNICAL REPORT

TETRA TECH

August 7, 2013

Brian Smith
County of Los Angeles
Department of Public Works
900 South Fremont Ave
Alhambra, CA 91803

Reference: **Infiltration Rates for Silverado Solar Project Sites, Antelope Valley, CA**

Dear Brian:

The purpose of this letter is to establish a basis for the infiltration rates to be used for various Low Impact Development facilities to treat and infiltrate storm water to meet the Standard Urban Stormwater Mitigation Plan requirements. Currently, LA County Public Works has provided guidance to use an infiltration rate equal to .25 in/hr. We feel this value is extremely conservative based on our experience in the area, and in other high desert areas in the region. Bruin GSI performed preliminary percolation testing at each of the six solar project sites based on the Excavation Percolation Testing Procedure or Ryon Method as outlined in LA County Administrative Manual GS200.1. The results of these preliminary tests show percolation rates much higher than the LA County provided rate of .25 in/hr. The table below shows the preliminary percolation rates recorded by Bruin GSI, the corresponding Reduction Factor, Factor of Safety and requested site specific Infiltration Rate:

Project Site	Absorption Rate (minutes/inch)[1]	Preadjusted Percolation Rate (in/hr)	Reduction Factor[2]	Factor of Safety[3]	Infiltration Rate[4] (in/hr)
North Lancaster Ranch (RCUP201100079)	7	8.57	1.52	3	**1.88**
Western Antelope Blue Sky Ranch (RCUP201100070)	3	20.0	1.52	3	**4.39**
American Solar Greenworks (RCUP201100071)	3	20.0	1.52	3	**4.39**
Antelope Solar Greenworks (RCUP201100076)	4	15.0	1.52	3	**3.29**
Silver Sun Greenworks (RCUP201100072)	5	12.0	1.52	3	**2.63**
Lancaster WAD (RCUP201100074)	3	20.0	1.52	3	**4.39**

[1] Absorption rate was measured between the drop from 6" to 5" above bottom of the percolation pit

[2] Reduction factor is based on Rf=(2di-�d)/13.5 + 1 per GS200.1

[3] Factor of Safety accounts for variations across the site and for silt accumulation over time.

[4] Infiltration rate = Preadjusted Percolation Rate/(Reduction Factor x Factor of Safety)

Tetra Tech, Inc.
17885 Von Karman Avenue, Suite 500, Irvine, CA 92614
Tel 949.809.5000 Fax 949.809.5004 www.tetratech.com

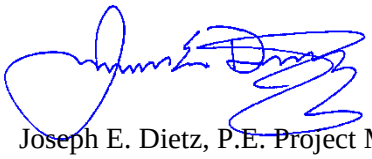
The Low Impact Development, LID, features on each project site will consist of a road that will create a berm to allow for the retention area. The road, which provides a berm of approximately 4 to 8 inches, enables run-off water to be captured and treated on-site at original grade level. Any flow in excess of retention capability of these berms will continue and normalize before it leaves the project boundaries thereby maintaining existing project conditions.

The excavations that Bruin GSI performed support our request to utilize these infiltration rates with the findings that the soil to a depth of 10 feet had no impermeable layers and the materials that were found were uniform. The density of the alluvial material, silty sand (SM) and sandy silt (ML) was generally loose to medium density with dry to moist conditions. The conditions of these materials further leads us to our conclusion that the above reference infiltration rates would be suitable to design the retention features on the respective project sites.

Groundwater conditions in the area, based on Bruin GSI review and Tetra Tech research, are at least 100 feet below ground surface elevation in the subject project areas.

As shown in the table above, the site specific infiltration rates based on preliminary testing are much higher than the .25 in/hr currently allowed. We request the use of the infiltration rates above for the design of the, LID, features at each site.

Sincerely,



Joseph E. Dietz, P.E. Project Manager

jd
P:\04546\135-04546-12001\Docs\Letters\LTR_InfiltrationRates_20130626.docx

Attachments:
Bruin GSI Preliminary Percolation Feasibility Study dated August 1, 2013

BRUIN GSI PRELIMINARY PERCOLATION FEASIBILITY STUDY DATED AUGUST 1, 2013

REVISED PRELIMINARY PERCOLATION FEASIBILITY STUDY FOR SURFACE INFILTRATION DATA FOR SILVERADO POWER ON PROPOSED SOLAR SITES

NORTH LANCASTER RANCH
WESTERN ANTELOPE BLUE SKY RANCH
AMERICAN SOLAR GREENWORKS
ANTELOPE SOLAR GREENWORKS
SILVER SUN GREENWORKS
LANCASTER WAD

LANCASTER, LOS ANGELES COUNTY
CALIFORNIA

Prepared by:
Bruin Geotechnical Services, Inc.
1817 East Avenue Q, Unit A1
Palmdale, California 93550

August 1, 2013
J.N. 12-59

BRUIN GSI

SOIL AND MATERIAL
TESTING AND INSPECTIONS

August 1, 2013 J.N. 12-59

Mr. Ryan Galeria
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

Project: Proposed Solar Sites, Lancaster, California

Sites:

1- North Lancaster Ranch

2- Western Antelope Blue Sky Ranch

3- American Solar Greenworks

4- Antelope Solar Greenworks

5- Silver Sun Greenworks

6- Lancaster WAD

Subject: Revised Preliminary Percolation Feasibility Study for Surface Infiltration Data via Los Angeles County Ryon Method

Presented herewith, per your request, are the results of the percolation testing program for the referenced project. The purpose of this report is to provide preliminary surficial percolation rates for the referenced sites for use by the client to determine the infiltration rates of the existing native soils at existing grade for the proposed water run-off of impermeable areas, such as drive access roadways and small equipment pad areas. This report concludes the scope of our services per our contract.

Site Description

The subject sites are located in the southwest portion of the Antelope Valley, in the Lancaster area of Los Angeles County. The subject sites vary in size and topography. However the sites are relatively flat and level with general slopes of approximately 1-3 percent, with drainage occurring by sheetflow, except site 2, Western Antelope Blue Sky Ranch, which sloped up to the southwest with minor rolling hills.

At the time of our investigation, the sites were vacant of structures. Vegetation consisted of native desert flora, with varying amounts of shrubs, annual grass and weeds. Oak trees were not observed at the sites. The site locations and site plan are presented in Appendix A. The approximate percolation test locations for each site are also indicated on the site plan.

Proposed Development and Drainage

Based on our review of the preliminary site plan, it is our understanding that a solar farm is proposed. The impermeable areas that create water run-off consist of raised access roadways on the perimeter of the site with access roadways, which locations vary by site, dissecting the sites. In addition, concrete equipment pads at various locations on each site will create small impermeable areas. The impermeable surface areas on each site range from 7.5% to 15% of the entire site areas. It is intended that the raised access roads serve as a berm and capture the run-off water and allow it to infiltrate at existing ground elevation. The height of the roadway will range from four to eight inches in height and will create the retention basins on each site and to allow infiltration into native soil at exiting grade elevation. Any additional flow will continue over the roads, therefore maintaining existing sheet flow patterns.

Percolation Testing Protocol

Testing for percolation rates was performed in accordance with the Los Angeles County Ryon Method. This method was performed by excavating a cubic foot test hole at existing ground surface which is the anticipated elevation of the infiltration basins. The test hole is pre-soaked by filling with clean water to existing grade (12 inches). Once all the water has been absorbed, the test hole is cleaned of loose material and filled again with clean water. The percolation rate is determined by monitoring the time of drop for each inch from 0 to 6 inches. The time of absorption between the 5th to 6th inch is the percolation rate in minutes per inch.

On December 1, 2012, the field-testing program was instigated. A minimum of one (1) cubic foot percolation test hole was excavated at each site. The test holes were excavated at the existing ground elevation to a depth of one (1) foot below existing ground elevation with hand equipment. The soil types were logged by our representative. Soil profile information and classifications are presented in Appendix B.

The same day, the cubic foot hole prepared was filled to the initial fill level of existing ground elevation with clean water for pre-soaking. Pre-soaking time varied with each test hole, however all the water percolated within ten to fifteen minutes of the addition of the water. The test hole was then cleaned and re-filled with water to the initial fill level (existing ground). The drop was monitored and documented to determine the absorption rate (drop from the 5th to 5th inch). The percolation rates are provided in Appendix B. Our representative David Michel performed the tests.

Subsurface Investigation

On July 31, 2013, seven (7) additional excavations were performed utilizing a tractor-mounted backhoe to a depth of ten (10) feet below existing ground surface at the locations of each test hole. The purpose of the excavations was to log the soil types, determine the soil classifications and if any impermeable material was present below the test holes. Our representative observed the excavations and prepared field logs of the material encountered. The final logs of the excavations are presented in Appendix C.

Groundwater Conditions

A review of various website databases regarding water well data and groundwater for the Antelope Valley area was performed. The sites included the United States Geological Survey, Los Angeles County Department of Public Works, State of California Department of Conservation, and published State of California Seismic Zone Hazard Maps (Del Sur Quadrangle and West Lancaster Quadrangle), with associated reports regarding liquefaction which is relative to groundwater levels. Based on our review, groundwater in the areas of the subject sites is a minimum of 100 feet below ground surface elevation.

Conclusions

Based on the excavations performed at the subject sites, the material encountered was uniform and no impermeable layers were observed within the total depth of the excavations (10 feet bgs). The areas observed consist of alluvial material, silty sand (SM) and sandy silt (ML). This material was observed to be generally loose to medium dense and dry to moist. Some cementation was observed. The soils appeared porous and permeable.

Groundwater is over 100 feet below ground surface elevation in the subject site areas.

The percolation rates, indicated as minutes per inch, may be utilized to determine the infiltration rate of the soil at existing grade to design the specific area required for the amount of water run-off based on the size of the impermeable areas. The design should include a minimum safety factor of 2.0.

The proposed use of the project site as a solar farm is not expected to significantly change the imperviousness of the sites, with the exception of road construction, which is anticipated to cover 7-15%, depending on the site. It is our professional opinion, provided the drainage and infiltration basins are properly designed, the use of these raised roadway areas as berms to capture run-off water to allow infiltration at existing ground elevation is feasible.

Limitations

The percolation test data provided is based on Los Angeles County Health Department Guidelines (Ryon Method) typically required for septic system design to determine

in minutes per inch at the location on the site as indicated in this report only. Other areas of the each site may vary. The purpose of the testing is to provide the client with preliminary soil absorption rates for their use in preparing information in regards to water run-off and minor surficial detention of water for infiltration in order to comply with the Limited Impact Development standards. Los Angeles County may require additional testing or methodology for final approval.

If there are any changes in the proposed construction or additional testing is necessary, this office should be notified immediately. If soils encountered are different than indicated in this report, contact this office. No warranty is expressed or implied. Test results indicate the rates at the locations indicated. This report does not guarantee issuance of a permit. This report is subject to approval from the governing agency.

Closure

Information and procedures described in the report were performed in accordance with general standards of practice. We trust this reports meets your needs. If you have any questions or require additional information, Please contact our office.

Sincerely,

Bruin Geotechnical Services Inc.

Dennis J. Sloan, P.E.

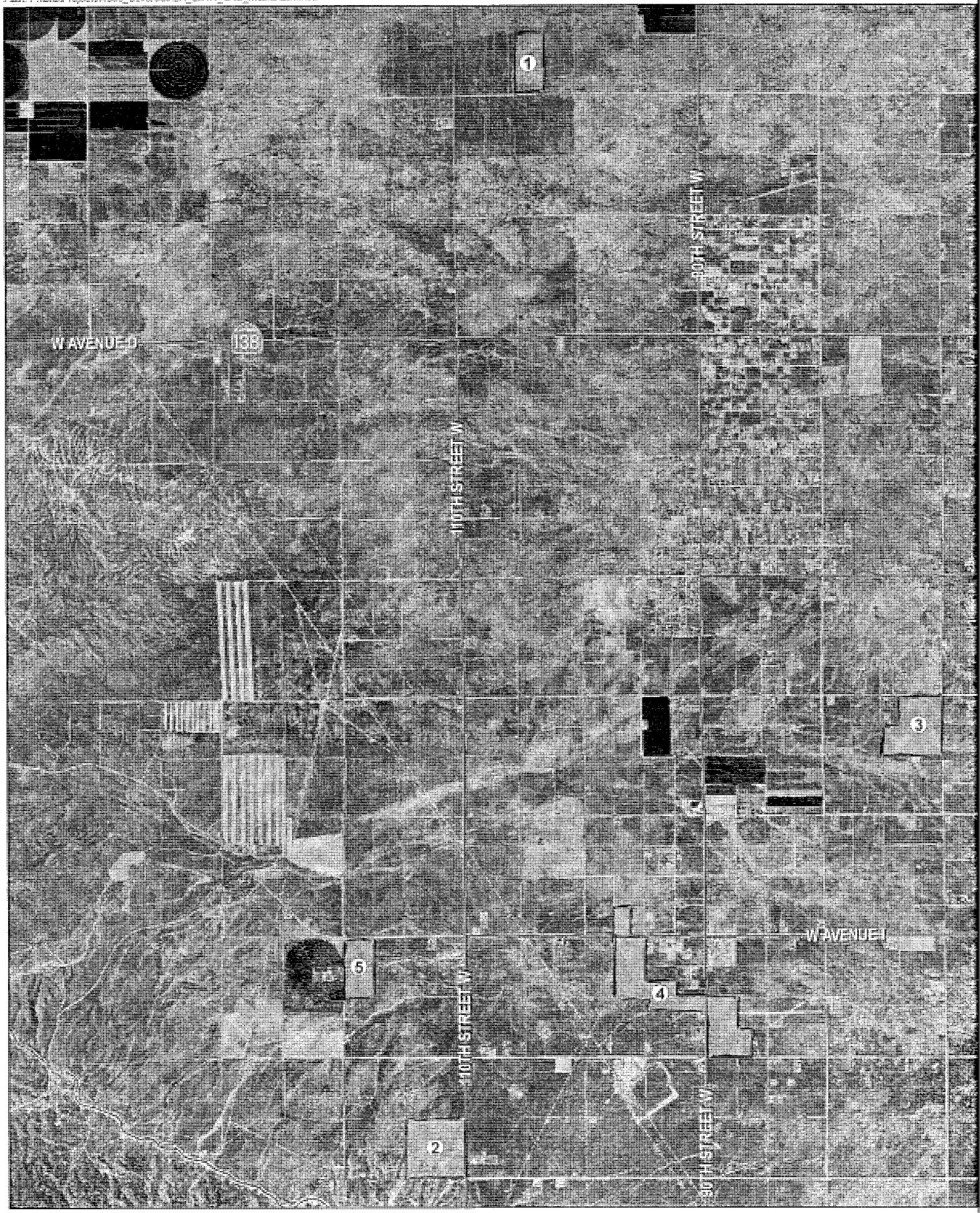
REGISTERED PROFESSIONAL ENGINEER
DENNIS J. SLOAN
No. 29704
Expires 03/31/15
CIVIL
STATE OF CALIFORNIA

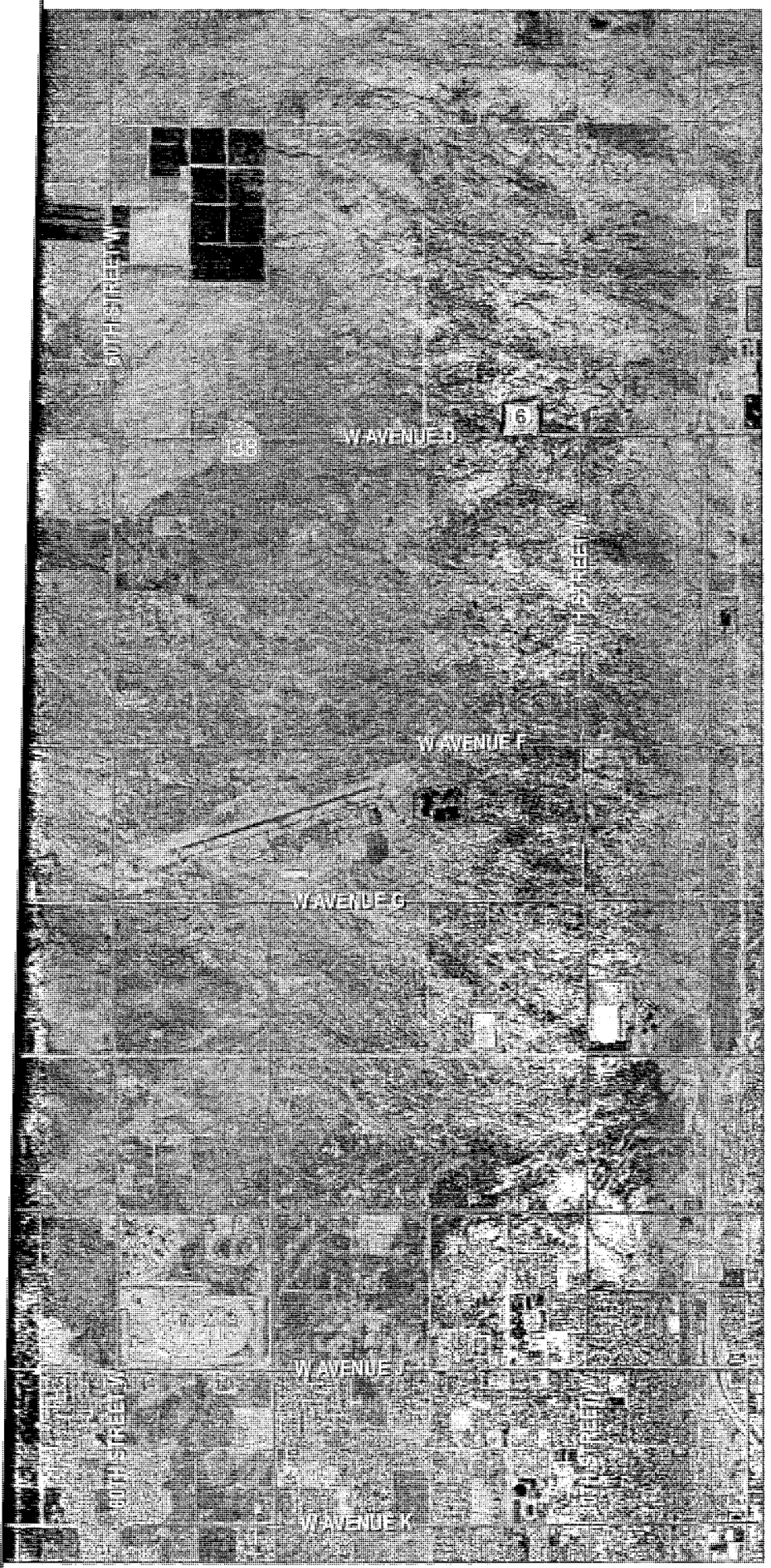
DJS/mes

APPENDIX A

Site Location Map
Site Plans with Approximate Test Locations

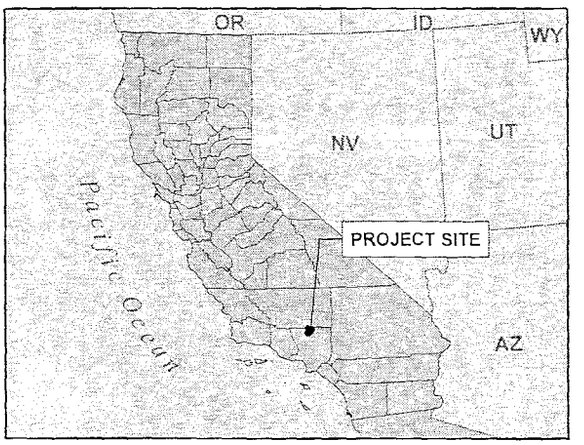
Plotting Date: 6/27/2012 4:18:17 PM
Path: P:\GIS\Projects\4335_Shirrado\LA_EIR\1_LAC_MasterEIR.mxd





SILVERADO power

SILVERADO POWER WEST
LOS ANGELES COUNTY



LEGEND

PROJECT 1 - NORTH LANCASTER RANCH

PROJECT 2 - WESTERN ANTELOPE BLUE SKY RANCH

PROJECT 3 - AMERICAN SOLAR GREENWORKS

PROJECT 4 - ANTELOPE SOLAR GREENWORKS

PROJECT 5 - SILVER SUN GREENWORKS

PROJECT 6 - LANCASTER WAD

NOTE:
(a) State Plane, Zone V (NAD83), US Survey Feet.
(b) Source Data: ESRI, TTEC.

FIGURE 1
SILVERADO POWER WEST
LOS ANGELES COUNTY
PROJECTS

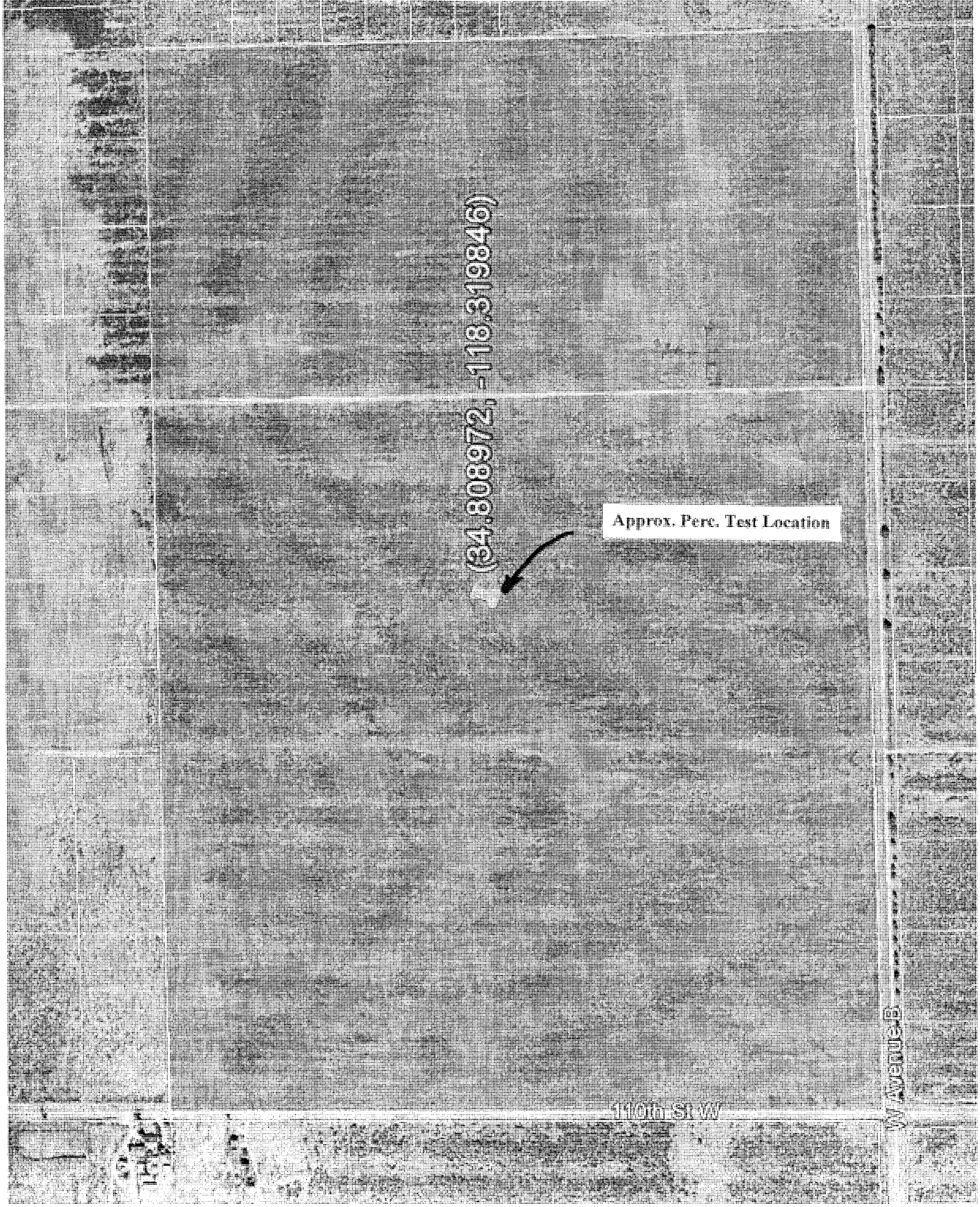
0 0.5 1 2

Miles

TETRA TECH EC, INC.

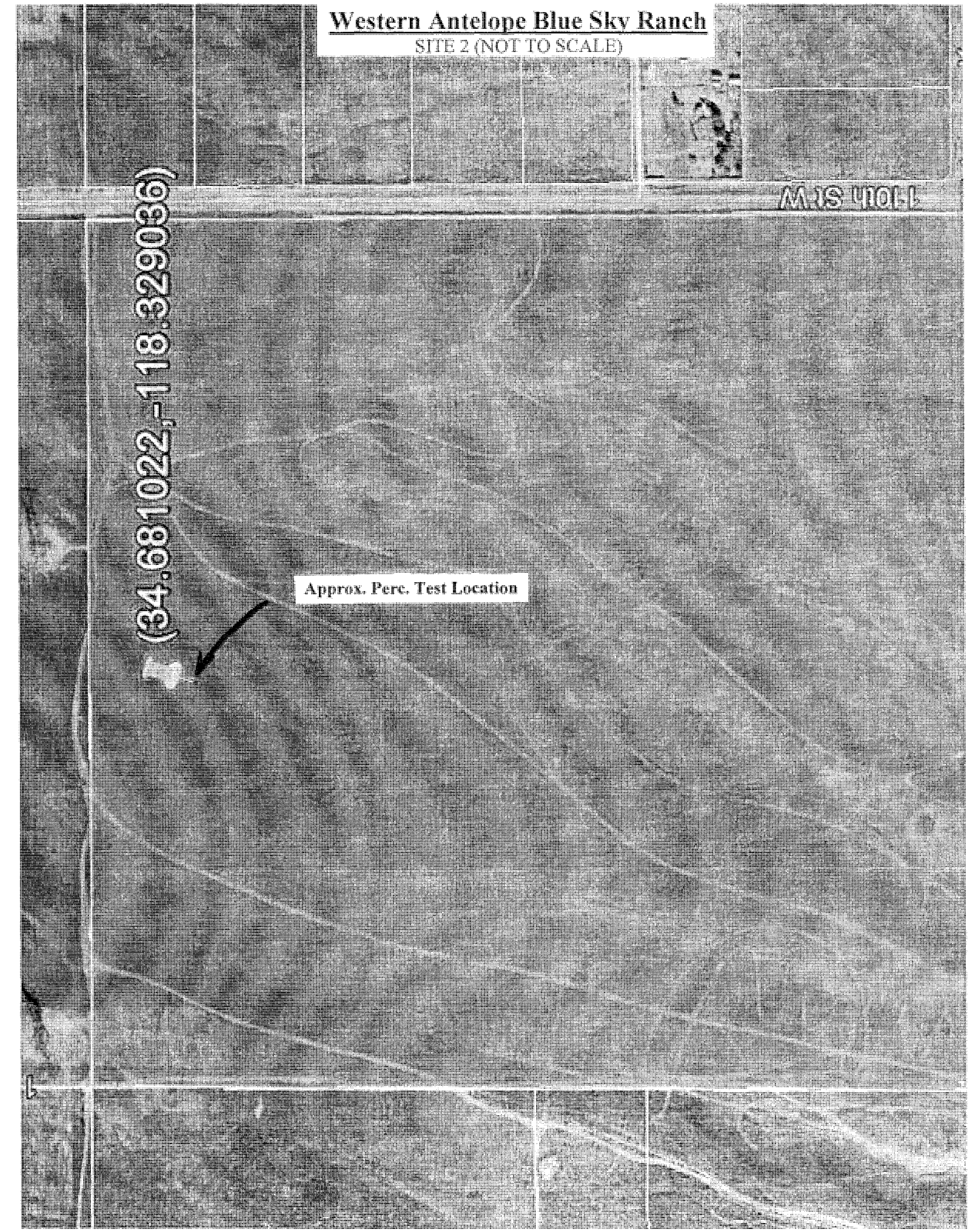
North Lancaster Ranch

SITE 1 (NOT TO SCALE)



Western Antelope Blue Sky Ranch

SITE 2 (NOT TO SCALE)

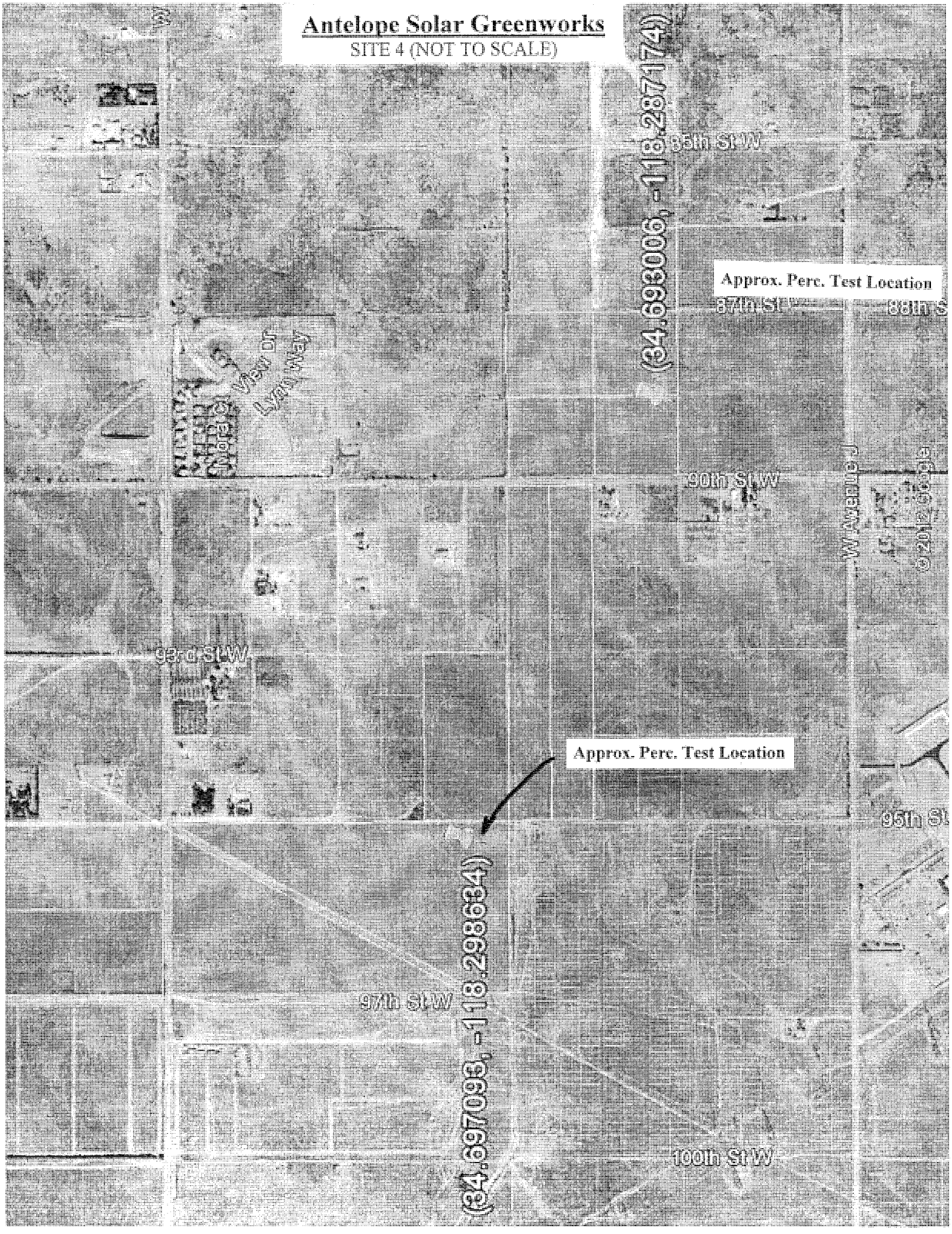


American Solar Greenworks

SITE 3 (NOT TO SCALE)

Antelope Solar Greenworks

SITE 4 (NOT TO SCALE)



Silver Sun Greenworks

SITE 5 (NOT TO SCALE)

Lancaster WAD

SITE 6 (NOT TO SCALE)

APPENDIX B

Soil Profile, Classifications and Absorption Rate

Site	Soil Description	USCS Classification	Absorption Rate (MPI)
Site 1 North Lancaster Ranch Ave. B & 110th St. West	Light brown fine sandy silt w/ medium to coarse sand (cemented)	ML	7
Site 2 Western Antelope Blue Sky Ranch Ave. K & 110th St. West	Dark Yellow brown silty fine to coarse sand	SM	3
Site 3 American Solar Greenworks Ave. G-8 & 70th St. West	Light brown silty fine to medium sand with coarse sand (slightly cemented)	SM	3
Site 4 Antelope Solar Greenworks Ave. J & 90th St. West (2 tests- A=NW portion, B=SE portion)	A-Moderate brown very silty fine to medium sand	SM	4
	B-Light brown silty fine to medium sand with coarse sand	SM	3
Site 5 Silver Sun Greenworks Ave. I & 120th St. West	Strong brown silty fine to coarse sand (slightly cemented)	SM	5
Site 6 Lancaster WAD Ave. D & 30th St. West	Light brown very silty fine to medium sand (cemented)	SM	3

APPENDIX C

Excavation Logs

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 1 North Lancaster Ranch	**Drill Type:** Case backhoe
Location: Ave. B &110th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
5'		ML	Light brown fine sandy silt w/ medium to coarse sand medium dense, dry (cemented)					
			(slightly cemented)					
10'		SM	Grey brown very silty fine sand w/ medium sand medium dense, moist (slightly cemented)					
		SM	Medium brown silty fine to medium medium dense, moist (slightly cemented)					
15'			Excavation terminated @ 10' bgs No free groundwater encountered No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 2 Western Antelope Blue Sky Ranch	**Drill Type:** Case backhoe
Location: K-8 & 110th St West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Dark yellow silty fine to medium sand w/ occasional coarse sand, medium dense, dry (slightly cemented)					
5'		SM	Reddish brown silty fine to coarse sand & clay binder medium dense, slightly moist					
		SM	Yellow brown silty fine to coarse sand w/ occasional #4 gravel medium dense moist (cemented)					
10'		SM	Yellow brown silty fine to coarse w/ occasional #4 gravel medium dense moist					
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 3 American Solar Greenworks	**Drill Type:** Case backhoe
Location: 70th st west & Ave G-8	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Light brown silty fine to medium sand medium dense, dry (slightly cemented)					
		SM	Moderate brown silty fine to coarse sand loose, moist					
5'								
		SM	Moderate brown silty fine to medium sand w/ coarse sand moist medium dense, moist (slightly cemented)					
		ML	Yellow brown silty fine to medium sand medium dense, moist					
10'								
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1 (A)

Client: Silverado Power	**Project No:** 12-59
Project: Site 4 Antelope Solar Greenworks	**Drill Type:** Case backhoe
Location: 90th West & Ave J	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
5'		SM	Moderate brown very silty fine to medium sand w/ coarse sand medium dense, dry (cemented dry)					
10'		SM	Yellow brown silty fine to medium sand w/ coarse sand loose, dry (slightly cemented)					
		SM/ML	Light brown very silty fine to medium sand w/ occasional coarse sand medium dense, moist (cemented)					
15'		SM/ML	Light brown very silty fine to medium sand w/ occasional coarse sand medium dense, moist (cemented) Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E2 (B)

Client: Silverado Power	**Project No:** 12-59
Project: Site 4 Antelope Solar Greenworks	**Drill Type:** Case backhoe
Location: 90th West & Ave J	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		ML	Light brown silty fine to medium sand medium dense, dry (slightly cemneted)					
5'		SM	Moderate brown silty fine to medium sand medium dense, moist (slightly cemented)					
		SM	Orange brown silty fine to medium sand w/ occasional #4-1/2 gravel loose, moist					
10'		SP	Yellowish brown slightly silty fine to medium sand w/ coarse sand medium dense, slightly moist					
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 5 Silver Sun Greenworks	**Drill Type:** Case backhoe
Location: Ave I & 120th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Medium brown silty fine to w/coarse sand					
			medium dense, dry (slightly cemneted)					
		SM	Dark brown silty fine to coarse sand w/ clay binder					
5'			medium dense (slightly cemented)					
		SM	Dark yellowish brown slightly silty fine to coarse sand w/ #4 gravel					
			loose, moist					
10'		SM	Dark brown slightly silty fine to coarse sand w/ #4 gravel & occasional 1"- 3" gravel					
			loose, moist					
15'			Excavation Terminated @ 10' bgs					
			No free groundwater encountered					
20'			No caving					
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 6 Lancaster WAD	**Drill Type:** Case backhoe
Location: Ave D & 30th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Light grey very silty brown fine to medium sand					
			medium dense (cemented)					
		ML	Light grey brown fine sandy silt					
			firm, slightly moist (cemented)					
5'		ML	Pale brown fine sandy silt					
			dense, dry					
		SM	Light brown silty fine sand w/ occasional medium sand					
			loose, dry					
10'		SM	Light brown silty sand w/ occasional medium sand					
			loose, dry					
			Excavation Terminated @ 10' bgs					
			No free groundwater encountered					
15'			No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

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APPENDIX B-7.5

PROJECT 5 SILVER SUN
HYDROLOGY STUDY/DRAINAGE CONCEPT/SUSMP/LID

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HYDROLOGY STUDY/DRAINAGE CONCEPT/LID

PROJECT 5
SILVER SUN GREENWORKS

R2011-00801 (RCUP201100072)

120TH ST. W & W AVE. I
LANCASTER
LOS ANGELES COUNTY, CA

December 2013

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID APPROVED FOR AREA AND Q ONLY

APPROVED BY: _____ RCE NO. _____DATE_____

CHECKED BY:_____ DATE_____

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS LAND DEVELOPMENT DIVISION

Prepared for:

SILVERADO power

2 Embarcadero Center, Suite 410
San Francisco, CA 94111
(415) 692-7740

Prepared by:

TETRA TECH, INC.

17885 Von Karman, Suite 500
Irvine, CA 92614
(949) 809-5000

Under the supervision of:
Joseph E. Dietz, P.E.

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.

Joseph E. Dietz P.E. 67032 | 12.6.13 | Date | Seal

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I. INTRODUCTION

Project 5 Silver Sun Greenworks is a solar power project located west of 110th Street, between West Avenue I to the north and Lancaster Blvd. to the south (see **Location Map, Appendix A**). The property is owned by Silverado Power (referred to as "applicant" for the remainder of this report). The scope of this hydrology report is to analyze the pre-development and post-development hydrological conditions (once the installation of the solar panels is complete) in order determine runoff effects on and off the site. The peak runoff calculations were developed for the 25-year and 50-year storm events. Currently, runoff from approximately 4,285 acres of offsite area enters the 161.2 acre project site from the west, creating a study watershed area of approximately 4,446.2 acres. The off-site runoff was added into the on-site runoff areas as shown on the attached Drainage Maps (see **Appendix G**). The majority of the watershed consists of un-developed land.

II. PROJECT BACKGROUND

Due to the predominantly flat nature of the site (less than 1.75% longitudinal slope), the project will involve minimal grading for construction of dirt access roads between the proposed arrays of solar panels. The project site currently drains from west to east. The post-development condition will maintain this flow path. The post-development runoff will continue to sheet flow in the pre-development condition in order to avoid disturbance to downstream drainage structures and wildlife. Impacts to the 50-year storm event flow rates, volumes, depths, and velocities leaving the site will be negligible (see **Impact Analysis, Appendix E**). The construction of the solar panel arrays and other miscellaneous site development will be accounted for by increasing the site's impervious percentage from 1% to the Los Angeles County approved value of 10%. Per the LACDPW Flood Control Division, the additional amount of runoff generated by this increase in impervious surface will be collected onsite with the help of 4 reinforced elevated road sections that run north to south at various locations along the site (see **On-Site Drainage Map, Appendix G)**. The ponding water will infiltrate in about 4.5 hours (see **Water Quality Calculations, Appendix F**). The basins are located within the first half of the site in order to allow flows to normalize before leaving the site.

III. EXISTING DRAINAGE CONDITION

In order to delineate the existing drainage conditions for the Silver Sun Greenworks project site and its watershed, USGS and site specific topographic data were reviewed. A watershed boundary was developed for the project site (see **Off-Site Drainage Map, Appendix G)**. A site visit was conducted on January 31, 2012 by Cris Dragomir, PE to verify the delineated watersheds and to take site photos of the existing drainage features. A map showing locations where the photos were taken as well as photos identifying typical site drainage conditions are attached under the **Existing Drainage Condition Appendix B** of this report.

Review of the topographic information and results of the site survey found that storm runoff generally sheet flows in an eastern direction. A portion of the flow seems to concentrate in a naturally formed channel that is approximately 3 to 4 feet in depth (see **On-Site Drainage Map, Appendix G**). The channel also drains in an easterly direction and will remain unaltered by any construction activities. There are no signs of erosion due to the presence of vegetation and soils with high infiltration rates.

A Geotechnical Report (see **Appendix H**) was prepared for the site. The report shows site soils consist of silty fine to coarse sand. The percolation test performed shows soil infiltration rates of 5 min/in, which is equivalent to 12.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 2.63 in/hr.

IV. METHODOLOGY

HYDROLOGIC CALCULATIONS

To determine the watershed boundaries tributary to the project site, existing USGS and site specific topographic data were reviewed. Hydrologic Calculations for the proposed project site were performed in conformance with the Los Angeles County Hydrology Manual, dated January 2006, utilizing the Modified Rational Method TC Calculator. The Modified Rational Method was used to estimate the runoff flows for each sub-area of the watershed, which were limited to 40 acres (see **Appendix D**). The Modified Rational Method equation relates rainfall intensity, time of concentration, runoff coefficient, and drainage area size to the direct runoff from each drainage sub-area. The TC Calculator along with rainfall intensity maps from the Los Angeles County Hydrology Manual were used to model the various watersheds and determine the peak flows.

Hydrologic Soil numbers 100, 120, and 134 were used as the soils group for the project site per the Los Angeles County Hydrology Manual, Map 1-H1.65 and 1-H1.66 (see **Appendix C**). Times of concentration for the various sub-areas were calculated by the TC Calculator based on the approximate length and the elevation difference over that length. Lastly, peak flows from each sub-area were summed in order to achieve a total peak runoff for the entire watershed. This approach is conservative due to the fact that it yields a slightly higher peak runoff if compared to an alternative approach which analyzes all sub-areas and utilizes surface routing to generate lag times.

DEBRIS POTENTIAL CALCULATIONS

A debris production rate was calculated for the site using the Debris Production Rate figures for the Antelope Valley from Appendix B of the LACDPW Sedimentation Manual (see **Appendix C**). These rates, multiplied by the square mileage of the site tributary to the specific zone, provide the debris potential for the site (see **Appendix G**). The site does not produce high levels of debris due to its relatively flat nature. Therefore, no debris protection will be provided for the low levels of debris produced.

V. SUMMARY OF RESULTS

Hydrologic calculations were performed for the pre-/post development conditions. Summary tables and detailed calculations for the 25-year and 50-year storm events showing drainage area size, soil type, storm frequency, flow length, slope, flow rate, burned flow rate, storm volumes, etc., are located in **Appendices D and G** of this report. The pre-development 25-year storm event yielded a clean runoff of 6,597.02 cfs and a storm volume of 332.09 ac-ft (for onsite areas + offsite areas). The proposed use of the project site as a solar farm is not expected to significantly change the imperviousness of the site. With the addition of the solar panel arrays and other miscellaneous development, the site's impervious surface was increased to the Los Angeles County approved value of 10%. With this increase in impervious surface, the post-development 25-year storm event yielded a clean runoff of 6,613.16 cfs and a storm volume of 335.99 ac-ft (for onsite areas + offsite areas). The additional runoff of 16.14 cfs and the additional storm volume of 3.90 ac-ft represent the delta quantities which require mitigation in order for the pre- and post-development flow rate and storm volume to be the same for the 25-year storm event. The on-site clean runoffs and storm volumes from the Modified Rational Method TC Calculator are shown in Table 1 and 2 below. For off-site clean runoffs and storm volumes, see **Appendix D.**

Table 1 – Pre Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A	25-YEAR	8.74	1.04
B	25-YEAR	6.55	0.79
C	25-YEAR	6.35	0.54
D	25-YEAR	6.68	0.75
E	25-YEAR	29.54	1.78
F	25-YEAR	14.28	1.22
G	25-YEAR	11.40	0.98
H	25-YEAR	9.64	0.82
A	50-YEAR	13.00	1.25
B	50-YEAR	8.42	0.95
C	50-YEAR	9.57	0.64
D	50-YEAR	10.30	0.91
E	50-YEAR	38.47	2.08
F	50-YEAR	20.64	1.46
G	50-YEAR	17.32	1.17
H	50-YEAR	14.54	0.98

Table 2 – Post Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)	ΔQ (CFS)	ΔV (AC-FT)
A	25-YEAR	10.75	1.56	2.01	0.52
B	25-YEAR	7.49	1.20	0.94	0.41
C	25-YEAR	7.75	0.80	1.40	0.26
D	25-YEAR	8.13	1.12	1.45	0.37
E	25-YEAR	31.90	2.61	2.36	0.83
F	25-YEAR	17.53	1.84	3.25	0.62
G	25-YEAR	14.00	1.47	2.60	0.49
H	25-YEAR	11.77	1.22	2.13	0.40
A	50-YEAR	16.10	1.85	3.10	0.60
B	50-YEAR	10.21	1.41	1.79	0.46
C	50-YEAR	10.86	0.94	1.29	0.65
D	50-YEAR	11.42	1.32	1.12	0.21
E	50-YEAR	43.07	3.02	4.60	2.52
F	50-YEAR	23.43	2.14	2.79	1.33
G	50-YEAR	19.72	1.72	2.40	1.23
H	50-YEAR	15.68	1.42	1.14	0.16

As discussed further in the Water Quality Calculations, the peak mitigation flow rate (Q_{PM}) of 5.51 cfs and the mitigation volume (V_M) of 1.79 ac-ft from the post-development condition represent required mitigation quantities (see **Water Quality Calculations, Appendix F**). The mitigation runoffs and storm volumes for each subarea are shown below in Table 3. The mitigation measures will be sized to account for the 25-year storm event pre-/post-development delta quantities since they exceed the mitigation quantities.

Table 3 – Post Development Mitigation Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A	MITIGATION	0.75	0.24
B	MITIGATION	0.62	0.20
C	MITIGATION	0.36	0.12
D	MITIGATION	0.51	0.17
E	MITIGATION	1.16	0.38
F	MITIGATION	0.87	0.28
G	MITIGATION	0.69	0.22
H	MITIGATION	0.55	0.18

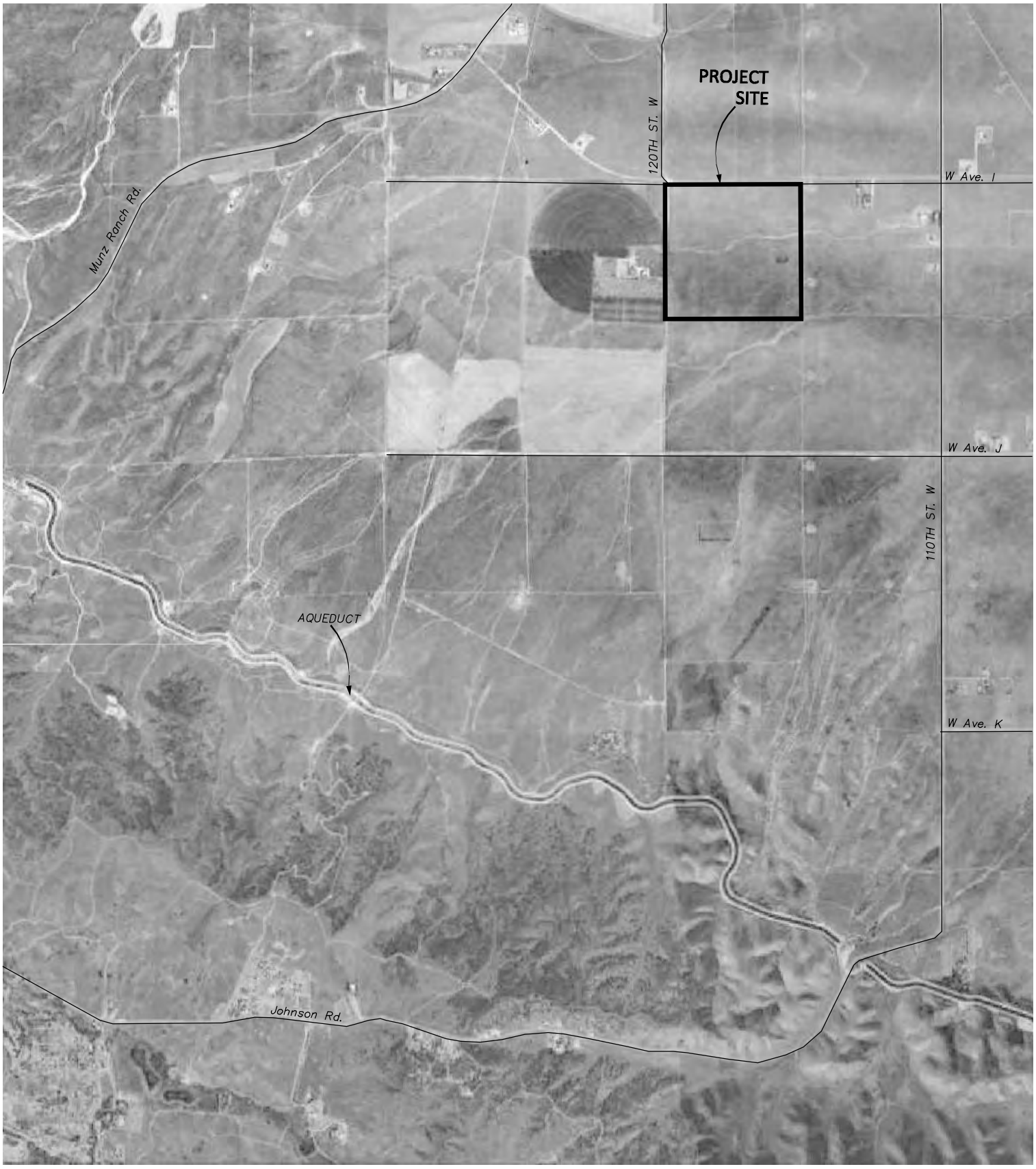
The proposed infiltration basins were sized to meet the ΔV_{25} of 3.90 ac-ft. The proposed basins will be created by 4 north to south reinforced elevated access road sections located at various locations throughout the site (see **Water Quality Calculations, Appendix F**). The role of the elevated road sections (ranging from 10.25 inches to 12.25 inches as shown on the **On-Site Drainage Maps, Appendix G**) is to capture only the ΔV_{25} and allow it to infiltrate. In doing so, the whole V_M will be infiltrated and treated by the existing soils. The additional flow will continue over the road toward the eastern part of the project site, therefore mimicking pre-development sheet flow patterns.

An analysis was performed to ensure that the post-development 50-year storm event flow rates and volumes leaving the site do not experience a significant increase over pre-development levels (see **Impact Analysis Calculations, Appendix E**). The infiltration basins were ignored for these calculations. This approach is conservative as the basins act to reduce the flow rates and volumes of the post-development condition. For the three major site flow lines (see **On-Site Drainage Map, Appendix G**), the post-development yielded negligible increases of 2% or less.

An analysis for the development's impact on 50-year storm event flow depths and velocities leaving the site was deemed unnecessary due to the results of the flow rate analysis (see **Impact Analysis Calculations, Appendix E**). Flow depths and velocities are dependent on their corresponding flow rate. Since the flow rates experience negligible increases, the flow depths and velocities are anticipated to experience negligible increases.

Due to the predominantly flat nature of the site, the 92,400 cubic yards of debris produced (see **Appendix G**) will be spread evenly over the 161.2 acre project site and approximately half of the watershed (half of the 4,285 acre watershed is predominantly flat). This amounts to approximately 0.30 inches of debris depth spread evenly across about 2,304 acres. Since the debris production volume is very small, protections measures will not be implemented at the project site.

APPENDIX A:
LOCATION MAP



N

TETRA TECH
17885 VON KARMAN AVE., STE. 500
IRVINE, CA 92614-6213
949-809-5000

Scale:

Date: 9-5-2013

LOS ANGELES COUNTY

PROJECT 5
SILVER SUN GREENWORKS
LOCATION MAP

FIGURE A

File Location:
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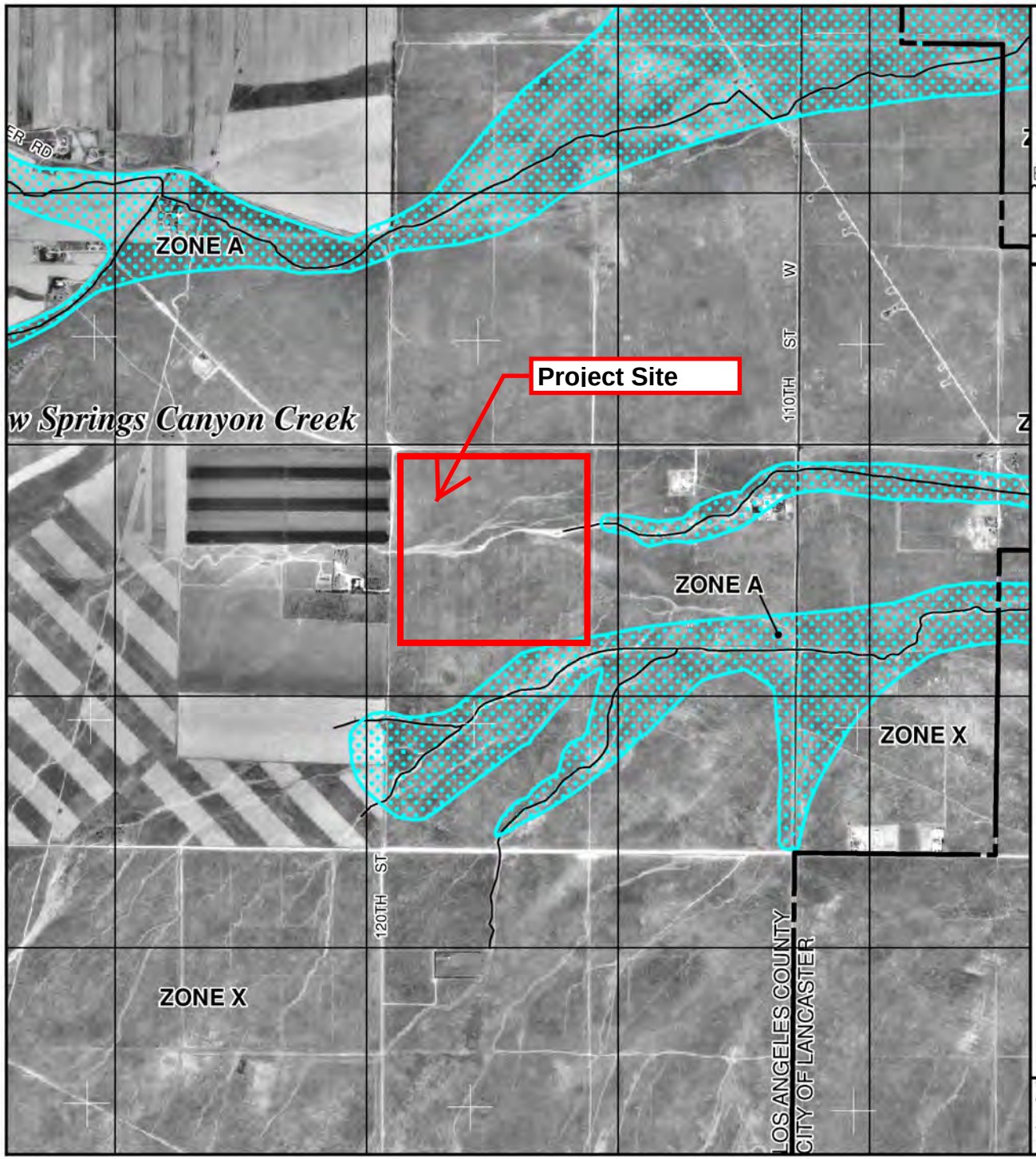
APPENDIX B:
EXISTING DRAINAGE CONDITION



MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0400F

FIRM

FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 400 OF 2350

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES COUNTY	065043	0400	F
LANCASTER, CITY OF	060672	0400	F
PALMDALE,CITY OF	060144	0400	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06037C0400F

EFFECTIVE DATE
SEPTEMBER 26, 2008

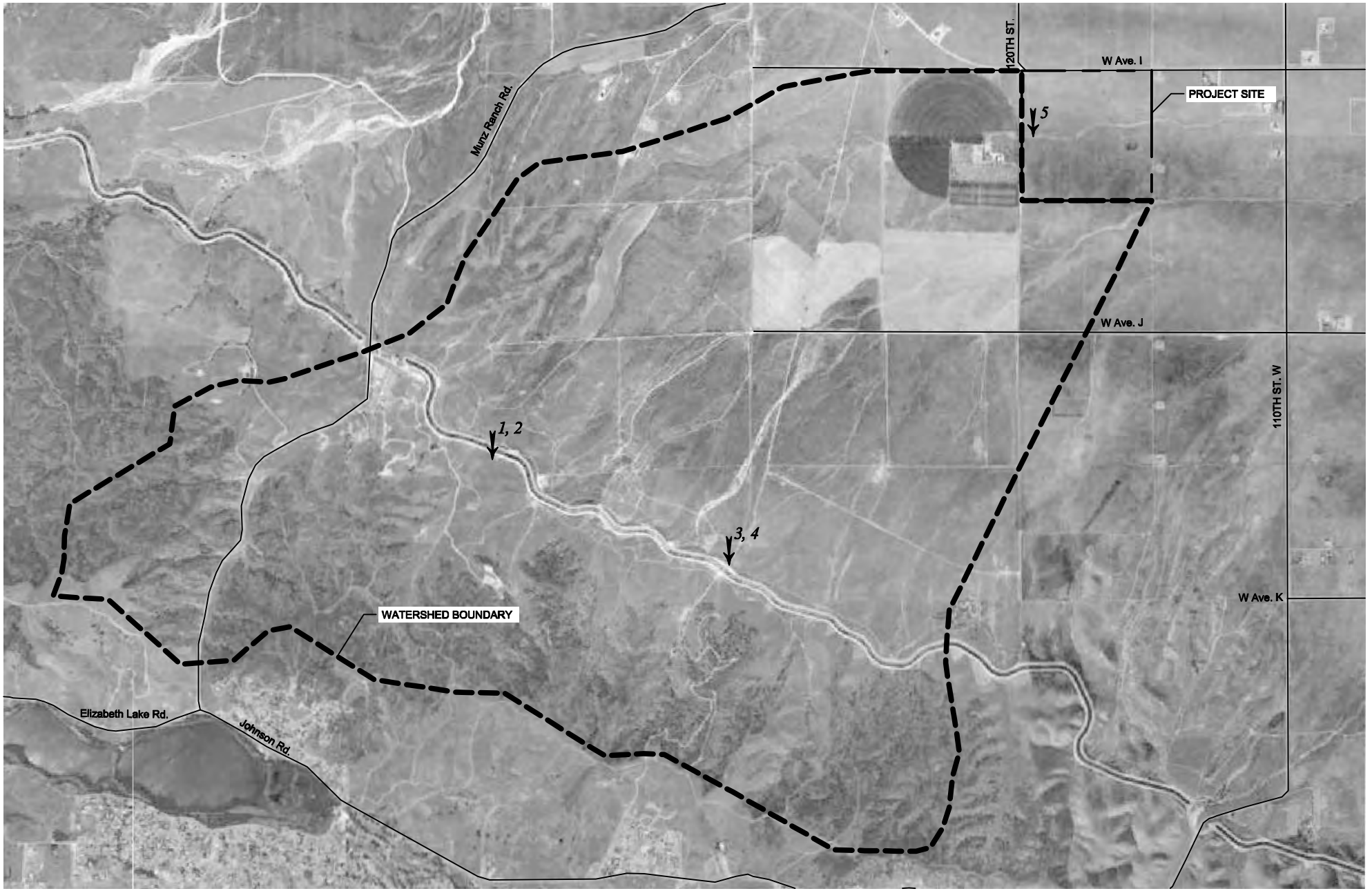
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Los Angeles County Flood Control

Flood Zone Determination Website

Click for more Information.



LEGEND

- PROJECT BOUNDARY
- WATERSHED BOUNDARY
- 3,4 PHOTO ID AND LOCATION

N

TETRA TECH
17885 VON KARMAN AVE., STE. 500
IRVINE, CA 92614-6213
949-809-5000

Scale: N.T.S.

Date: 9-5-2013

LOS ANGELES COUNTY

PROJECT 5 SILVER SUN GREENWORKS EXISTING DRAINAGE STRUCTURES PHOTO LOCATIONS

FIGURE 1

File Location: P:\04546\135-04546-12001\SupportDocs\Calcs\Hydrology\11\FINAL DESIGN\Photo Locations.dwg 09/03/2013 15:56

Photo 1 (Northward Facing):

Culvert Entrance: typical RCP culvert carries runoff from hills south of the aqueduct.
Culvert locations and spacing vary along entire length of aqueduct. Pipe diameter sizes range from 36" to 60"

Photo 2 (Southward Facing):

Culvert Exit: runoff exists the culvert underneath the aqueduct and continues to sheet flow toward the north.

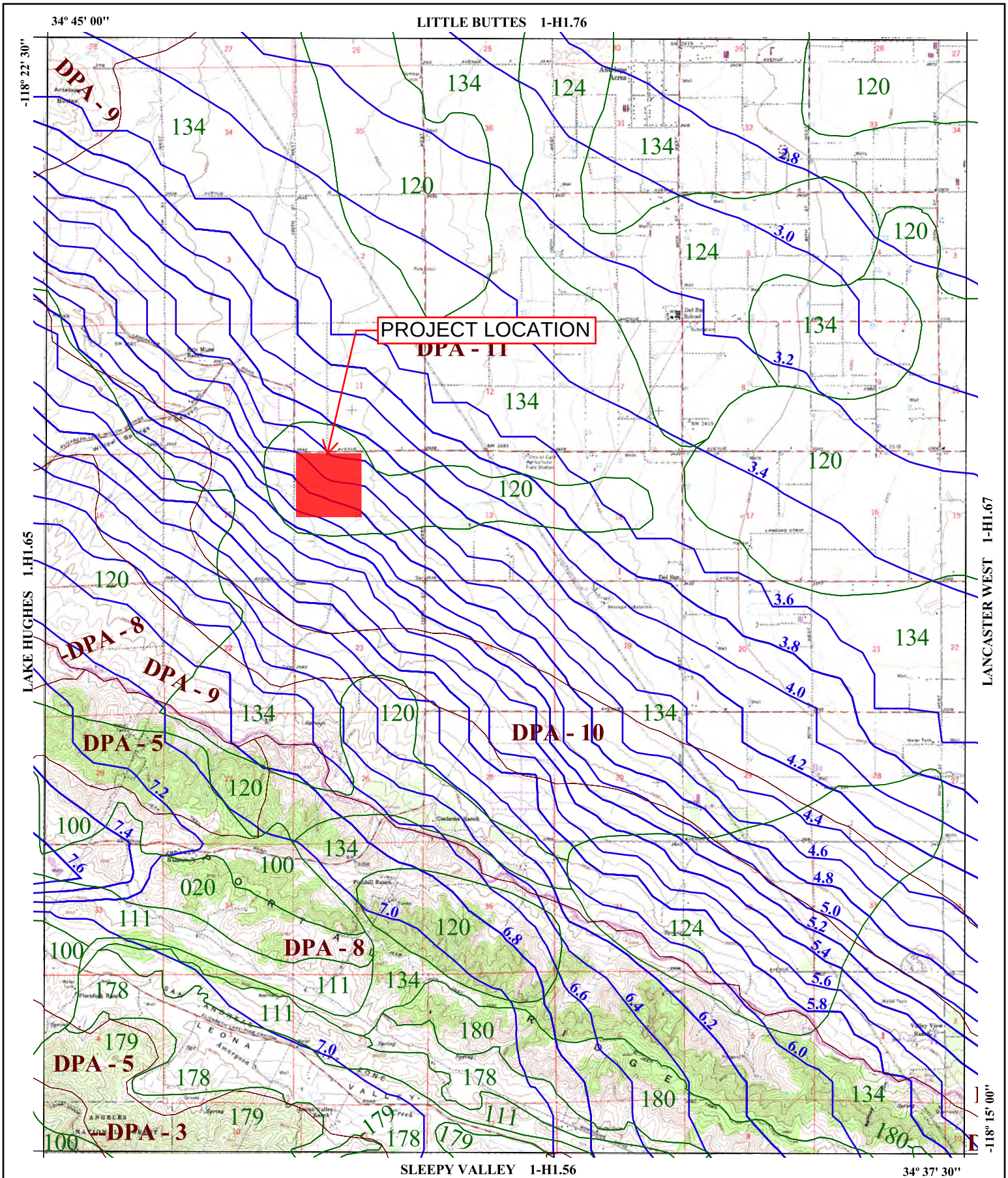
Photo 3 (Northward Facing):
Runoff sheet flows northerly toward Project 5

Photo 4 (Northward Facing):
Runoff sheet flows northerly toward Project 5

Photo 5 (Eastward Facing):

Runoff sheet flows onto Project 5 and enters a trapezoidal dirt channel which runs west to east through the middle of the site. Approximate channel dimensions: 5ft deep x 25ft wide (bottom), 2:1 side slopes

APPENDIX C:
HYDROLOGY MANUAL REFERENCES



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

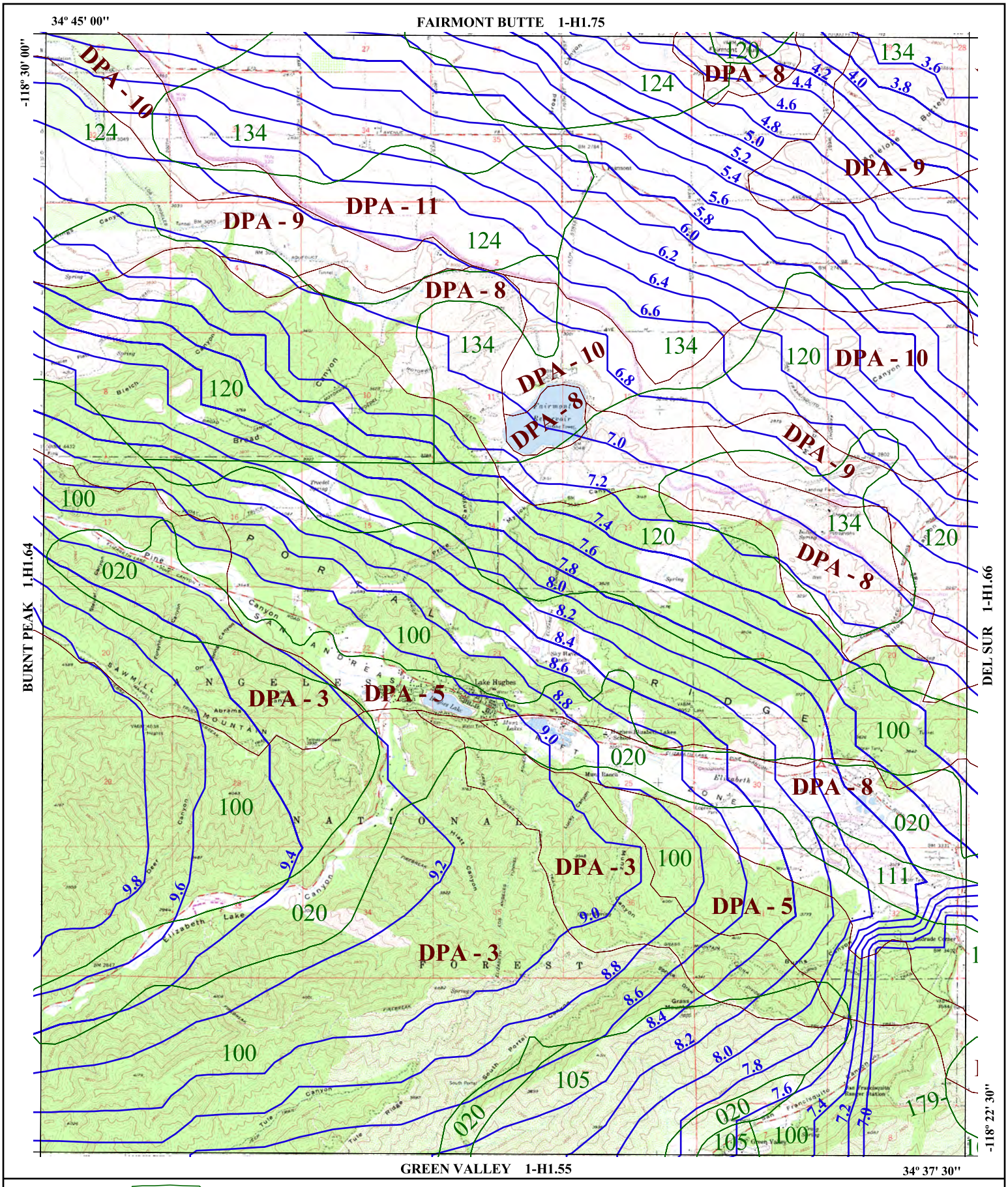
1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

DEL SUR
50-YEAR 24-HOUR ISOHYET

1-H1.66

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

LAKE HUGHES
50-YEAR 24-HOUR ISOHYET

1-H1.65

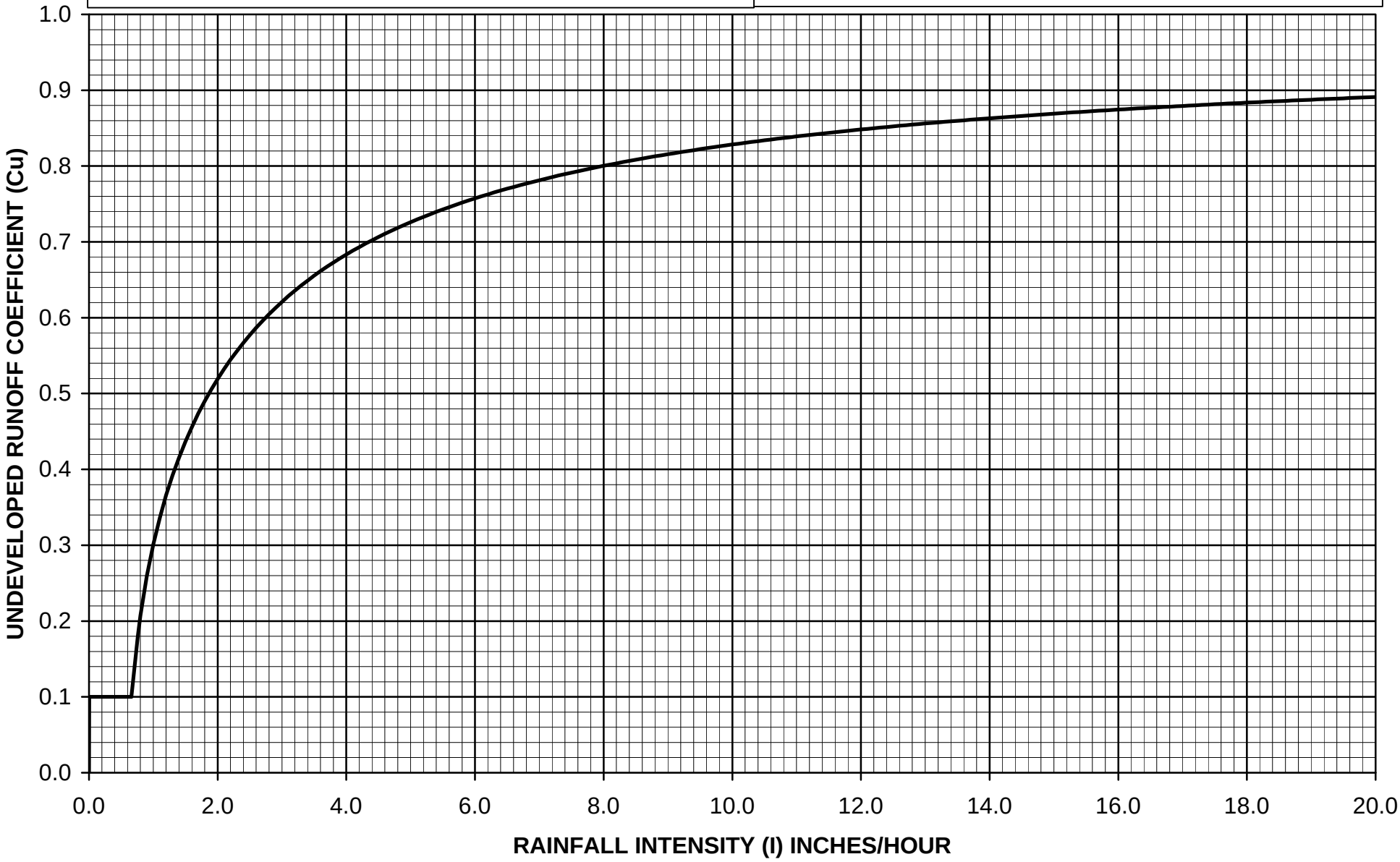
LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 100

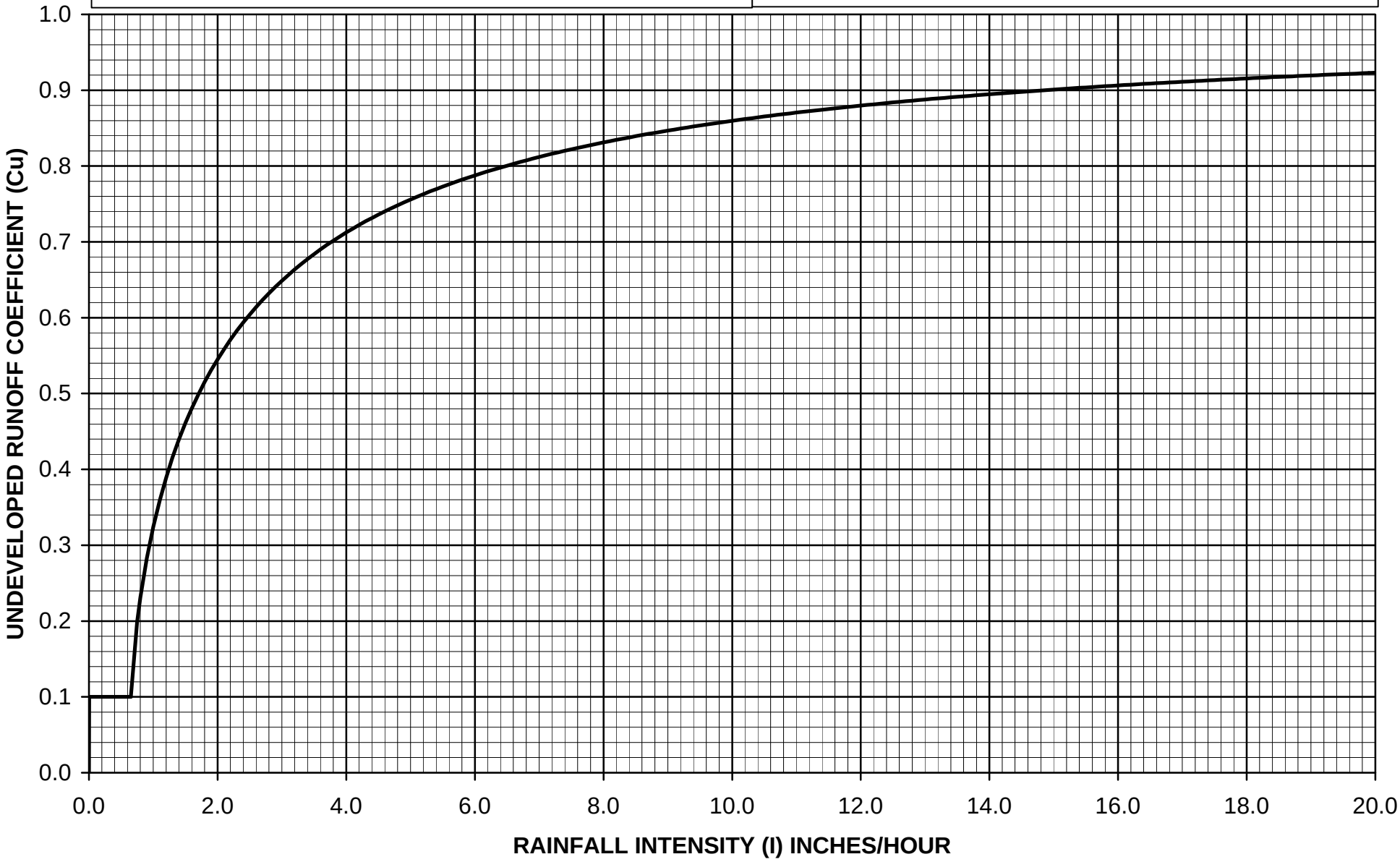


$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 120

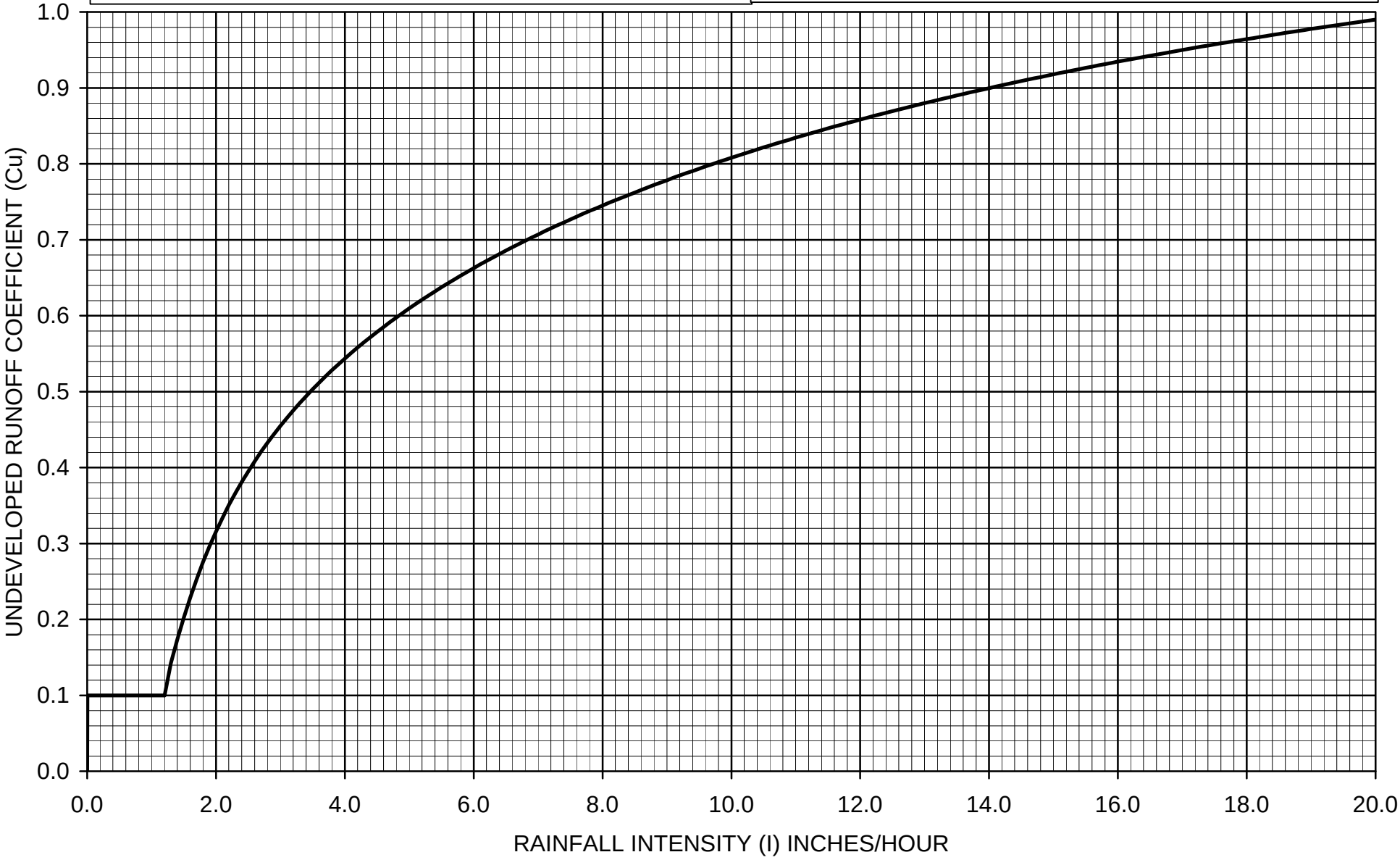


$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

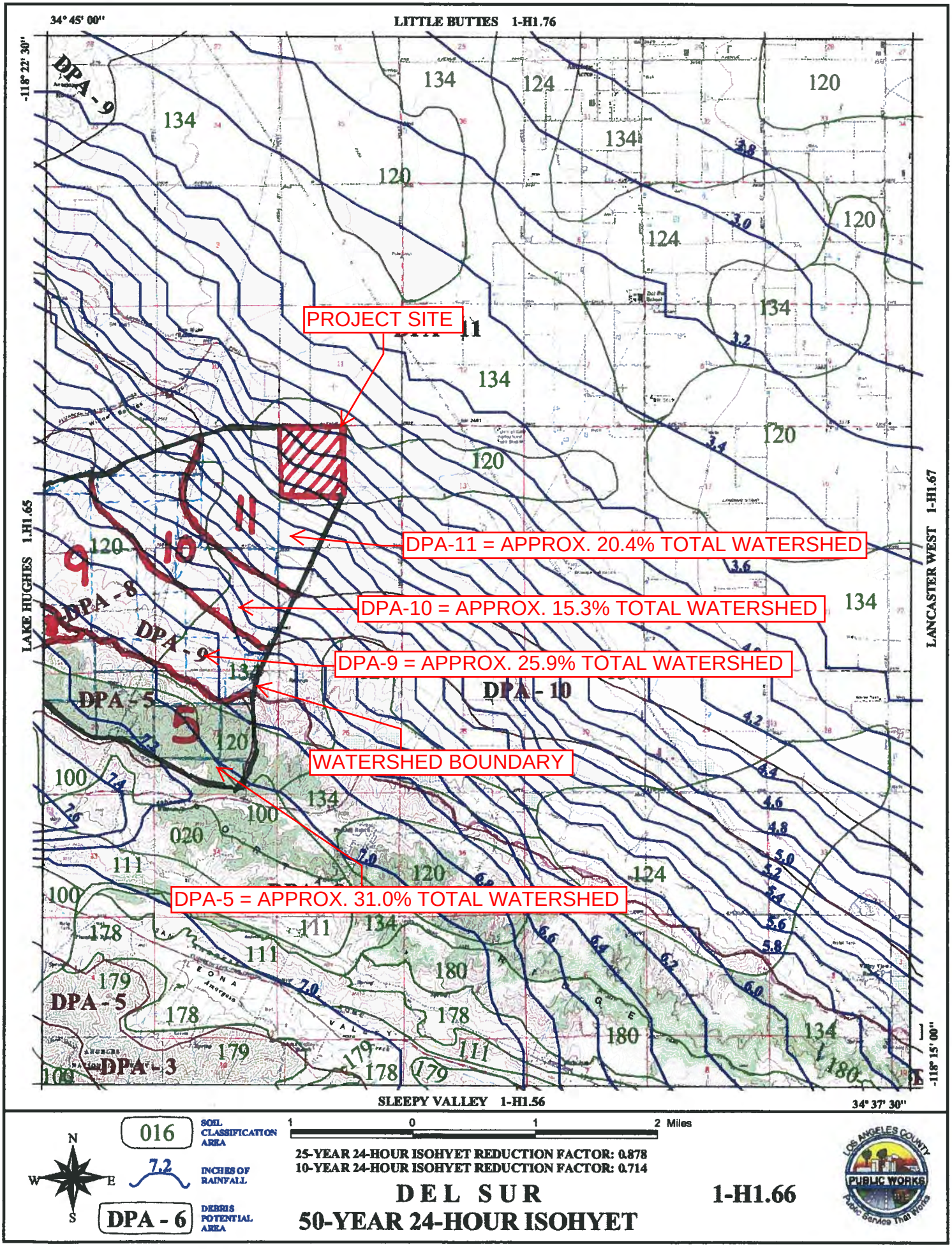
Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

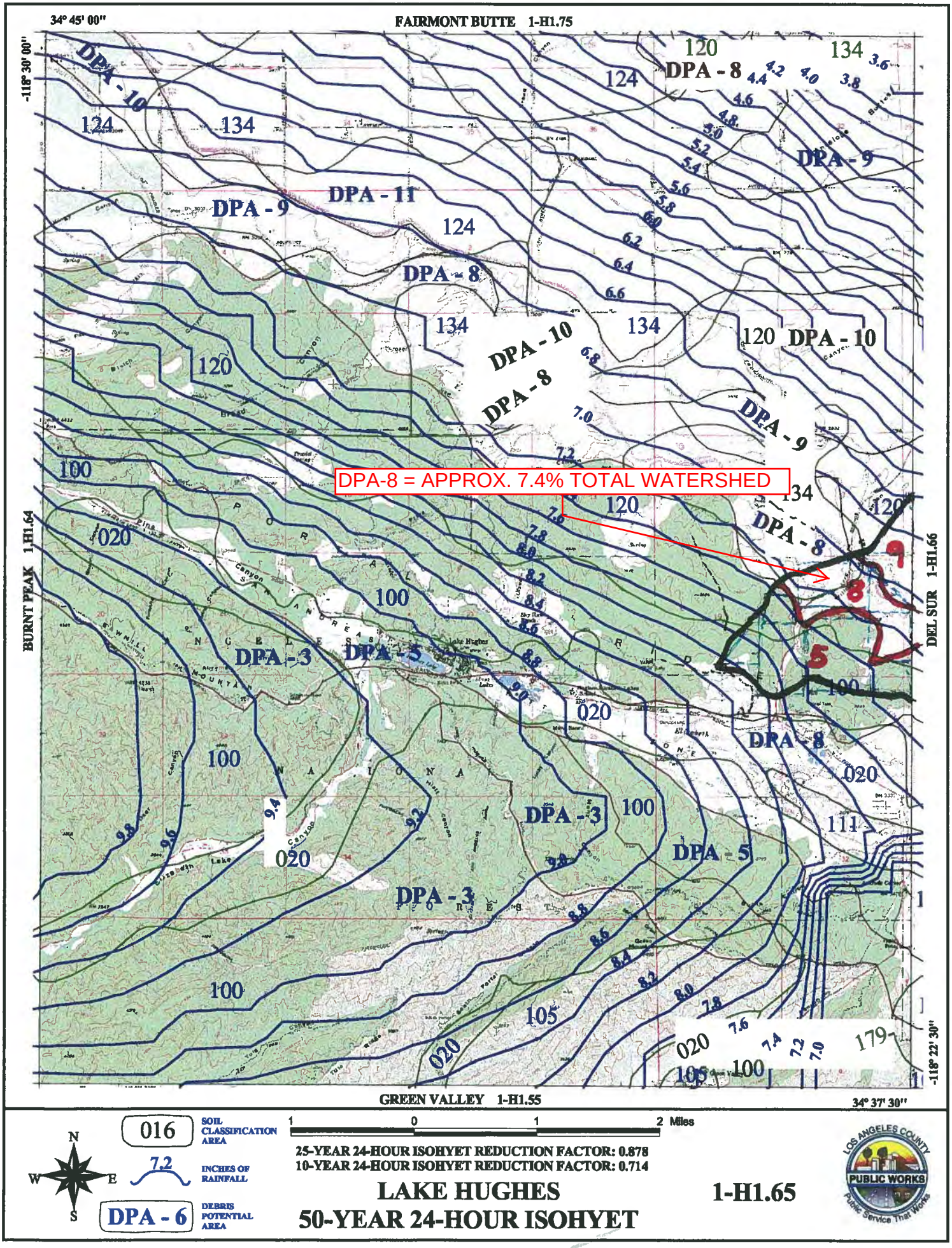
RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 134



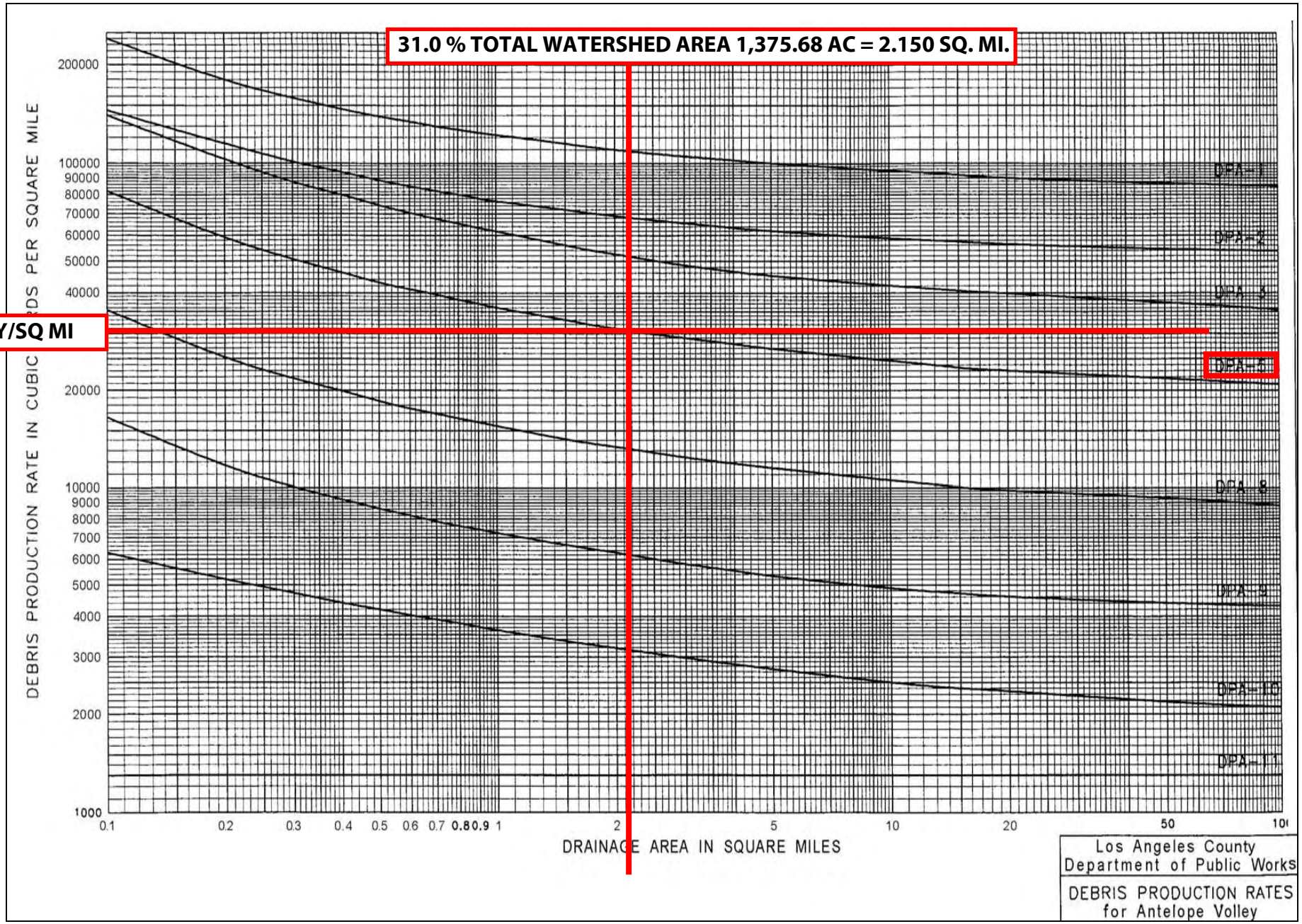
DPA ZONE WATERSHED AREA BREAKDOWN



DPA ZONE WATERSHED AREA BREAKDOWN



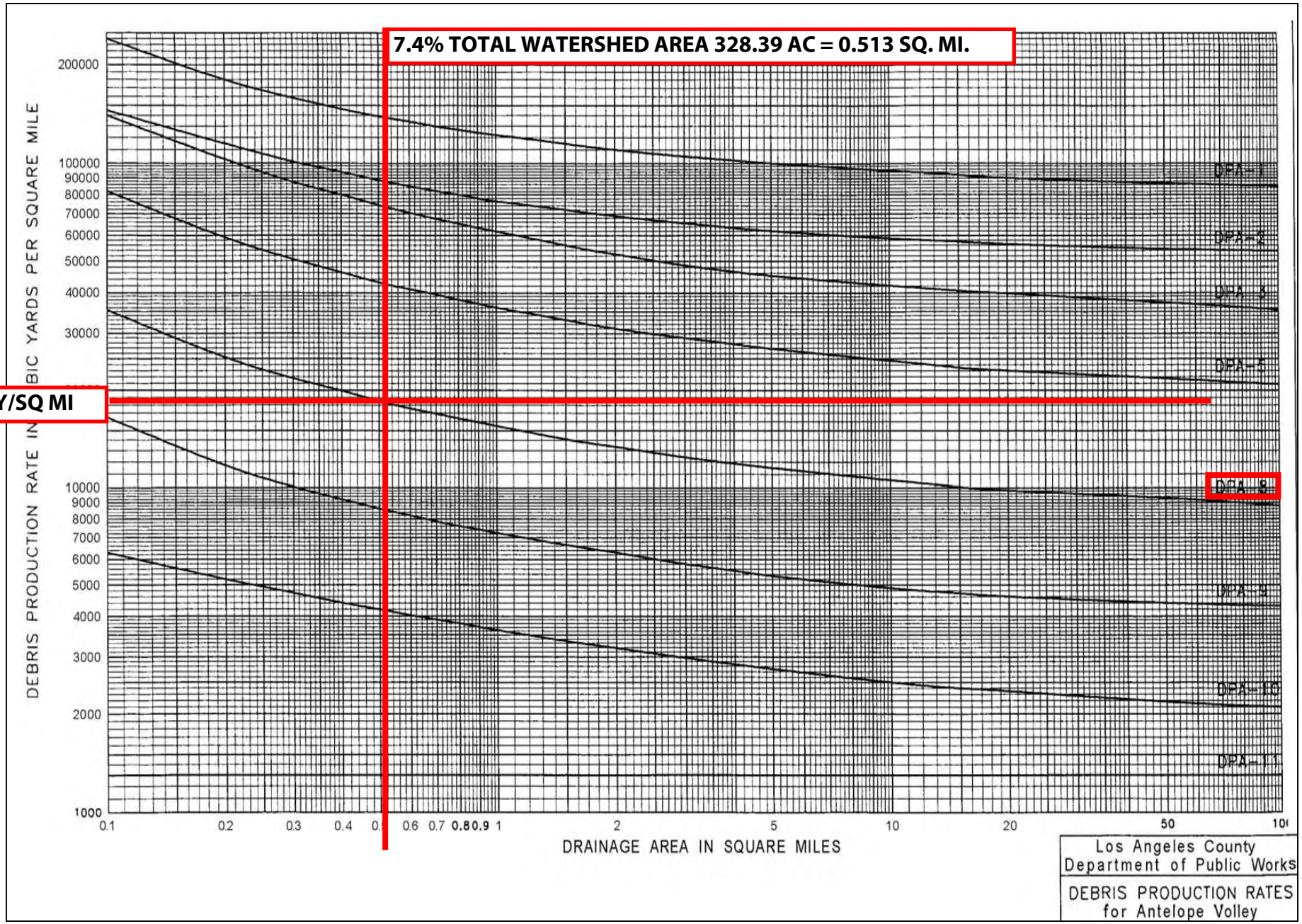
WATERSHED AREA UNDER DPA-5



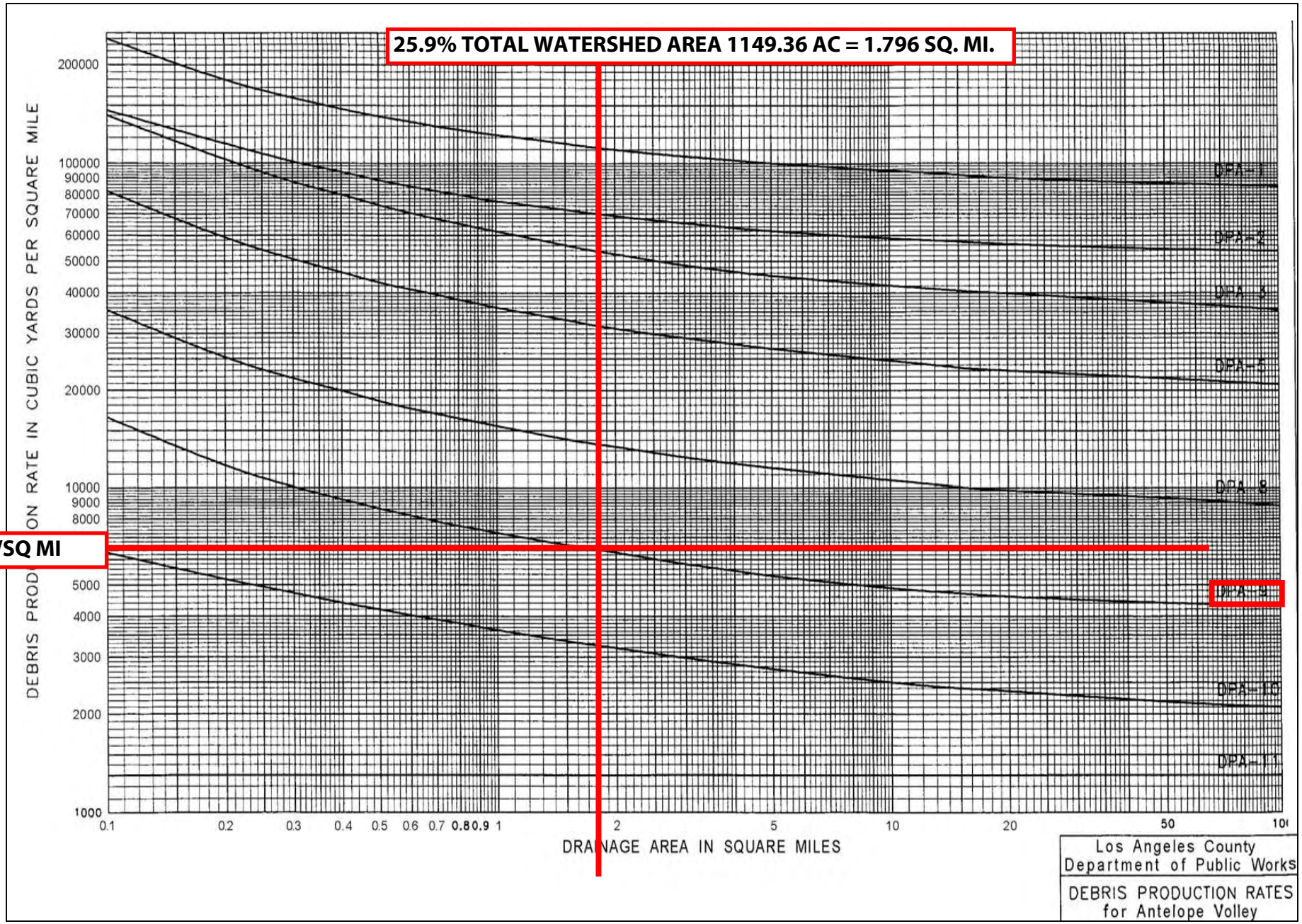
WATERSHED AREA UNDER DPA-8

7.4% TOTAL WATERSHED AREA 328.39 AC = 0.513 SQ. MI.

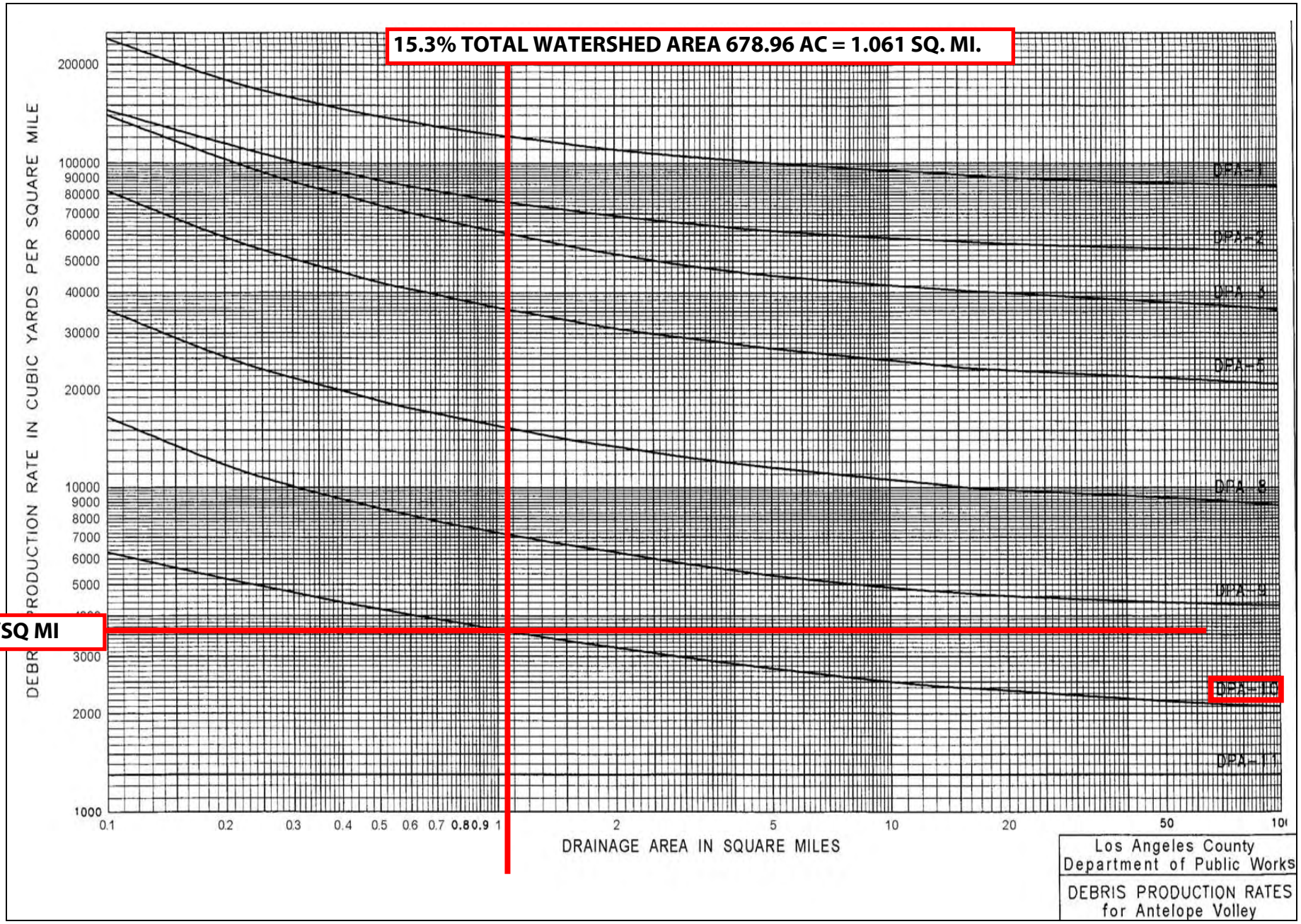
18,500 CY/SQ MI



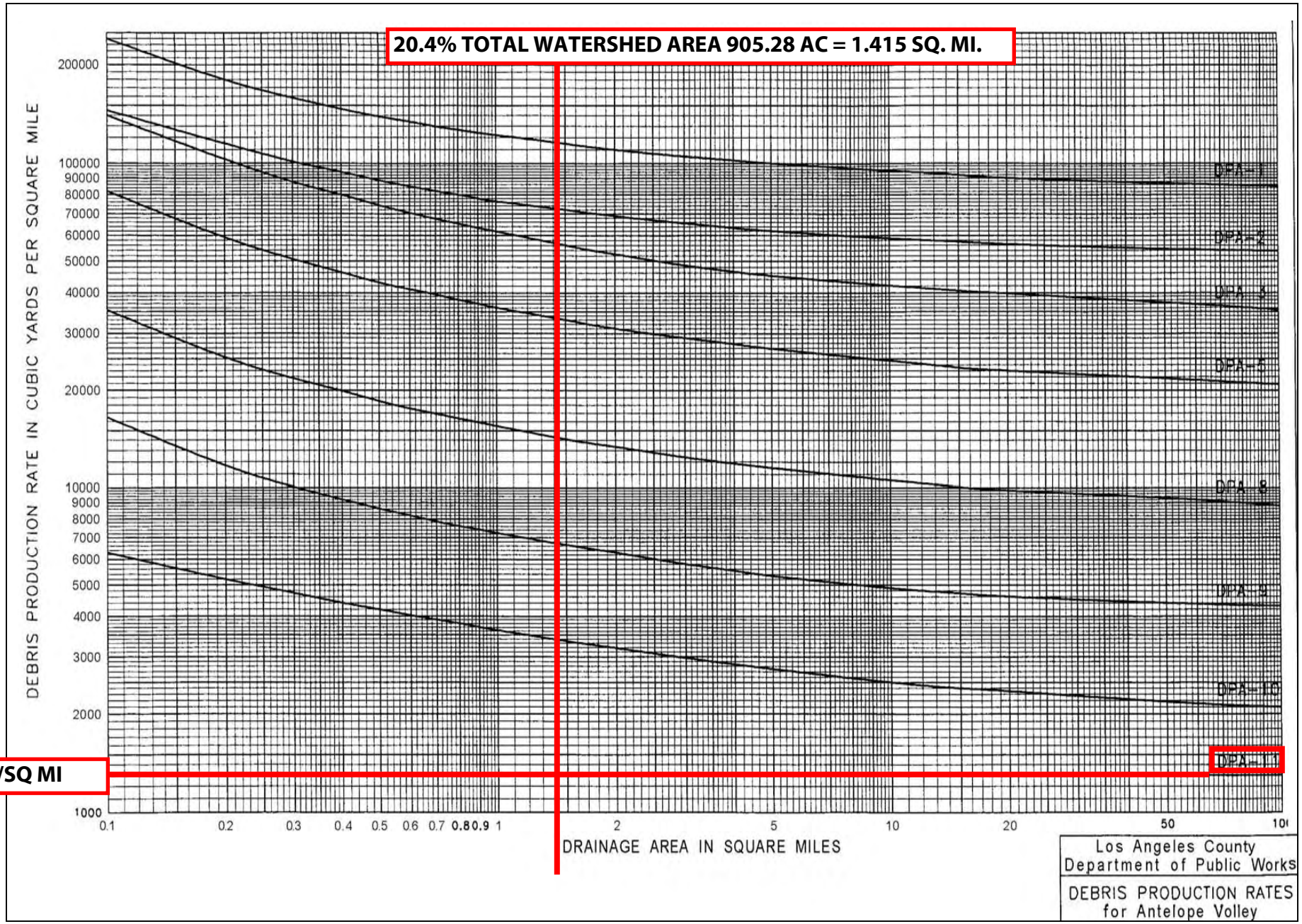
WATERSHED AREA UNDER DPA-9



WATERSHED AREA UNDER DPA-10



WATERSHED AREA UNDER DPA-11



TETRA TECH

Sheet No. ____ of ____ Date: ____
Checked By: ____ Office: ____
Telephone: ____
Engineer: ____ Job No.: ____
Subject: DEBRIS POTENTIAL VOLUME CALC.

DEBRIS POTENTIAL VOLUME (V_{DP})

V_{DP} = (30,500 CY/SQ. MI.) × (WATERSHED AREA UNDER DPA-5) +
(18,500 CY/SQ. MI.) × (WATERSHED AREA UNDER DPA-8) +
(6,500 CY/SQ. MI.) × (WATERSHED AREA UNDER DPA-9) +
(3,600 CY/SQ. MI.) × (WATERSHED AREA UNDER DPA-10) +
(1,300 CY/SQ. MI.) × (WATERSHED AREA UNDER DPA-11)

= (30,500 CY/SQ. MI.) × (2.150 SQ. MI.) + (18,500 CY/SQ MI.) × (0.513 SQ MI.)
+ (6,500 CY/SQ. MI.) × (1.796 SQ. MI.) + (3,600 CY/SQ. MI.) × (1.061 SQ. MI.)
+ (1,300 CY/SQ. MI.) × (1.415 SQ. MI.)

= (65,575 CY) + (9,491 CY) + (11,674 CY) + (3,820 CY)
+ (1,840 CY)

V_{DP} = 92,400 CY

APPENDIX D:
PRE-/POST DEVELOPMENT ON-/OFF-SITE HYDROLOGIC CALCULATIONS –25 & 50 YEAR EVENTS

OFF-SITE PRE-/POST DEVELOPMENT HYDROLOGIC CALCULATIONS

OFF-SITE HYDROLOGY																	
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 5	A1	27.69	0.01	25	100	1391	0.1299	7.0	10	3.03	0.62	0.62	52.02	0.34	56.29	2.66
Project 5	A2	30.81	0.01	25	100	534	0.2405	6.8	5	4.09	0.69	0.69	86.95	0.34	92.42	2.88
Project 5	A3	28.37	0.01	25	120	601	0.1488	6.8	5	4.03	0.71	0.71	81.18	0.34	85.81	2.66
Project 5	A4	31.37	0.01	25	120	1405	0.0940	6.7	11	2.75	0.62	0.62	53.49	0.34	57.81	2.84
Project 5	A5	22.00	0.01	25	120	1859	0.1141	6.5	13	2.47	0.60	0.60	32.60	0.34	35.42	1.96
Project 5	B1	30.66	0.01	25	100	2168	0.1213	7.0	13	2.67	0.59	0.59	48.30	0.34	52.71	2.97
Project 5	B2	27.16	0.01	25	100	1672	0.1860	6.8	11	2.82	0.60	0.60	45.95	0.34	50.02	2.50
Project 5	C1	37.53	0.01	25	100	535	0.0631	6.9	6	3.80	0.67	0.67	95.55	0.34	102.08	3.53
Project 5	C2	29.35	0.01	25	100	485	0.1684	6.8	5	4.03	0.68	0.68	80.43	0.34	85.73	2.69
Project 5	C3	10.91	0.01	25	100	963	0.0631	6.7	9	3.02	0.62	0.62	20.43	0.34	22.11	0.99
Project 5	D1	29.31	0.01	25	100	435	0.0128	6.8	7	3.44	0.65	0.65	65.54	0.34	70.36	2.74
Project 5	D2	32.44	0.01	25	100	815	0.0432	6.6	9	2.98	0.61	0.61	58.97	0.34	64.01	2.87
Project 5	D3	9.94	0.01	25	120	1178	0.1443	6.5	9	2.94	0.64	0.64	18.70	0.34	20.11	0.89
Project 5	E1	29.80	0.01	25	100	1554	0.1545	6.6	11	2.71	0.59	0.59	47.65	0.34	52.01	2.59
Project 5	E2	24.17	0.01	25	100	1754	0.1352	6.6	12	2.60	0.59	0.59	37.08	0.34	40.45	2.15
Project 5	F1	24.79	0.01	25	120	294	0.0633	6.5	5	3.88	0.70	0.70	67.33	0.34	71.34	2.21
Project 5	F2	16.36	0.01	25	120	472	0.0654	6.4	6	3.51	0.68	0.68	39.05	0.34	41.57	1.41
Project 5	G1	32.90	0.01	25	120	1103	0.1301	6.5	9	2.94	0.64	0.64	61.90	0.34	66.55	2.93
Project 5	G2	29.25	0.01	25	120	2059	0.0769	6.3	15	2.25	0.57	0.57	37.51	0.34	41.13	2.46
Project 5	H1	21.34	0.01	25	134	1765	0.0903	6.2	22	1.85	0.28	0.29	11.45	0.34	14.91	1.37
Project 5	H2	21.15	0.01	25	120	1243	0.1011	6.1	11	2.53	0.61	0.61	32.64	0.34	35.36	1.71
Project 5	H3	18.75	0.01	25	120	1367	0.0394	6.1	14	2.23	0.57	0.57	23.83	0.34	26.13	1.50
Project 5	H4	36.02	0.01	25	120	1830	0.0504	6.0	16	2.06	0.55	0.55	40.81	0.34	45.01	2.78
Project 5	I1	21.40	0.01	25	120	302	0.0344	6.3	5	3.77	0.70	0.70	56.47	0.34	59.83	1.83
Project 5	I2	34.22	0.01	25	120	563	0.0476	6.3	7	3.22	0.66	0.66	72.72	0.34	77.79	2.99
Project 5	I3	27.04	0.01	25	120	652	0.1290	6.2	6	3.41	0.68	0.68	62.70	0.34	66.73	2.24
Project 5	I4	27.89	0.01	25	120	712	0.0742	6.1	8	2.94	0.64	0.64	52.48	0.34	56.42	2.34
Project 5	I5	32.92	0.01	25	120	669	0.0611	6.1	8	2.94	0.64	0.64	61.94	0.34	66.59	2.76
Project 5	I6	30.95	0.01	25	120	453	0.0629	6.1	6	3.32	0.67	0.67	68.85	0.34	73.45	2.47
Project 5	I7	30.94	0.01	25	120	602	0.0608	6.1	7	3.09	0.65	0.65	62.14	0.34	66.64	2.55
Project 5	I8	35.39	0.01	25	120	1068	0.0258	6.1	12	2.40	0.59	0.59	50.11	0.34	54.61	2.86
Project 5	J1	34.79	0.01	25	120	1137	0.0408	6.0	12	2.36	0.59	0.59	48.44	0.34	52.78	2.76
Project 5	J2	22.06	0.01	25	120	1257	0.0351	5.8	14	2.13	0.56	0.56	26.31	0.34	28.93	1.66
Project 5	K1	34.02	0.01	25	120	529	0.0450	6.0	7	3.04	0.65	0.65	67.22	0.34	72.08	2.74
Project 5	K2	36.40	0.01	25	120	483	0.0550	6.0	6	3.27	0.67	0.67	79.75	0.34	85.08	2.84
Project 5	K3	35.96	0.01	25	120	417	0.0534	5.9	6	3.22	0.66	0.66	76.42	0.34	81.75	2.75
Project 5	K4	32.99	0.01	25	120	390	0.0512	5.9	6	3.22	0.66	0.66	70.11	0.34	75.00	2.52
Project 5	L1	37.40	0.01	25	120	716	0.0348	5.8	9	2.62	0.61	0.61	59.77	0.34	64.78	2.84
Project 5	L2	25.32	0.01	25	120	1522	0.0184	5.6	19	1.79	0.51	0.51	23.11	0.34	25.84	1.81
Project 5	L3	30.83	0.01	25	120	1068	0.0284	5.4	14	2.00	0.55	0.55	33.91	0.34	37.39	2.13
Project 5	L4	18.30	0.01	25	120	1510	0.0277	5.3	19	1.68	0.49	0.49	15.06	0.34	16.97	1.20
Project 5	M1	39.81	0.01	25	120	971	0.0180	5.8	13	2.21	0.57	0.57	50.15	0.34	54.97	3.03
Project 5	M2	35.64	0.01	25	120	644	0.0384	5.6	9	2.54	0.61	0.61	55.22	0.34	59.82	2.60
Project 5	M3	28.47	0.01	25	120	890	0.0255	5.4	12	2.15	0.56	0.56	34.28	0.34	37.69	1.99
Project 5	M4	27.31	0.01	25	120	1374	0.0255	5.4	18	1.75	0.50	0.50	23.90	0.34	26.82	1.85
Project 5	N1	24.62	0.01	25	120	1018	0.0235	4.9	16	1.70	0.49	0.49	20.51	0.34	23.11	1.46
Project 5	N2	21.15	0.01	25	134	1234	0.0162	4.9	30	1.26	0.12	0.13	3.46	0.34	6.13	0.95
Project 5	O1	38.33	0.01	25	120	1617	0.0150	5.1	24	1.45	0.45	0.45	25.01	0.34	28.62	2.37
Project 5	P1	14.08	0.01	25	120	1644	0.0298	5.6	18	1.84	0.52	0.52	13.47	0.34	15.01	1.01
Project 5	P2	20.93	0.01	25	120	1253	0.0255	5.3	17	1.77	0.51	0.51	18.89	0.34	21.12	1.38
Project 5	P3	14.76	0.01	25	120	1079	0.0170	5.1	17	1.71	0.50	0.50	12.62	0.34	14.16	0.93
Project 5	Q1	30.69	0.01	25	120	685	0.0123	4.8	14	1.78	0.51	0.51	27.86	0.34	31.15	1.80
Project 5	Q2	28.77	0.01	25	134	840	0.0151	4.7	30	1.20	0.10	0.11	3.80	0.34	7.30	1.21
Project 5	Q3	26.84	0.01	25	120	861	0.0141	4.5	18	1.46	0.45	0.45	17.63	0.34	20.18	1.42
Project 5	Q4	25.53	0.01	25	120	1032	0.0117	4.2	24	1.20	0.38	0.39	11.95	0.34	14.08	1.22
Project 5	R1	35.56	0.01	25	100	230	0.0808	6.6	5	3.93	0.68	0.68	95.03	0.34	101.26	3.15
Project 5	R2	20.91	0.01	25	100	315	0.1493	6.6	5	3.93	0.68	0.68	55.88	0.34	59.54	1.85
Project 5	R3	36.75	0.01	25	100	578	0.2332	6.5	5	3.88	0.67	0.67	95.54	0.34	102.08	3.20
Project 5	R4	34.18	0.01	25	100	929	0.0676	6.5	9	2.94	0.61	0.61	61.30	0.34	66.53	2.97
Project 5	R5	33.02	0.01	25	120	612	0.1326	6.4	6	3.51	0.68	0.68	78.81	0.34	83.90	2.84
Project 5	R6	32.58	0.01	25	120	626	0.1659	6.3	6	3.46	0.68	0.68	76.65	0.34	81.59	2.76
Project 5	R7	35.27	0.01	25	120	914	0.0661	6.3	9	2.86	0.63	0.63	63.55	0.34	68.51	3.02
Project 5	R8	32.24	0.01	25	120	1049	0.0643	6.2	10	2.69	0.62	0.62	53.77	0.34	58.11	2.68
Project 5	R9	35.77	0.01	25	120	1077	0.0687	6.2	10	2.69	0.62	0.62	59.66	0.34	64.47	2.97
Project 5	R10	38.07	0.01	25	120	2302	0.0522	6.1	19	1.96	0.54	0.54	40.29	0.34	44.58	3.07
Project 5	S1	38.71	0.01	25	100	821	0.0961	6.4	8	3.07	0.62	0.62	73.68	0.34	79.75	3.36
Project 5	S2	37.34	0.01	25	100	900	0.1400	6.4	8	3.07	0.62	0.62	71.07	0.34	76.93	3.24
Project 5	S3	35.40	0.01	25	100	730	0.2090	6.4	6	3.51	0.66	0.66	82.01	0.34	87.80	2.98
Project 5	S4	31.89	0.01	25	100	841	0.1413	6.3	8	3.02	0.62	0.62	59.71	0.34	64.62	2.72
Project 5	S5	34.55	0.01	25	120	1252	0.1225	6.3	10	2.72	0.62	0.62	58.27	0.34	62.97	2.93
Project 5	S6	32.68	0.01	25	120	1205	0.0802	6.2	11	2.57	0.61	0.61	51.23	0.34	55.51	2.71
Project 5	S7	31.14	0.01	25	120	1961	0.0539	6.1	16	2.12	0.56	0.56	36.97	0.34	40.64	2.51
Project 5	T1	38.50	0.01	25	120	149	0.0413	6.1	5	3.61	0.69	0.69	95.90	0.34	101.83	3.11

OFF-SITE HYDROLOGY																	
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 5	T2	27.60	0.01	25	120	418	0.0602	6.0	6	3.27	0.67	0.67	60.47	0.34	64.51	2.15
Project 5	T3	37.75	0.01	25	120	1081	0.0285	5.9	13	2.24	0.57	0.57	48.20	0.34	52.84	2.93
Project 5	T4	34.38	0.01	25	120	758	0.0382	5.8	10	2.50	0.60	0.60	51.57	0.34	56.04	2.58
Project 5	T5	39.03	0.01	25	120	997	0.0306	5.6	12	2.22	0.57	0.57	49.39	0.34	54.14	2.85
Project 5	T6	39.82	0.01	25	120	1261	0.0234	5.4	16	1.88	0.53	0.53	39.68	0.34	44.04	2.71
Project 5	T7	33.91	0.01	25	120	1125	0.0203	5.3	16	1.82	0.51	0.51	31.48	0.34	35.20	2.20
Project 5	T8	33.65	0.01	25	120	1207	0.0179	5.0	19	1.59	0.48	0.48	25.68	0.34	29.03	2.05
Project 5	T9	29.29	0.01	25	120	1108	0.0156	4.7	20	1.45	0.45	0.45	19.11	0.34	21.87	1.61
Project 5	T10	18.31	0.01	25	120	872	0.0140	4.5	18	1.46	0.45	0.45	12.03	0.34	13.77	0.97
Project 5	U1	17.78	0.01	25	100	1093	0.1646	6.4	9	2.90	0.61	0.61	31.45	0.34	34.13	1.52
Project 5	U2	21.42	0.01	25	100	800	0.2260	6.3	7	3.22	0.63	0.63	43.45	0.34	46.91	1.83
Project 5	U3	29.63	0.01	25	100	739	0.2324	6.3	6	3.46	0.65	0.65	66.64	0.34	71.55	2.45
Project 5	U4	32.27	0.01	25	120	935	0.1545	6.2	8	2.98	0.64	0.64	61.55	0.34	66.17	2.75
Project 5	U5	28.23	0.01	25	120	773	0.2019	6.2	6	3.41	0.68	0.68	65.46	0.34	69.66	2.33
Project 5	U6	25.60	0.01	25	120	651	0.0970	6.2	7	3.18	0.66	0.66	53.73	0.34	57.47	2.19
Project 5	U7	28.04	0.01	25	120	777	0.0674	6.1	8	2.94	0.64	0.64	52.76	0.34	56.72	2.35
Project 5	U8	33.08	0.01	25	120	759	0.0642	6.1	8	2.90	0.64	0.64	61.40	0.34	65.99	2.71
Project 5	U9	35.40	0.01	25	120	894	0.0478	6.1	10	2.61	0.61	0.61	56.36	0.34	61.08	2.84
Project 5	U10	29.66	0.01	25	120	798	0.0367	5.9	10	2.53	0.61	0.61	45.77	0.34	49.59	2.28
Project 5	U11	28.21	0.01	25	120	722	0.0358	5.8	9	2.62	0.61	0.61	45.09	0.34	48.86	2.14
Project 5	U12	29.18	0.01	25	120	692	0.0362	5.7	9	2.58	0.61	0.61	45.92	0.34	49.76	2.18
Project 5	U13	29.44	0.01	25	120	718	0.0292	5.6	10	2.42	0.59	0.59	42.03	0.34	45.81	2.12
Project 5	U14	27.90	0.01	25	120	672	0.0236	5.4	10	2.34	0.59	0.59	38.52	0.34	41.96	1.92
Project 5	U15	30.47	0.01	25	134	687	0.0205	5.4	18	1.75	0.26	0.27	14.40	0.34	19.16	1.64
Project 5	U16	31.99	0.01	25	134	673	0.0198	5.2	21	1.57	0.21	0.22	11.05	0.34	15.75	1.59
Project 5	U17	33.94	0.01	25	134	729	0.0192	5.0	30	1.29	0.13	0.14	6.13	0.34	10.48	1.55
Project 5	U18	38.52	0.01	25	134	968	0.0166	4.8	30	1.24	0.11	0.12	5.73	0.34	10.55	1.69
Project 5	U19	27.53	0.01	25	120	466	0.0163	4.7	10	2.00	0.55	0.55	30.28	0.34	33.39	1.54
Project 5	V1	16.08	0.01	25	100	993	0.1072	6.4	9	2.90	0.61	0.61	28.45	0.34	30.87	1.37
Project 5	V2	20.68	0.01	25	100	665	0.2624	6.3	6	3.46	0.65	0.65	46.51	0.34	49.94	1.71
Project 5	V3	37.04	0.01	25	100	707	0.2447	6.3	6	3.46	0.65	0.65	83.30	0.34	89.44	3.06
Project 5	V4	34.23	0.01	25	100	1131	0.1368	6.2	9	2.82	0.60	0.60	57.92	0.34	63.04	2.81
Project 5	V5	33.95	0.01	25	120	1077	0.1339	6.2	9	2.82	0.63	0.63	60.32	0.34	65.01	2.86
Project 5	V6	37.11	0.01	25	120	912	0.1447	6.1	8	2.94	0.64	0.64	69.83	0.34	75.07	3.11
Project 5	V7	34.64	0.01	25	120	865	0.0922	6.1	8	2.90	0.64	0.64	64.29	0.34	69.11	2.84
Project 5	V8	32.03	0.01	25	120	874	0.0579	6.1	9	2.74	0.62	0.62	54.41	0.34	58.81	2.58
Project 5	V9	35.75	0.01	25	120	1005	0.0429	6.0	11	2.46	0.60	0.60	52.77	0.34	57.33	2.77
Project 5	V10	34.31	0.01	25	120	930	0.0394	5.9	11	2.42	0.59	0.59	48.99	0.34	53.39	2.62
Project 5	V11	36.58	0.01	25	120	1060	0.0338	5.8	12	2.29	0.58	0.58	48.59	0.34	53.09	2.78
Project 5	V12	29.81	0.01	25	134	968	0.0277	5.5	22	1.64	0.24	0.25	12.22	0.34	16.68	1.62
Project 5	V13	23.41	0.01	25	134	881	0.0280	5.3	27	1.42	0.17	0.18	5.98	0.34	9.21	1.16
Project 5	V14	25.85	0.01	25	134	1876	0.0187	5.0	30	1.29	0.13	0.14	4.67	0.34	7.98	1.18
Project 5	W1	29.16	0.01	25	100	1918	0.1393	6.4	13	2.44	0.57	0.57	40.56	0.34	44.52	2.49
Project 5	W2	25.42	0.01	25	100	973	0.1263	6.3	8	3.02	0.62	0.62	47.60	0.34	51.51	2.17
Project 5	W3	36.92	0.01	25	100	1060	0.2106	6.2	8	2.98	0.61	0.61	67.11	0.34	72.85	3.09
Project 5	W4	37.92	0.01	25	120	1042	0.2183	6.1	8	2.94	0.64	0.64	71.35	0.34	76.71	3.18
Project 5	W5	30.70	0.01	25	134	1143	0.1251	6.1	14	2.23	0.35	0.36	24.65	0.34	30.24	1.97
Project 5	W6	18.92	0.01	25	134	1714	0.0626	6.1	25	1.70	0.25	0.26	8.36	0.34	11.26	1.14
Project 5	X1	37.18	0.01	25	100	760	0.2156	6.3	6	3.46	0.65	0.65	83.62	0.34	89.78	3.07
Project 5	X2	38.79	0.01	25	100	478	0.2206	6.2	5	3.72	0.67	0.67	96.68	0.34	103.26	3.18
Project 5	X3	32.12	0.01	25	100	925	0.0713	6.2	9	2.82	0.60	0.60	54.35	0.34	59.15	2.64
Project 5	X4	32.12	0.01	25	120	1102	0.1379	6.1	9	2.78	0.63	0.63	56.25	0.34	60.62	2.65
Project 5	X5	14.05	0.01	25	120	1002	0.3057	6.1	7	3.09	0.65	0.65	28.22	0.34	30.26	1.16
Project 5	Y1	24.22	0.01	25	100	901	0.1255	6.2	8	2.98	0.61	0.61	44.03	0.34	47.79	2.02
Project 5	Y2	27.47	0.01	25	100	833	0.1255	6.2	8	2.98	0.61	0.61	49.93	0.34	54.20	2.30
Project 5	Y3	28.64	0.01	25	120	969	0.1488	6.1	8	2.94	0.64	0.64	53.89	0.34	57.93	2.40
Project 5	Y4	21.04	0.01	25	120	630	0.2093	6.1	6	3.32	0.67	0.67	46.80	0.34	49.93	1.68
Project 5	Y5	16.42	0.01	25	120	850	0.1343	6.1	8	2.90	0.64	0.64	30.48	0.34	32.76	1.35
Project 5	Y6	11.52	0.01	25	134	1264	0.0843	6.0	17	2.00	0.31	0.32	7.37	0.34	9.34	0.72
Project 5	Z1	10.34	0.01	25	120	1080	0.1914	6.1	8	2.94	0.64	0.64	19.46	0.34	20.92	0.87
Project 5	Z2	8.89	0.01	25	120	1052	0.2202	6.1	8	2.90	0.64	0.64	16.50	0.34	17.74	0.73
Project 5	XX1	39.93	0.01	25	134	683	0.1097	6.1	9	2.74	0.42	0.42	45.95	0.34	54.33	2.63
Project 5	XX2	23.29	0.01	25	134	1083	0.0684	6.0	16	2.06	0.32	0.33	15.83	0.34	19.88	1.44
Project 5	XX3	27.80	0.01	25	134	869	0.0609	6.0	13	2.27	0.36	0.37	23.35	0.34	28.44	1.78
Project 5	YY1	36.43	0.01	25	134	522	0.0465	6.0	9	2.70	0.42	0.42	41.31	0.34	48.83	2.35
Project 5	YY2	31.47	0.01	25	134	746	0.0393	5.8	13	2.21	0.34	0.35	24.34	0.34	30.11	1.94
Project 5	YY3	36.17	0.01	25	134	914	0.0359	5.6	18	1.84	0.28	0.29	19.30	0.34	25.14	2.08
Project 5	YY4	35.30	0.01	25	134	1024	0.0289	5.4	29	1.42	0.17	0.18	9.02	0.34	13.88	1.81
Project 5	YY5	34.15	0.01	25	134	1102	0.0293	5.3	30	1.35	0.14	0.15	6.92	0.34	11.49	1.67
Project 5	YY6	32.26	0.01	25	134	1835	0.0193	5.0	30	1.29	0.13	0.14	5.83	0.34	9.96	1.48
Project 5	ZZ1	37.28	0.01	25	134	359	0.0192	4.8	12	1.91	0.29	0.30	21.36	0.34	27.56	1.83
Project 5	ZZ2	23.81	0.01	25	120	716	0.0181	4.7	14	1.71	0.50	0.50	20.36	0.34	22.84	1.33
Project 5	ZZ3	19.05	0.01	25	120	763	0.0159	4.5	15	1.59	0.48	0.48	14.54	0.34	16.43	1.01

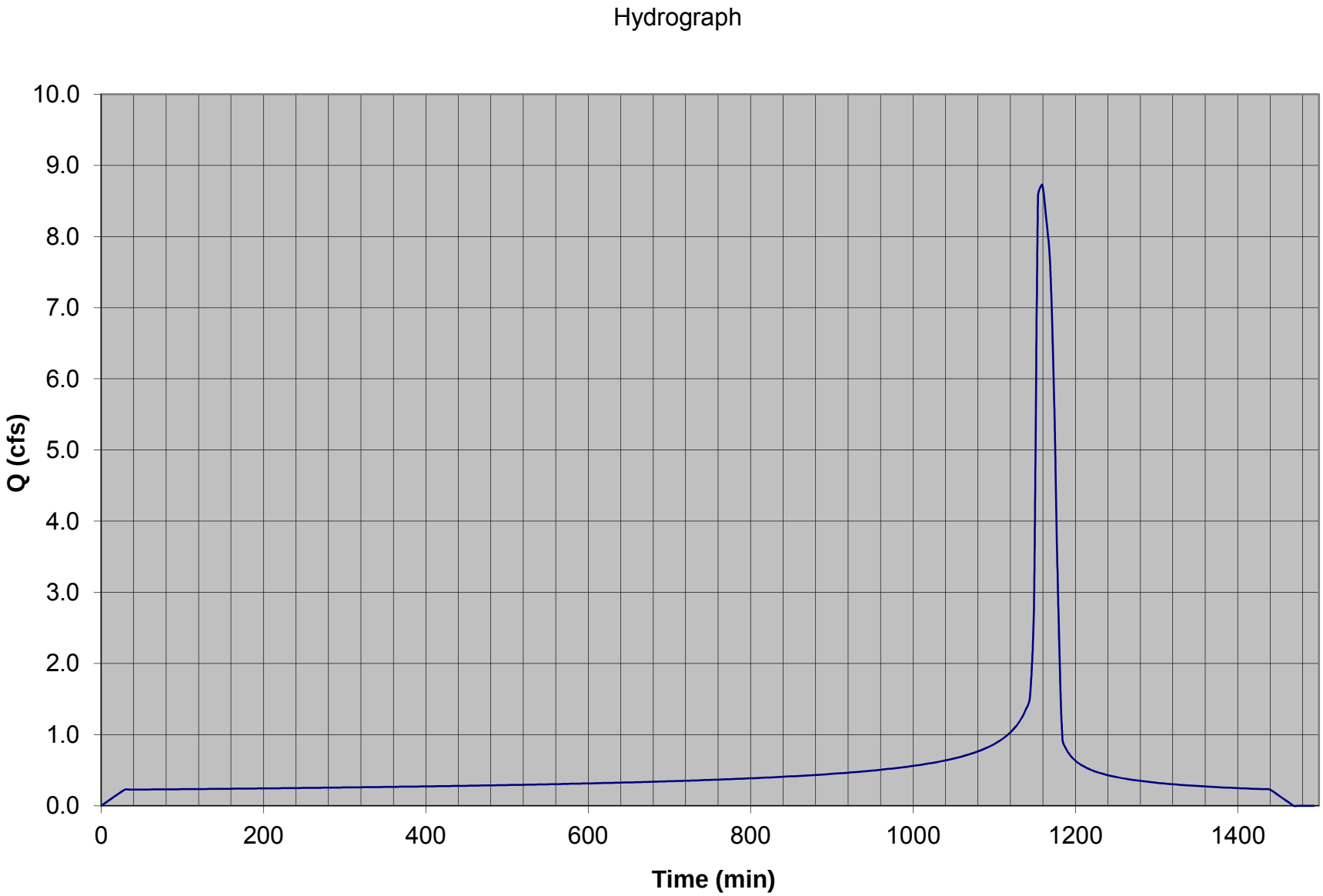
OFF-SITE HYDROLOGY																	
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 5	A1	27.69	0.01	50	100	1391	0.1299	8.0	9	3.62	0.66	0.66	66.16	0.34	70.85	3.24
Project 5	A2	30.81	0.01	50	100	534	0.2405	7.8	5	4.65	0.71	0.71	101.72	0.34	107.65	3.46
Project 5	A3	28.37	0.01	50	120	601	0.1488	7.7	5	4.59	0.74	0.74	96.36	0.34	101.18	3.21
Project 5	A4	31.37	0.01	50	120	1405	0.0940	7.6	9	3.44	0.68	0.68	73.38	0.34	78.10	3.49
Project 5	A5	22.00	0.01	50	120	1859	0.1141	7.4	11	3.05	0.65	0.65	43.62	0.34	46.77	2.31
Project 5	B1	30.66	0.01	50	100	2168	0.1213	8.0	12	3.16	0.63	0.63	61.04	0.34	65.88	3.58
Project 5	B2	27.16	0.01	50	100	1672	0.1860	7.8	9	3.53	0.66	0.66	63.28	0.34	67.75	3.07
Project 5	C1	37.53	0.01	50	100	535	0.0631	7.9	5	4.71	0.71	0.71	125.50	0.34	132.83	4.29
Project 5	C2	29.35	0.01	50	100	485	0.1684	7.7	5	4.59	0.71	0.71	95.65	0.34	101.21	3.23
Project 5	C3	10.91	0.01	50	100	963	0.0631	7.6	8	3.64	0.66	0.66	26.21	0.34	28.07	1.20
Project 5	D1	29.31	0.01	50	100	435	0.0128	7.7	6	4.22	0.69	0.69	85.34	0.34	90.74	3.20
Project 5	D2	32.44	0.01	50	100	815	0.0432	7.5	8	3.59	0.66	0.66	76.86	0.34	82.31	3.51
Project 5	D3	9.94	0.01	50	120	1178	0.1443	7.4	8	3.54	0.69	0.69	24.28	0.34	25.78	1.08
Project 5	E1	29.80	0.01	50	100	1554	0.1545	7.5	9	3.39	0.65	0.65	65.66	0.34	70.49	3.17
Project 5	E2	24.17	0.01	50	100	1754	0.1352	7.5	11	3.09	0.62	0.62	46.30	0.34	50.12	2.53
Project 5	F1	24.79	0.01	50	120	294	0.0633	7.4	5	4.42	0.73	0.73	79.99	0.34	84.18	2.65
Project 5	F2	16.36	0.01	50	120	472	0.0654	7.3	5	4.36	0.73	0.73	52.07	0.34	54.79	1.72
Project 5	G1	32.90	0.01	50	120	1103	0.1301	7.4	8	3.54	0.69	0.69	80.36	0.34	85.32	3.59
Project 5	G2	29.25	0.01	50	120	2059	0.0769	7.2	13	2.74	0.62	0.62	49.69	0.34	53.71	3.01
Project 5	H1	21.34	0.01	50	134	1765	0.0903	7.1	16	2.45	0.39	0.40	20.91	0.34	24.98	1.66
Project 5	H2	21.15	0.01	50	120	1243	0.1011	7.0	9	3.17	0.66	0.66	44.25	0.34	47.33	2.09
Project 5	H3	18.75	0.01	50	120	1367	0.0394	6.9	12	2.73	0.62	0.62	31.74	0.34	34.30	1.82
Project 5	H4	36.02	0.01	50	120	1830	0.0504	6.8	14	2.50	0.60	0.60	54.03	0.34	58.71	3.39
Project 5	I1	21.40	0.01	50	120	302	0.0344	7.2	5	4.30	0.73	0.73	67.17	0.34	70.68	2.20
Project 5	I2	34.22	0.01	50	120	563	0.0476	7.2	6	3.94	0.71	0.71	95.73	0.34	101.18	3.48
Project 5	I3	27.04	0.01	50	120	652	0.1290	7.1	5	4.24	0.72	0.72	82.55	0.34	87.07	2.72
Project 5	I4	27.89	0.01	50	120	712	0.0742	7.0	7	3.57	0.69	0.69	68.70	0.34	72.94	2.82
Project 5	I5	32.92	0.01	50	120	669	0.0611	7.0	7	3.57	0.69	0.69	81.09	0.34	86.10	3.32
Project 5	I6	30.95	0.01	50	120	453	0.0629	6.9	5	4.12	0.72	0.72	91.81	0.34	96.82	3.00
Project 5	I7	30.94	0.01	50	120	602	0.0608	6.9	6	3.78	0.70	0.70	81.87	0.34	86.73	2.96
Project 5	I8	35.39	0.01	50	120	1068	0.0258	6.9	11	2.84	0.63	0.63	63.32	0.34	68.25	3.37
Project 5	J1	34.79	0.01	50	120	1137	0.0408	6.8	11	2.80	0.63	0.63	61.37	0.34	66.14	3.24
Project 5	J2	22.06	0.01	50	120	1257	0.0351	6.6	12	2.61	0.61	0.61	35.12	0.34	38.06	2.01
Project 5	K1	34.02	0.01	50	120	529	0.0450	6.8	6	3.72	0.70	0.70	88.59	0.34	93.84	3.20
Project 5	K2	36.40	0.01	50	120	483	0.0550	6.8	6	3.72	0.70	0.70	94.79	0.34	100.40	3.42
Project 5	K3	35.96	0.01	50	120	417	0.0534	6.7	5	4.00	0.71	0.71	102.13	0.34	107.95	3.34
Project 5	K4	32.99	0.01	50	120	390	0.0512	6.7	5	4.00	0.71	0.71	93.69	0.34	99.04	3.07
Project 5	L1	37.40	0.01	50	120	716	0.0348	6.6	8	3.16	0.66	0.66	78.00	0.34	83.42	3.47
Project 5	L2	25.32	0.01	50	120	1522	0.0184	6.4	16	2.21	0.57	0.57	31.90	0.34	34.96	2.16
Project 5	L3	30.83	0.01	50	120	1068	0.0284	6.2	12	2.45	0.60	0.60	45.32	0.34	49.24	2.58
Project 5	L4	18.30	0.01	50	120	1510	0.0277	6.0	16	2.07	0.55	0.55	20.83	0.34	22.98	1.42
Project 5	M1	39.81	0.01	50	120	971	0.0180	6.6	12	2.61	0.61	0.61	63.38	0.34	68.69	3.63
Project 5	M2	35.64	0.01	50	120	644	0.0384	6.4	8	3.06	0.65	0.65	70.89	0.34	76.01	3.17
Project 5	M3	28.47	0.01	50	120	890	0.0255	6.2	11	2.55	0.61	0.61	44.29	0.34	47.98	2.34
Project 5	M4	27.31	0.01	50	120	1374	0.0255	6.1	15	2.17	0.57	0.57	33.78	0.34	37.02	2.19
Project 5	N1	24.62	0.01	50	120	1018	0.0235	5.6	13	2.13	0.56	0.56	29.37	0.34	32.29	1.79
Project 5	N2	21.15	0.01	50	134	1234	0.0162	5.6	30	1.44	0.17	0.18	5.48	0.34	8.43	1.12
Project 5	O1	38.33	0.01	50	120	1617	0.0150	5.8	20	1.80	0.51	0.51	35.19	0.34	39.34	2.84
Project 5	P1	14.08	0.01	50	120	1644	0.0298	6.4	16	2.21	0.57	0.57	17.74	0.34	19.44	1.20
Project 5	P2	20.93	0.01	50	120	1253	0.0255	6.0	14	2.21	0.57	0.57	26.37	0.34	28.90	1.65
Project 5	P3	14.76	0.01	50	120	1079	0.0170	5.8	14	2.13	0.56	0.56	17.61	0.34	19.36	1.11
Project 5	Q1	30.69	0.01	50	120	685	0.0123	5.5	12	2.17	0.57	0.57	37.96	0.34	41.60	2.17
Project 5	Q2	28.77	0.01	50	134	840	0.0151	5.3	30	1.36	0.15	0.16	6.26	0.34	10.10	1.42
Project 5	Q3	26.84	0.01	50	120	861	0.0141	5.1	15	1.82	0.51	0.51	24.91	0.34	27.86	1.68
Project 5	Q4	25.53	0.01	50	120	1032	0.0117	4.8	19	1.53	0.47	0.47	18.36	0.34	20.83	1.48
Project 5	R1	35.56	0.01	50	100	230	0.0808	7.5	5	4.47	0.71	0.71	112.86	0.34	119.40	3.78
Project 5	R2	20.91	0.01	50	100	315	0.1493	7.5	5	4.47	0.71	0.71	66.36	0.34	70.21	2.22
Project 5	R3	36.75	0.01	50	100	578	0.2332	7.4	5	4.42	0.70	0.70	113.70	0.34	120.61	3.82
Project 5	R4	34.18	0.01	50	100	929	0.0676	7.4	8	3.54	0.66	0.66	79.86	0.34	85.50	3.63
Project 5	R5	33.02	0.01	50	120	612	0.1326	7.3	5	4.36	0.73	0.73	105.10	0.34	110.59	3.46
Project 5	R6	32.58	0.01	50	120	626	0.1659	7.2	5	4.30	0.73	0.73	102.27	0.34	107.61	3.35
Project 5	R7	35.27	0.01	50	120	914	0.0661	7.2	8	3.44	0.68	0.68	82.50	0.34	87.81	3.69
Project 5	R8	32.24	0.01	50	120	1049	0.0643	7.1	9	3.21	0.66	0.66	68.30	0.34	73.06	3.25
Project 5	R9	35.77	0.01	50	120	1077	0.0687	7.1	9	3.21	0.66	0.66	75.78	0.34	81.06	3.61
Project 5	R10	38.07	0.01	50	120	2302	0.0522	7.0	16	2.42	0.59	0.59	54.36	0.34	59.24	3.68
Project 5	S1	38.71	0.01	50	100	821	0.0961	7.3	7	3.72	0.67	0.67	96.48	0.34	103.05	4.04
Project 5	S2	37.34	0.01	50	100	900	0.1400	7.3	7	3.72	0.67	0.67	93.07	0.34	99.40	3.89
Project 5	S3	35.40	0.01	50	100	730	0.2090	7.3	5	4.36	0.70	0.70	108.04	0.34	114.59	3.62
Project 5	S4	31.89	0.01	50	100	841	0.1413	7.2	7	3.67	0.66	0.66	77.24	0.34	82.74	3.27
Project 5	S5	34.55	0.01	50	120	1252	0.1225	7.2	9	3.26	0.66	0.66	74.34	0.34	79.53	3.56
Project 5	S6	32.68	0.01	50	120	1205	0.0802	7.1	9	3.21	0.66	0.66	69.24	0.34	74.06	3.30
Project 5	S7	31.14	0.01	50	120	1961	0.0539	7.0	14	2.57	0.61	0.61	48.82	0.34	52.89	3.06
Project 5	T1	38.50	0.01	50	120	149	0.0413	6.9	5	4.12	0.72	0.72	114.21	0.34	120.44	3.73

OFF-SITE HYDROLOGY																	
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 5	T2	27.60	0.01	50	120	418	0.0602	6.8	5	4.06	0.71	0.71	79.56	0.34	84.11	2.61
Project 5	T3	37.75	0.01	50	120	1081	0.0285	6.7	11	2.76	0.62	0.62	64.60	0.34	69.83	3.45
Project 5	T4	34.38	0.01	50	120	758	0.0382	6.6	8	3.16	0.66	0.66	71.70	0.34	76.69	3.19
Project 5	T5	39.03	0.01	50	120	997	0.0306	6.4	11	2.64	0.62	0.62	63.88	0.34	69.02	3.34
Project 5	T6	39.82	0.01	50	120	1261	0.0234	6.2	14	2.28	0.58	0.58	52.66	0.34	57.54	3.29
Project 5	T7	33.91	0.01	50	120	1125	0.0203	6.0	14	2.21	0.57	0.57	42.72	0.34	46.82	2.68
Project 5	T8	33.65	0.01	50	120	1207	0.0179	5.7	16	1.97	0.54	0.54	35.80	0.34	39.61	2.44
Project 5	T9	29.29	0.01	50	120	1108	0.0156	5.3	17	1.78	0.51	0.51	26.59	0.34	29.72	1.95
Project 5	T10	18.31	0.01	50	120	872	0.0140	5.1	15	1.82	0.51	0.51	17.00	0.34	19.01	1.15
Project 5	U1	17.78	0.01	50	100	1093	0.1646	7.3	8	3.49	0.65	0.65	40.33	0.34	43.31	1.85
Project 5	U2	21.42	0.01	50	100	800	0.2260	7.2	6	3.94	0.68	0.68	57.39	0.34	61.15	2.12
Project 5	U3	29.63	0.01	50	100	739	0.2324	7.2	5	4.30	0.70	0.70	89.19	0.34	94.58	2.97
Project 5	U4	32.27	0.01	50	120	935	0.1545	7.1	7	3.62	0.69	0.69	80.60	0.34	85.59	3.32
Project 5	U5	28.23	0.01	50	120	773	0.2019	7.1	6	3.89	0.70	0.70	76.87	0.34	81.45	2.82
Project 5	U6	25.60	0.01	50	120	651	0.0970	7.1	6	3.89	0.70	0.70	69.71	0.34	73.87	2.56
Project 5	U7	28.04	0.01	50	120	777	0.0674	7.0	7	3.57	0.69	0.69	69.07	0.34	73.33	2.83
Project 5	U8	33.08	0.01	50	120	759	0.0642	6.9	7	3.51	0.68	0.68	78.96	0.34	84.05	3.27
Project 5	U9	35.40	0.01	50	120	894	0.0478	6.9	9	3.12	0.65	0.65	71.79	0.34	77.00	3.43
Project 5	U10	29.66	0.01	50	120	798	0.0367	6.7	9	3.03	0.65	0.65	58.42	0.34	62.63	2.76
Project 5	U11	28.21	0.01	50	120	722	0.0358	6.6	8	3.16	0.66	0.66	58.83	0.34	62.92	2.61
Project 5	U12	29.18	0.01	50	120	692	0.0362	6.5	8	3.11	0.65	0.65	58.99	0.34	63.26	2.64
Project 5	U13	29.44	0.01	50	120	718	0.0292	6.4	9	2.90	0.64	0.64	54.64	0.34	58.73	2.57
Project 5	U14	27.90	0.01	50	120	672	0.0236	6.2	9	2.81	0.63	0.63	49.39	0.34	53.23	2.33
Project 5	U15	30.47	0.01	50	134	687	0.0205	6.1	13	2.32	0.36	0.37	26.16	0.34	31.88	2.01
Project 5	U16	31.99	0.01	50	134	673	0.0198	5.9	14	2.17	0.34	0.35	24.30	0.34	30.03	1.98
Project 5	U17	33.94	0.01	50	134	729	0.0192	5.7	17	1.91	0.29	0.30	19.45	0.34	25.09	2.00
Project 5	U18	38.52	0.01	50	134	968	0.0166	5.5	30	1.41	0.16	0.17	9.23	0.34	14.53	1.99
Project 5	U19	27.53	0.01	50	120	466	0.0163	5.3	9	2.40	0.59	0.59	38.98	0.34	42.48	1.85
Project 5	V1	16.08	0.01	50	100	993	0.1072	7.3	8	3.49	0.65	0.65	36.48	0.34	39.17	1.67
Project 5	V2	20.68	0.01	50	100	665	0.2624	7.2	5	4.30	0.70	0.70	62.25	0.34	66.01	2.07
Project 5	V3	37.04	0.01	50	100	707	0.2447	7.2	5	4.30	0.70	0.70	111.49	0.34	118.24	3.71
Project 5	V4	34.23	0.01	50	100	1131	0.1368	7.1	8	3.40	0.65	0.65	75.65	0.34	81.21	3.43
Project 5	V5	33.95	0.01	50	120	1077	0.1339	7.1	8	3.40	0.68	0.68	78.49	0.34	83.53	3.48
Project 5	V6	37.11	0.01	50	120	912	0.1447	7.0	7	3.57	0.69	0.69	91.41	0.34	97.06	3.75
Project 5	V7	34.64	0.01	50	120	865	0.0922	6.9	7	3.51	0.68	0.68	82.68	0.34	88.01	3.42
Project 5	V8	32.03	0.01	50	120	874	0.0579	6.9	8	3.30	0.67	0.67	70.82	0.34	75.56	3.16
Project 5	V9	35.75	0.01	50	120	1005	0.0429	6.8	10	2.93	0.64	0.64	67.04	0.34	72.07	3.36
Project 5	V10	34.31	0.01	50	120	930	0.0394	6.7	9	3.03	0.65	0.65	67.57	0.34	72.45	3.20
Project 5	V11	36.58	0.01	50	120	1060	0.0338	6.6	11	2.72	0.62	0.62	61.69	0.34	66.67	3.27
Project 5	V12	29.81	0.01	50	134	968	0.0277	6.3	16	2.18	0.34	0.35	22.75	0.34	28.12	1.97
Project 5	V13	23.41	0.01	50	134	881	0.0280	6.0	16	2.07	0.32	0.33	15.99	0.34	20.09	1.45
Project 5	V14	25.85	0.01	50	134	1876	0.0187	5.7	30	1.47	0.18	0.19	7.22	0.34	10.87	1.40
Project 5	W1	29.16	0.01	50	100	1918	0.1393	7.3	12	2.89	0.61	0.61	51.41	0.34	55.78	2.98
Project 5	W2	25.42	0.01	50	100	973	0.1263	7.2	7	3.67	0.66	0.66	61.57	0.34	65.95	2.61
Project 5	W3	36.92	0.01	50	100	1060	0.2106	7.1	7	3.62	0.66	0.66	88.21	0.34	94.47	3.71
Project 5	W4	37.92	0.01	50	120	1042	0.2183	7.0	7	3.57	0.69	0.69	93.41	0.34	99.17	3.83
Project 5	W5	30.70	0.01	50	134	1143	0.1251	6.9	11	2.84	0.44	0.44	38.36	0.34	44.85	2.33
Project 5	W6	18.92	0.01	50	134	1714	0.0626	6.9	18	2.25	0.35	0.36	15.33	0.34	18.81	1.42
Project 5	X1	37.18	0.01	50	100	760	0.2156	7.2	6	3.94	0.68	0.68	99.61	0.34	106.15	3.68
Project 5	X2	38.79	0.01	50	100	478	0.2206	7.1	5	4.24	0.69	0.69	113.48	0.34	120.67	3.80
Project 5	X3	32.12	0.01	50	100	925	0.0713	7.1	8	3.40	0.65	0.65	70.99	0.34	76.20	3.22
Project 5	X4	32.12	0.01	50	120	1102	0.1379	7.0	8	3.35	0.67	0.67	72.09	0.34	76.93	3.23
Project 5	X5	14.05	0.01	50	120	1002	0.3057	6.9	6	3.78	0.70	0.70	37.18	0.34	39.38	1.35
Project 5	Y1	24.22	0.01	50	100	901	0.1255	7.1	7	3.62	0.66	0.66	57.87	0.34	61.97	2.43
Project 5	Y2	27.47	0.01	50	100	833	0.1255	7.1	7	3.62	0.66	0.66	65.63	0.34	70.29	2.76
Project 5	Y3	28.64	0.01	50	120	969	0.1488	7.0	7	3.57	0.69	0.69	70.55	0.34	74.90	2.89
Project 5	Y4	21.04	0.01	50	120	630	0.2093	6.9	5	4.12	0.72	0.72	62.41	0.34	65.82	2.04
Project 5	Y5	16.42	0.01	50	120	850	0.1343	6.9	7	3.51	0.68	0.68	39.19	0.34	41.72	1.62
Project 5	Y6	11.52	0.01	50	134	1264	0.0843	6.8	13	2.59	0.41	0.41	12.23	0.34	14.54	0.87
Project 5	Z1	10.34	0.01	50	120	1080	0.1914	7.0	7	3.57	0.69	0.69	25.47	0.34	27.04	1.04
Project 5	Z2	8.89	0.01	50	120	1052	0.2202	6.9	7	3.51	0.68	0.68	21.22	0.34	22.59	0.88
Project 5	XX1	39.93	0.01	50	134	683	0.1097	6.9	8	3.30	0.48	0.48	63.25	0.34	72.56	3.16
Project 5	XX2	23.29	0.01	50	134	1083	0.0684	6.8	12	2.69	0.42	0.42	26.31	0.34	31.10	1.76
Project 5	XX3	27.80	0.01	50	134	869	0.0609	6.8	11	2.80	0.43	0.43	33.47	0.34	39.35	2.07
Project 5	YY1	36.43	0.01	50	134	522	0.0465	6.8	8	3.25	0.48	0.48	56.83	0.34	65.18	2.82
Project 5	YY2	31.47	0.01	50	134	746	0.0393	6.6	11	2.72	0.42	0.42	35.95	0.34	42.50	2.26
Project 5	YY3	36.17	0.01	50	134	914	0.0359	6.4	13	2.44	0.38	0.39	34.42	0.34	41.40	2.53
Project 5	YY4	35.30	0.01	50	134	1024	0.0289	6.2	17	2.08	0.32	0.33	24.23	0.34	30.44	2.31
Project 5	YY5	34.15	0.01	50	134	1102	0.0293	6.0	20	1.87	0.29	0.30	19.16	0.34	24.70	2.09
Project 5	YY6	32.26	0.01	50	134	1835	0.0193	5.7	30	1.47	0.18	0.19	9.01	0.34	13.56	1.75
Project 5	ZZ1	37.28	0.01	50	134	359	0.0192	5.5	9	2.49	0.39	0.40	37.13	0.34	44.37	2.18
Project 5	ZZ2	23.81	0.01	50	120	716	0.0181	5.3	12	2.10	0.56	0.56	28.00	0.34	30.78	1.60
Project 5	ZZ3	19.05	0.01	50	120	763	0.0159	5.1	13	1.94	0.54	0.54	19.96	0.34	22.07	1.22

ON-SITE PRE-DEVELOPMENT HYDROLOGIC CALCULATIONS

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 5	A	22.06	0.01	25	120	1291	0.0116	4.2	29	1.10	0.35	0.36	8.74	0.34	10.47	1.04
Project 5	B	18.00	0.01	25	120	1459	0.0103	4.0	30	1.04	0.34	0.35	6.55	0.34	7.90	0.79
Project 5	C	10.54	0.01	25	120	852	0.0129	4.4	19	1.40	0.43	0.43	6.35	0.34	7.33	0.54
Project 5	D	15.03	0.01	25	120	1485	0.0168	4.4	28	1.17	0.37	0.38	6.68	0.34	7.92	0.75
Project 5	E	33.95	0.01	25	120	456	0.0088	4.4	12	1.74	0.50	0.50	29.54	0.34	33.15	1.78
Project 5	F	25.37	0.01	25	120	747	0.0094	4.2	19	1.34	0.42	0.42	14.28	0.34	16.57	1.22
Project 5	G	20.26	0.01	25	120	706	0.0085	4.2	19	1.34	0.42	0.42	11.40	0.34	13.23	0.98
Project 5	H	16.02	0.01	25	120	872	0.0138	4.4	19	1.40	0.43	0.43	9.64	0.34	11.14	0.82
Project 5	A	22.06	0.01	50	120	1291	0.0116	4.8	24	1.37	0.43	0.43	13.00	0.34	15.01	1.25
Project 5	B	18.00	0.01	50	120	1459	0.0103	4.6	29	1.20	0.38	0.39	8.42	0.34	9.93	0.95
Project 5	C	10.54	0.01	50	120	852	0.0129	5.0	15	1.78	0.51	0.51	9.57	0.34	10.70	0.64
Project 5	D	15.03	0.01	50	120	1485	0.0168	5.0	22	1.49	0.46	0.46	10.30	0.34	11.74	0.91
Project 5	E	33.95	0.01	50	120	456	0.0088	5.0	11	2.06	0.55	0.55	38.47	0.34	42.43	2.08
Project 5	F	25.37	0.01	50	120	747	0.0094	4.8	16	1.66	0.49	0.49	20.64	0.34	23.24	1.46
Project 5	G	20.26	0.01	50	120	706	0.0085	4.8	15	1.71	0.50	0.50	17.32	0.34	19.43	1.17
Project 5	H	16.02	0.01	50	120	872	0.0138	5.0	15	1.78	0.51	0.51	14.54	0.34	16.26	0.98

DRAINAGE AREA A 25-YEAR STORM EVENT



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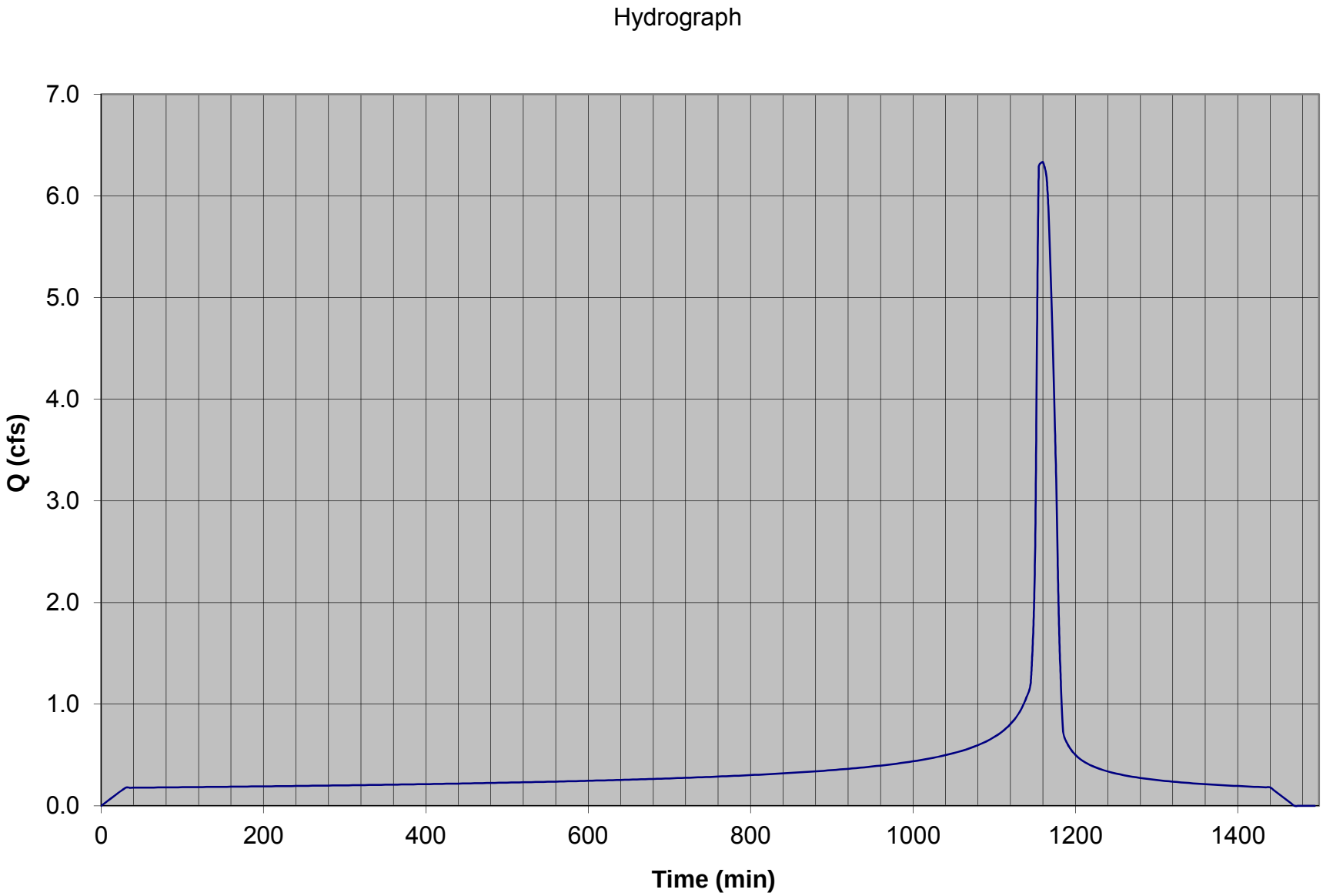

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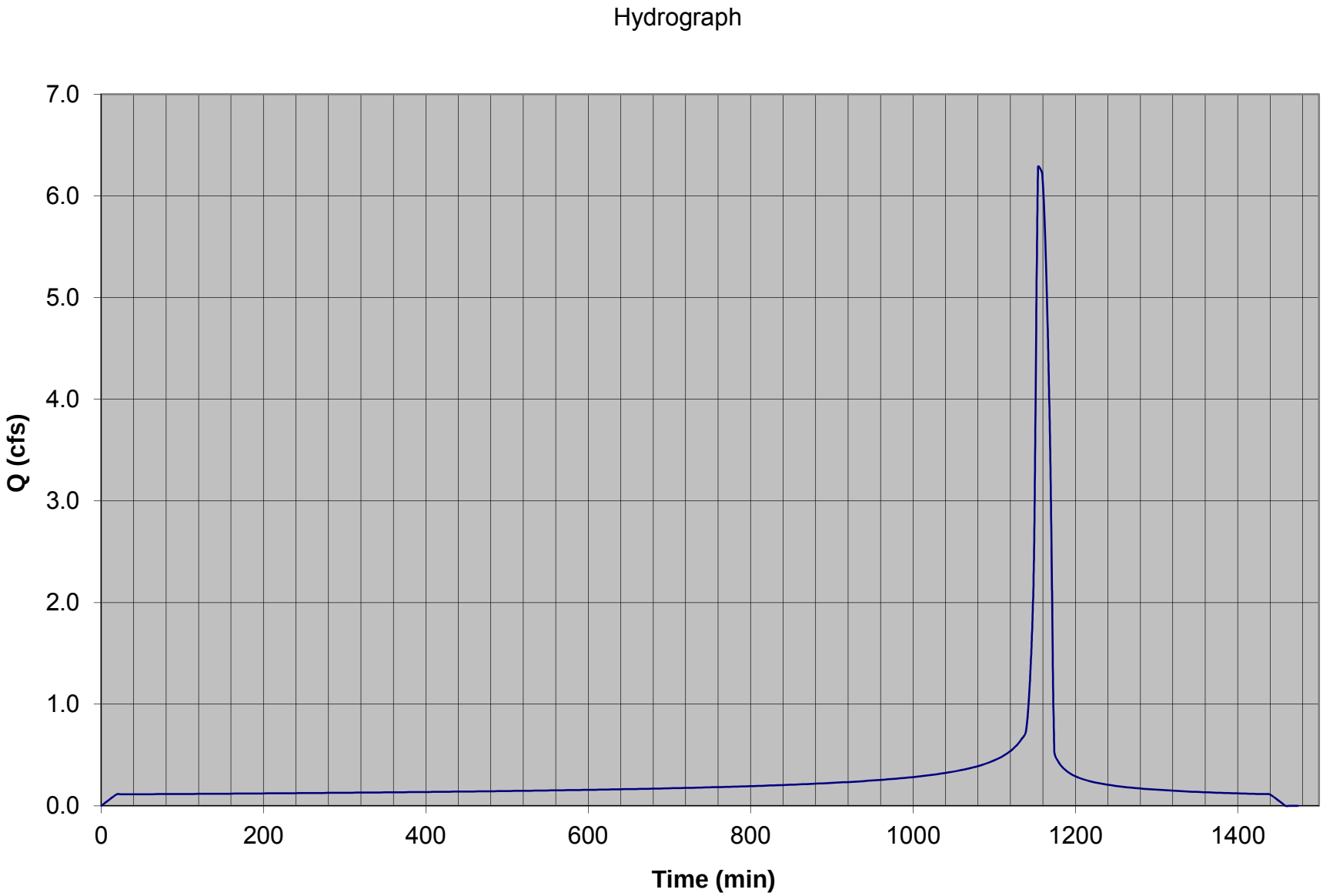

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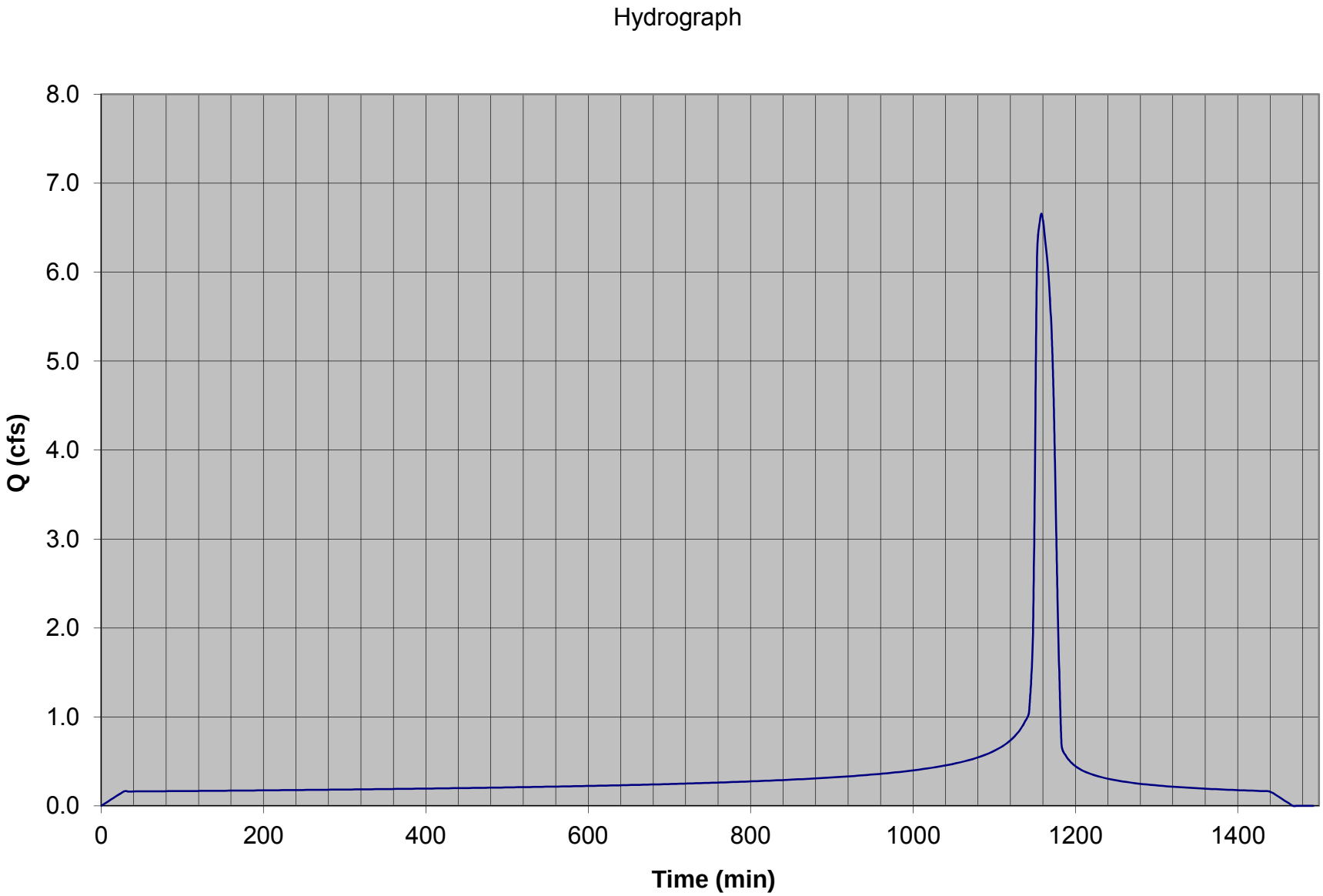

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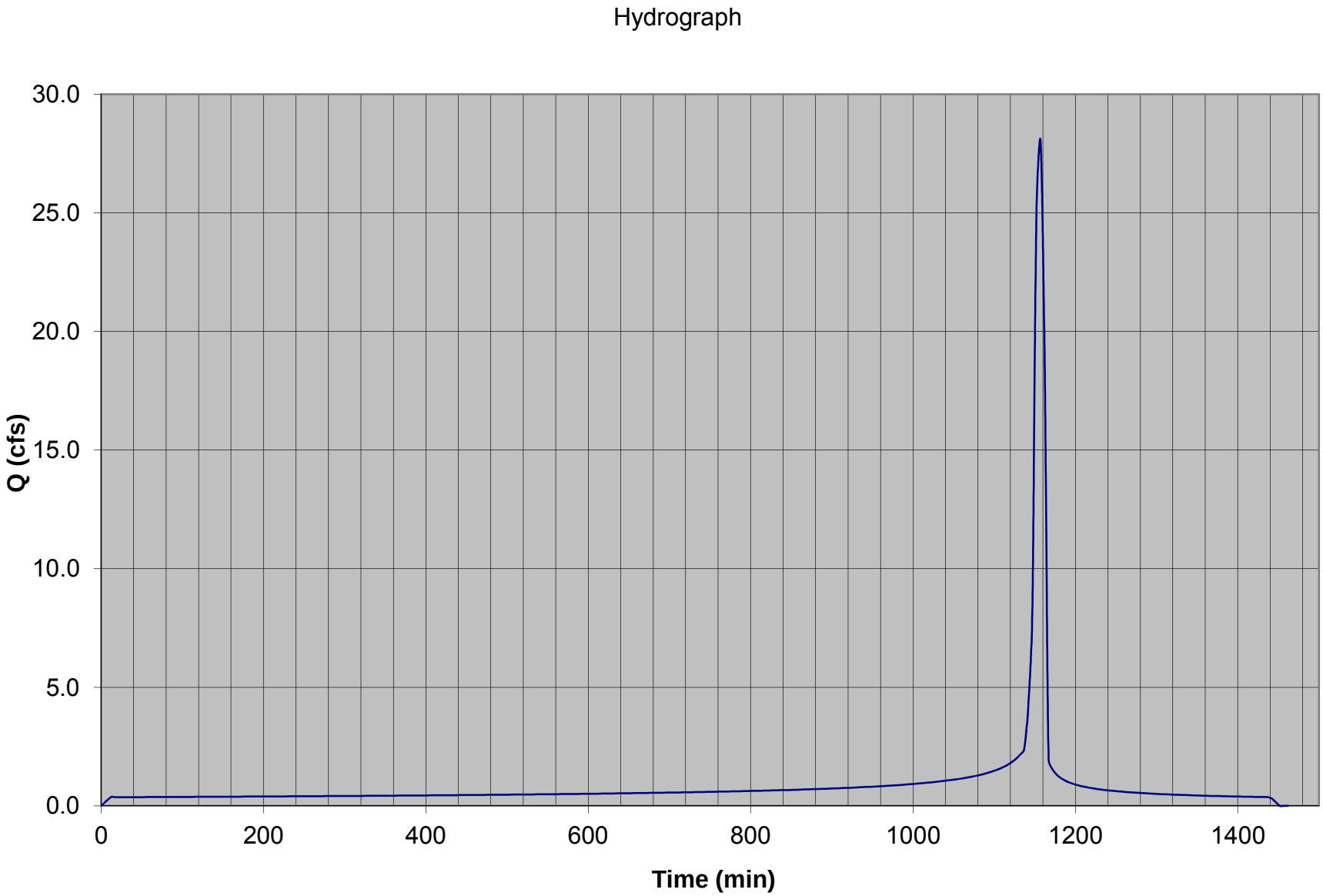

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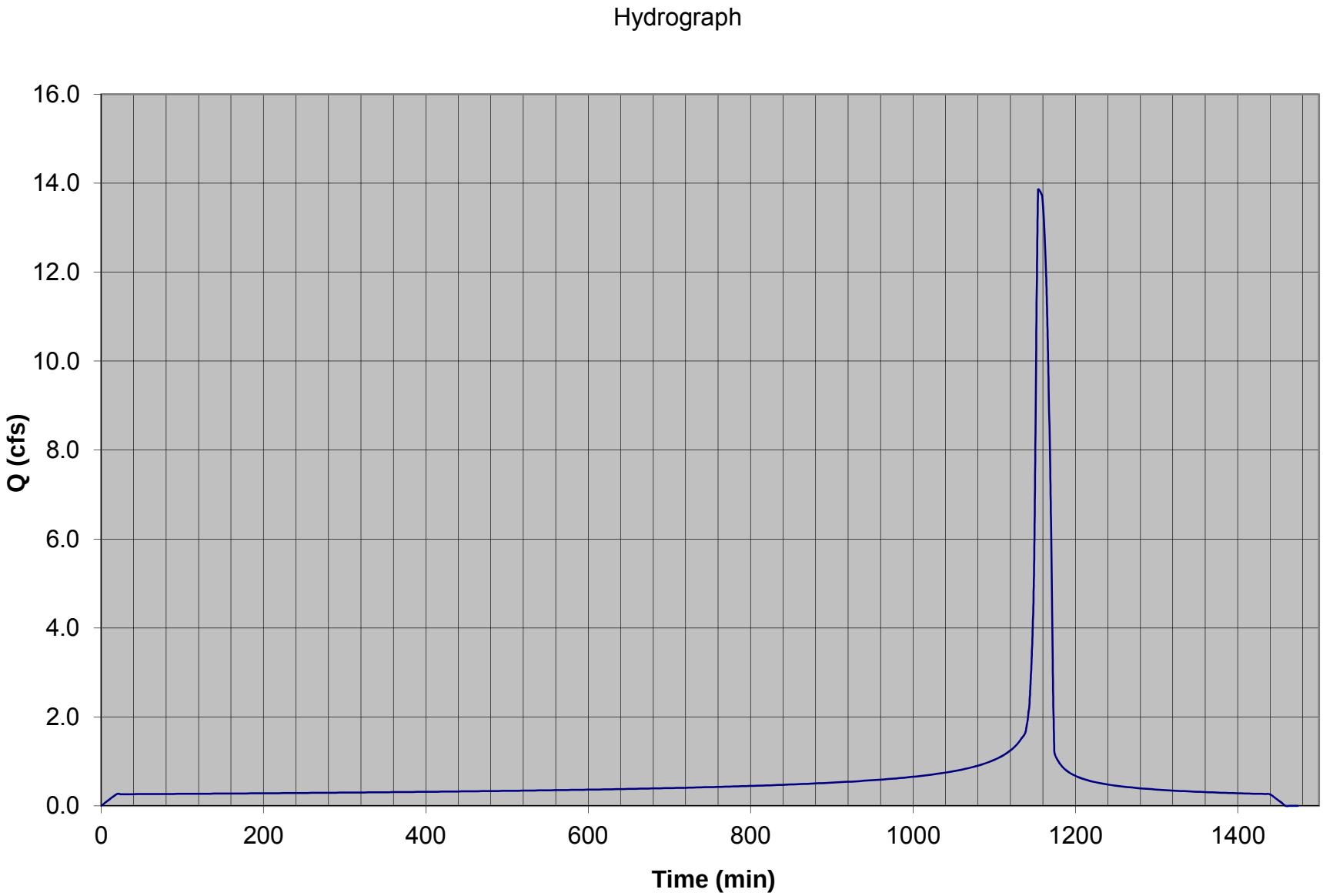

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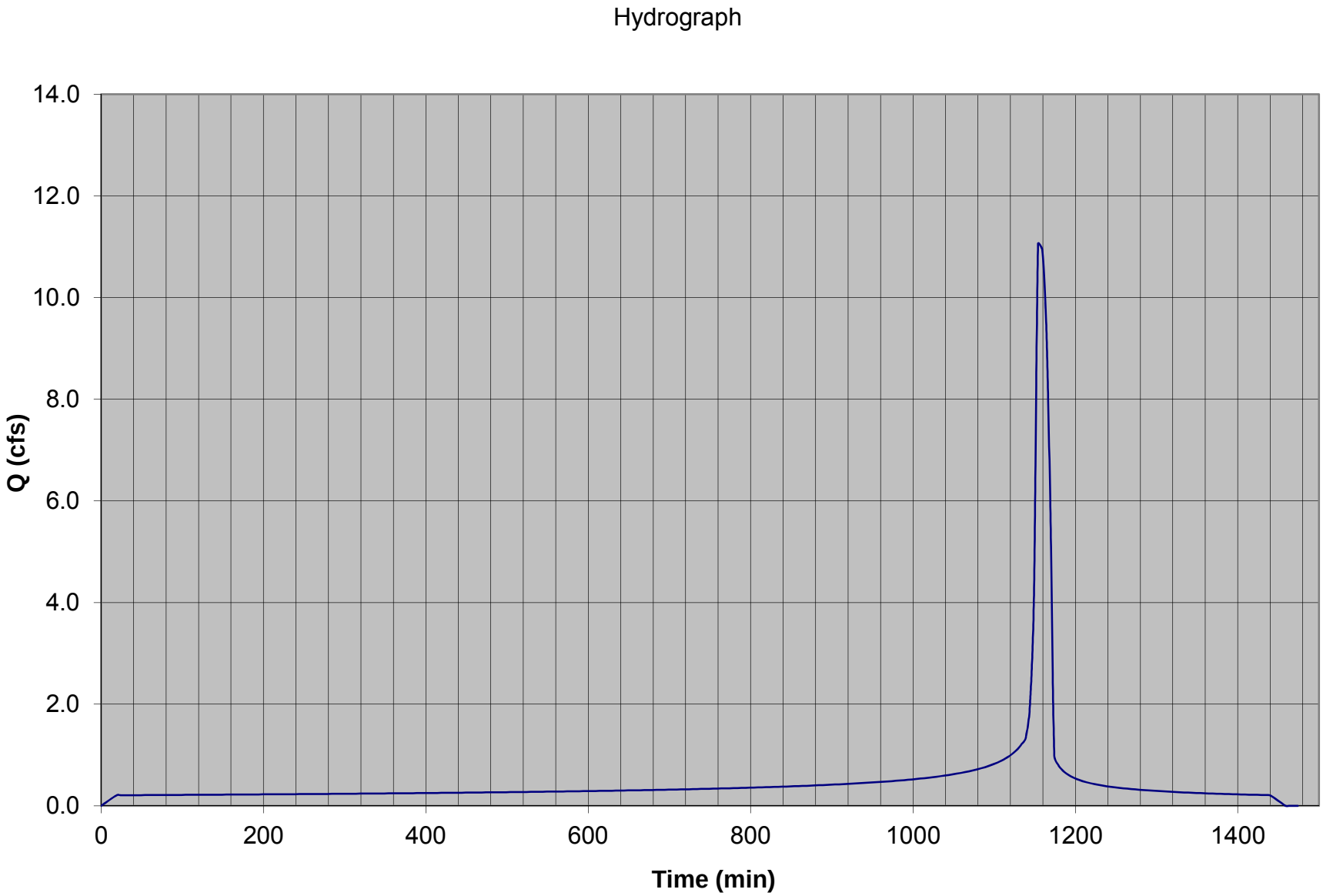

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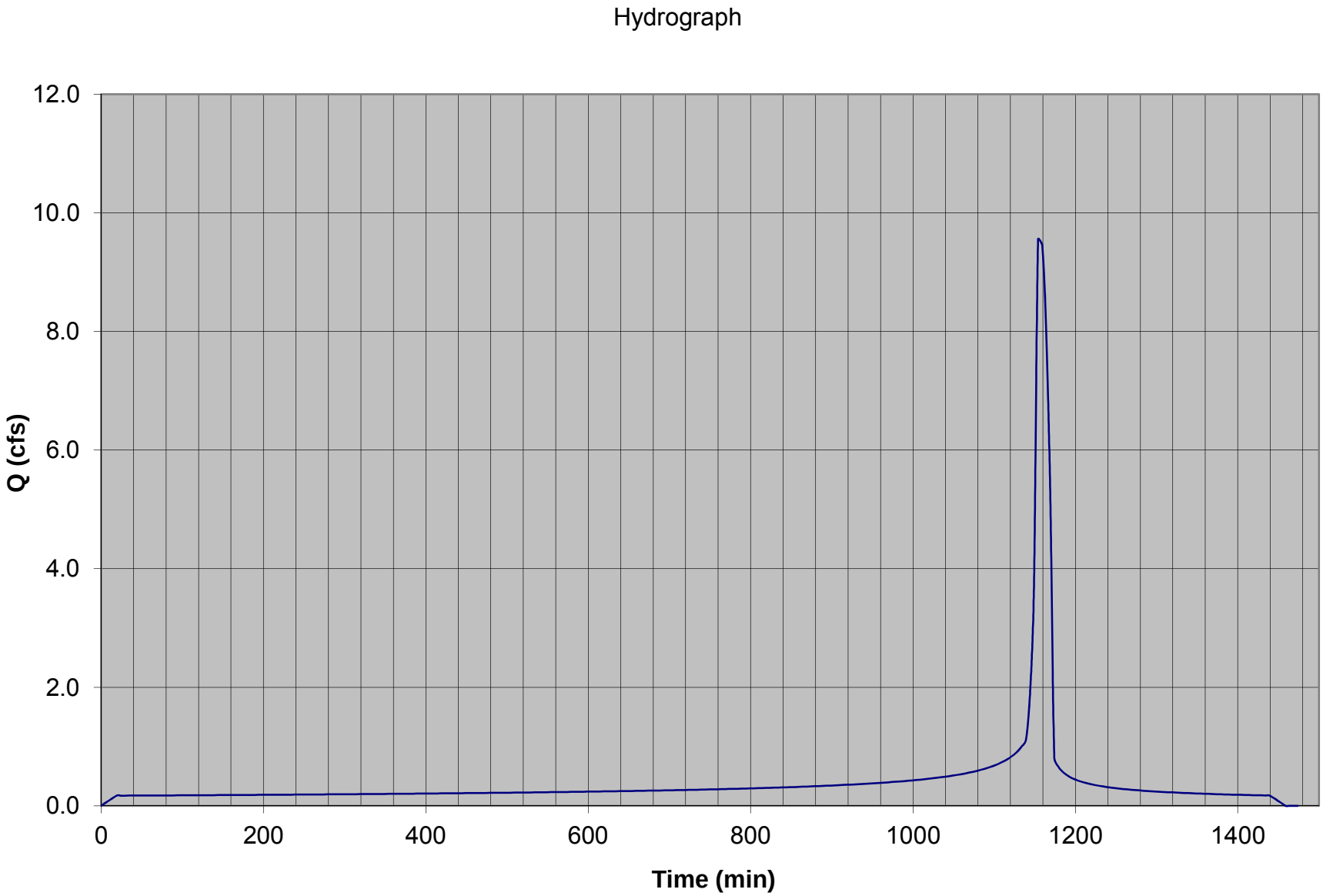
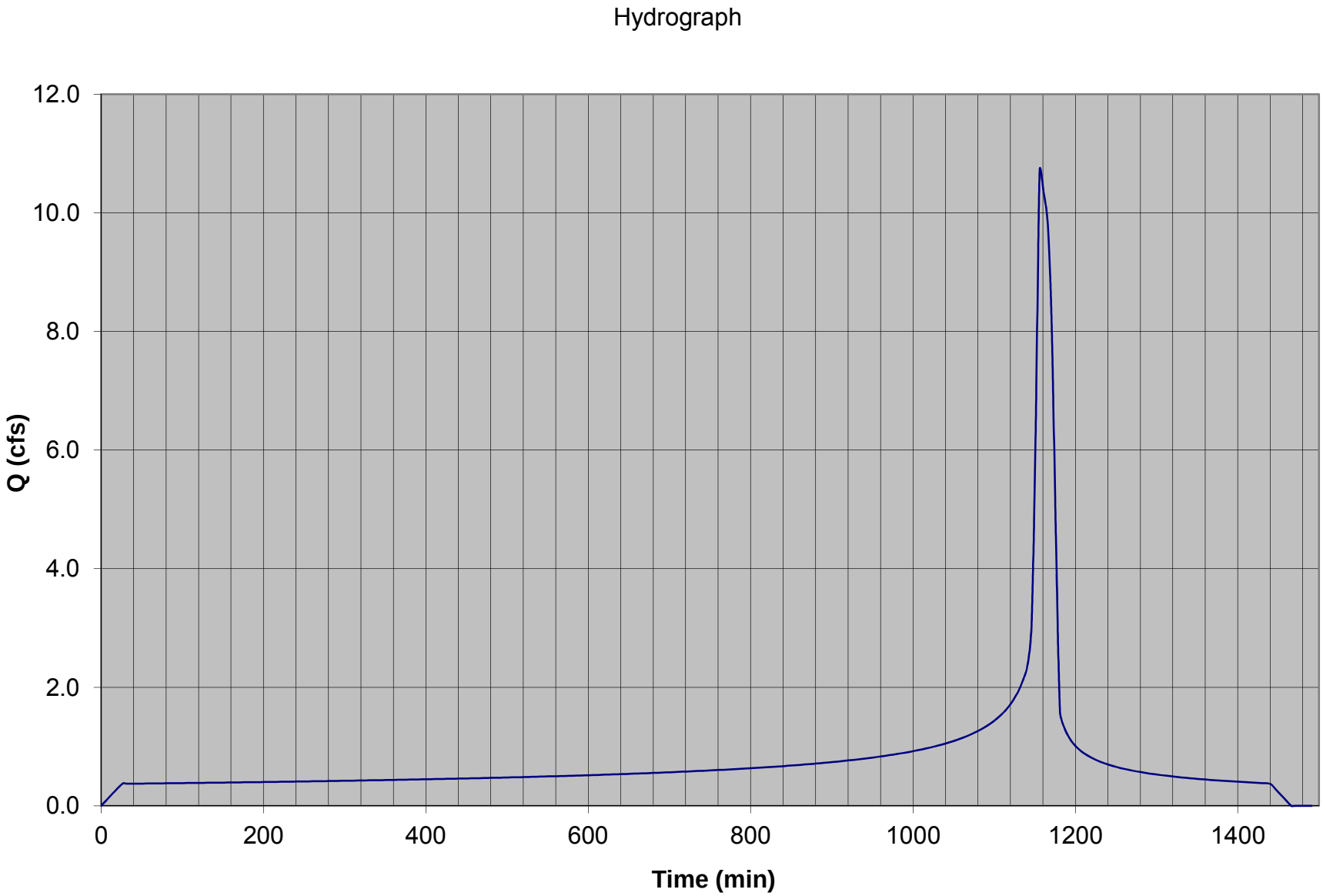


ON-SITE POST-DEVELOPMENT HYDROLOGIC CALCULATIONS

ON-SITE HYDROLOGY (POST-DEVELOPMENT)																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 5	A	22.06	0.1	25	120	1291	0.0116	4.2	26	1.16	0.37	0.42	10.75	0.34	12.40	1.56
Project 5	B	18.00	0.1	25	120	1459	0.0103	4.0	30	1.04	0.34	0.40	7.49	0.34	8.71	1.20
Project 5	C	10.54	0.1	25	120	852	0.0129	4.4	17	1.47	0.45	0.50	7.75	0.34	8.65	0.80
Project 5	D	15.03	0.1	25	120	1485	0.0168	4.4	25	1.23	0.39	0.44	8.13	0.34	9.30	1.12
Project 5	E	33.95	0.1	25	120	456	0.0088	4.4	12	1.74	0.50	0.54	31.90	0.34	35.15	2.61
Project 5	F	25.37	0.1	25	120	747	0.0094	4.2	17	1.41	0.44	0.49	17.53	0.34	19.63	1.84
Project 5	G	20.26	0.1	25	120	706	0.0085	4.2	17	1.41	0.44	0.49	14.00	0.34	15.68	1.47
Project 5	H	16.02	0.1	25	120	872	0.0138	4.4	17	1.47	0.45	0.50	11.77	0.34	13.14	1.22
Project 5	A	22.06	0.1	50	120	1291	0.0116	4.8	21	1.46	0.45	0.50	16.10	0.34	17.97	1.85
Project 5	B	18.00	0.1	50	120	1459	0.0103	4.6	26	1.26	0.40	0.45	10.21	0.34	11.62	1.41
Project 5	C	10.54	0.1	50	120	852	0.0129	5.0	14	1.84	0.52	0.56	10.86	0.34	11.89	0.94
Project 5	D	15.03	0.1	50	120	1485	0.0168	5.0	21	1.52	0.46	0.50	11.42	0.34	12.76	1.32
Project 5	E	33.95	0.1	50	120	456	0.0088	5.0	10	2.15	0.56	0.59	43.07	0.34	46.78	3.02
Project 5	F	25.37	0.1	50	120	747	0.0094	4.8	15	1.71	0.50	0.54	23.43	0.34	25.81	2.14
Project 5	G	20.26	0.1	50	120	706	0.0085	4.8	14	1.77	0.51	0.55	19.72	0.34	21.66	1.72
Project 5	H	16.02	0.1	50	120	872	0.0138	5.0	15	1.78	0.51	0.55	15.68	0.34	17.23	1.42
Project 5	A	22.06	0.1	MIT.	120	1291	0.0116	0.75	30	0.19	0.10	0.18	0.75	0.34	0.98	0.24
Project 5	B	18.00	0.1	MIT.	120	1459	0.0103	0.75	30	0.19	0.10	0.18	0.62	0.34	0.80	0.20
Project 5	C	10.54	0.1	MIT.	120	852	0.0129	0.75	30	0.19	0.10	0.18	0.36	0.34	0.47	0.12
Project 5	D	15.03	0.1	MIT.	120	1485	0.0168	0.75	30	0.19	0.10	0.18	0.51	0.34	0.67	0.17
Project 5	E	33.95	0.1	MIT.	120	456	0.0088	0.75	30	0.19	0.10	0.18	1.16	0.34	1.51	0.38
Project 5	F	25.37	0.1	MIT.	120	747	0.0094	0.75	30	0.19	0.10	0.18	0.87	0.34	1.13	0.28
Project 5	G	20.26	0.1	MIT.	120	706	0.0085	0.75	30	0.19	0.10	0.18	0.69	0.34	0.90	0.22
Project 5	H	16.02	0.1	MIT.	120	872	0.0138	0.75	30	0.19	0.10	0.18	0.55	0.34	0.71	0.18

DRAINAGE AREA A 25-YEAR STORM EVENT



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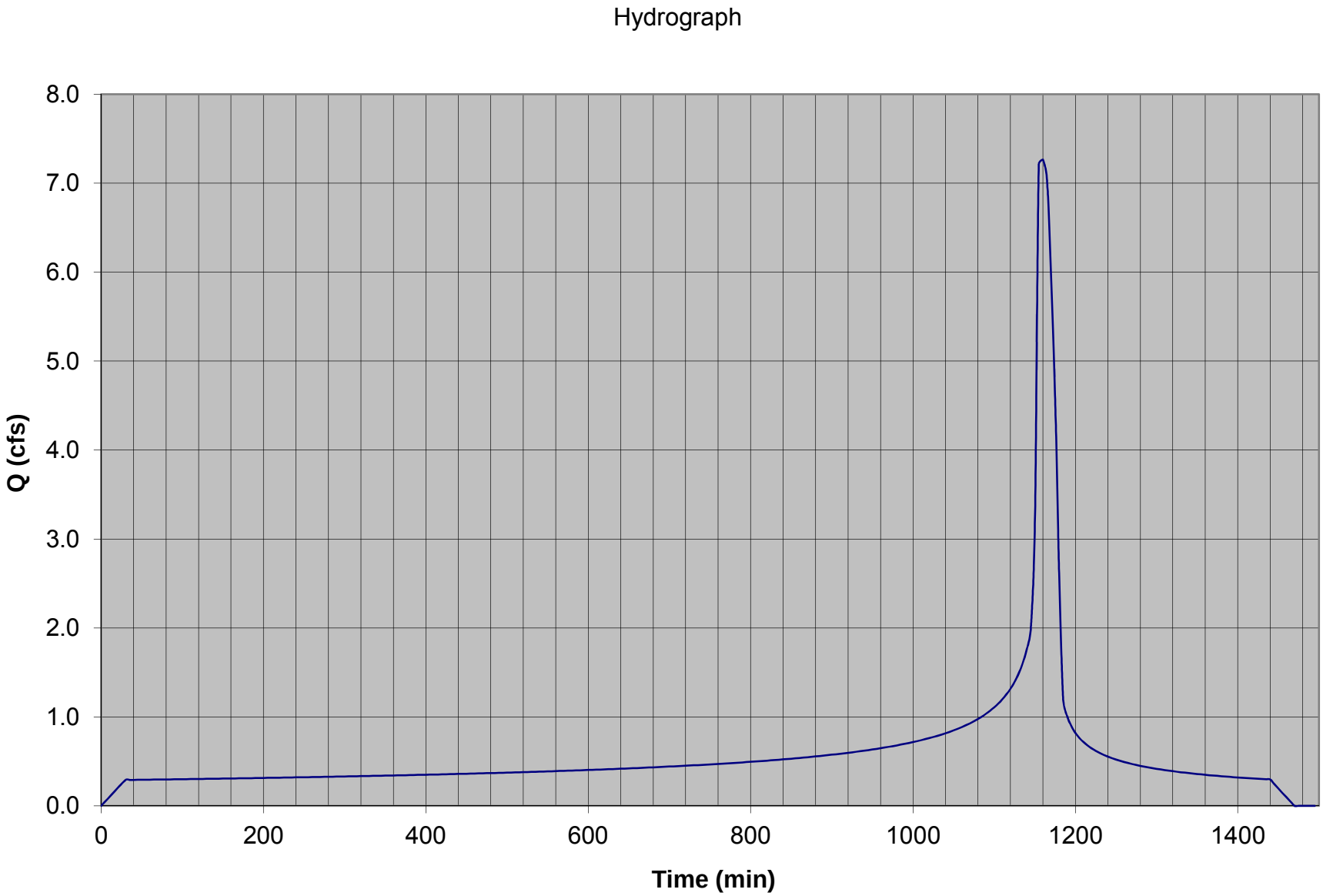

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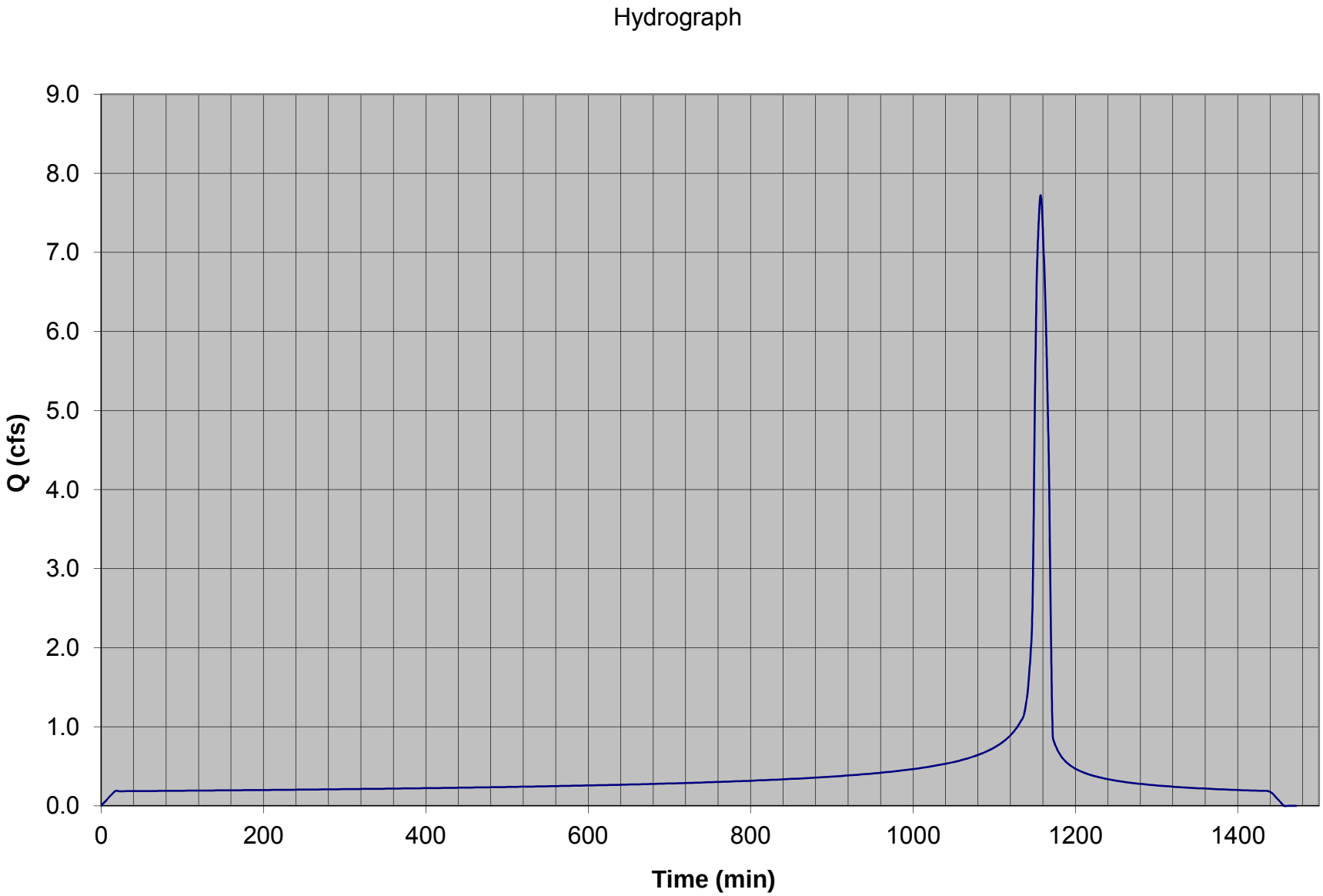

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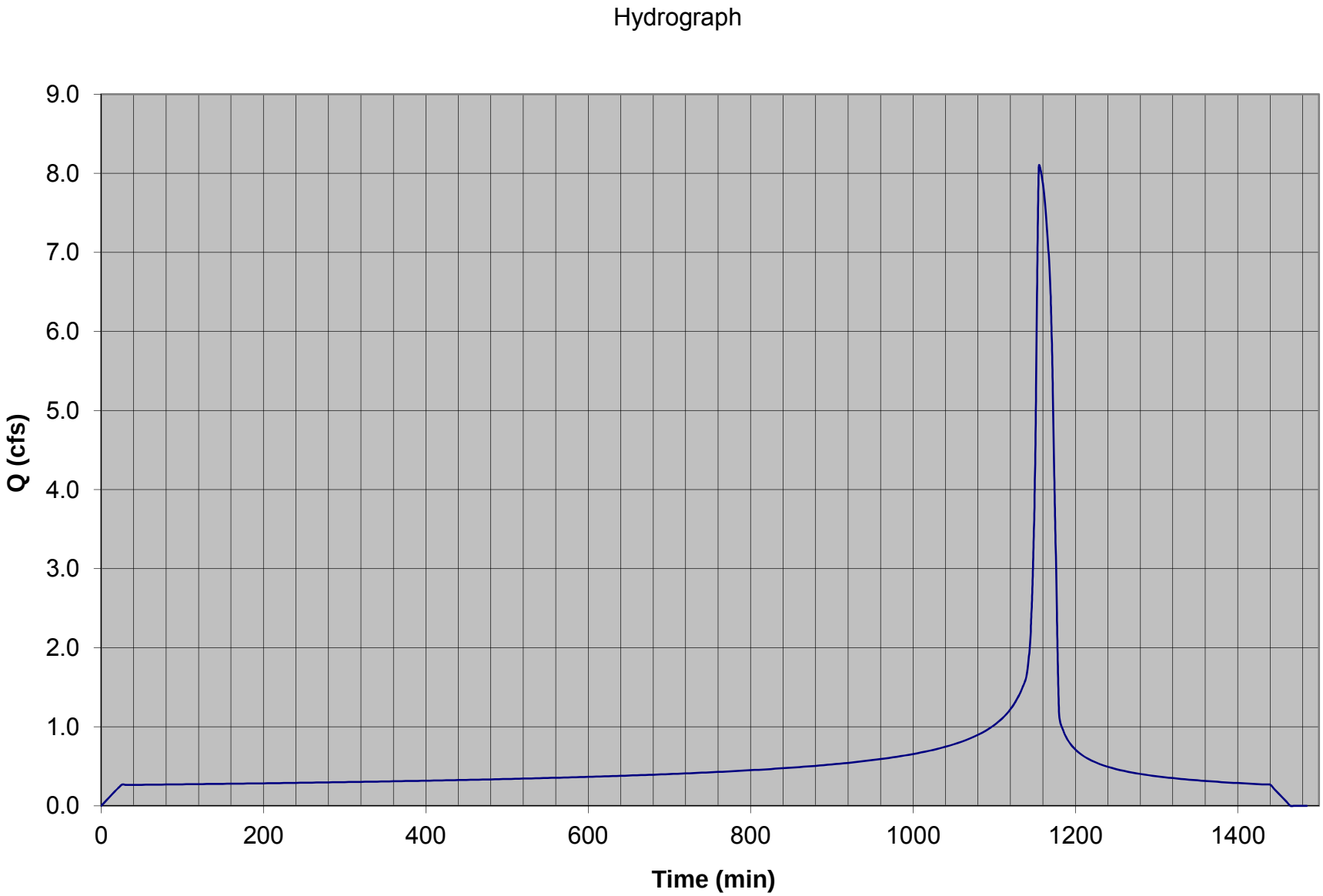

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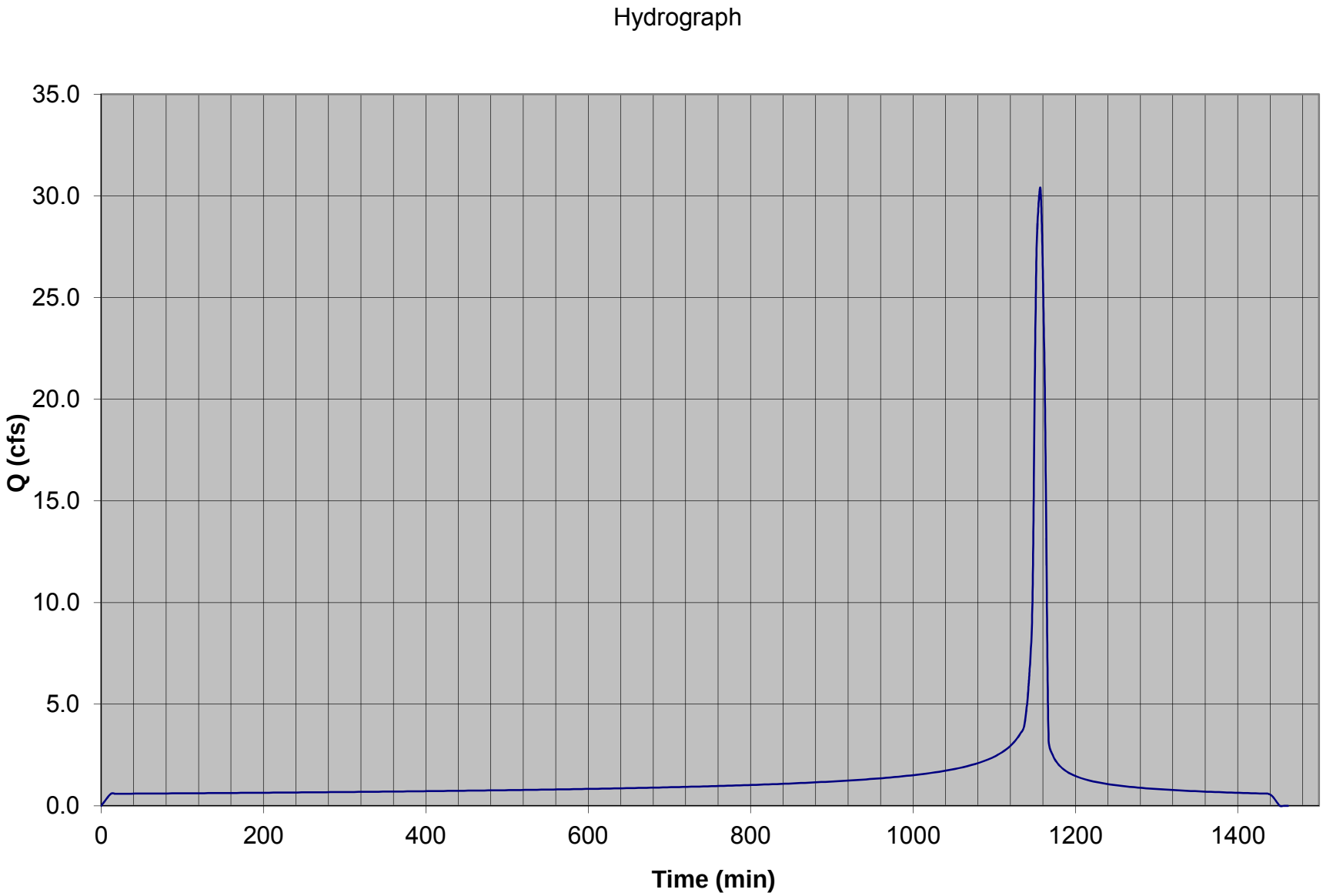

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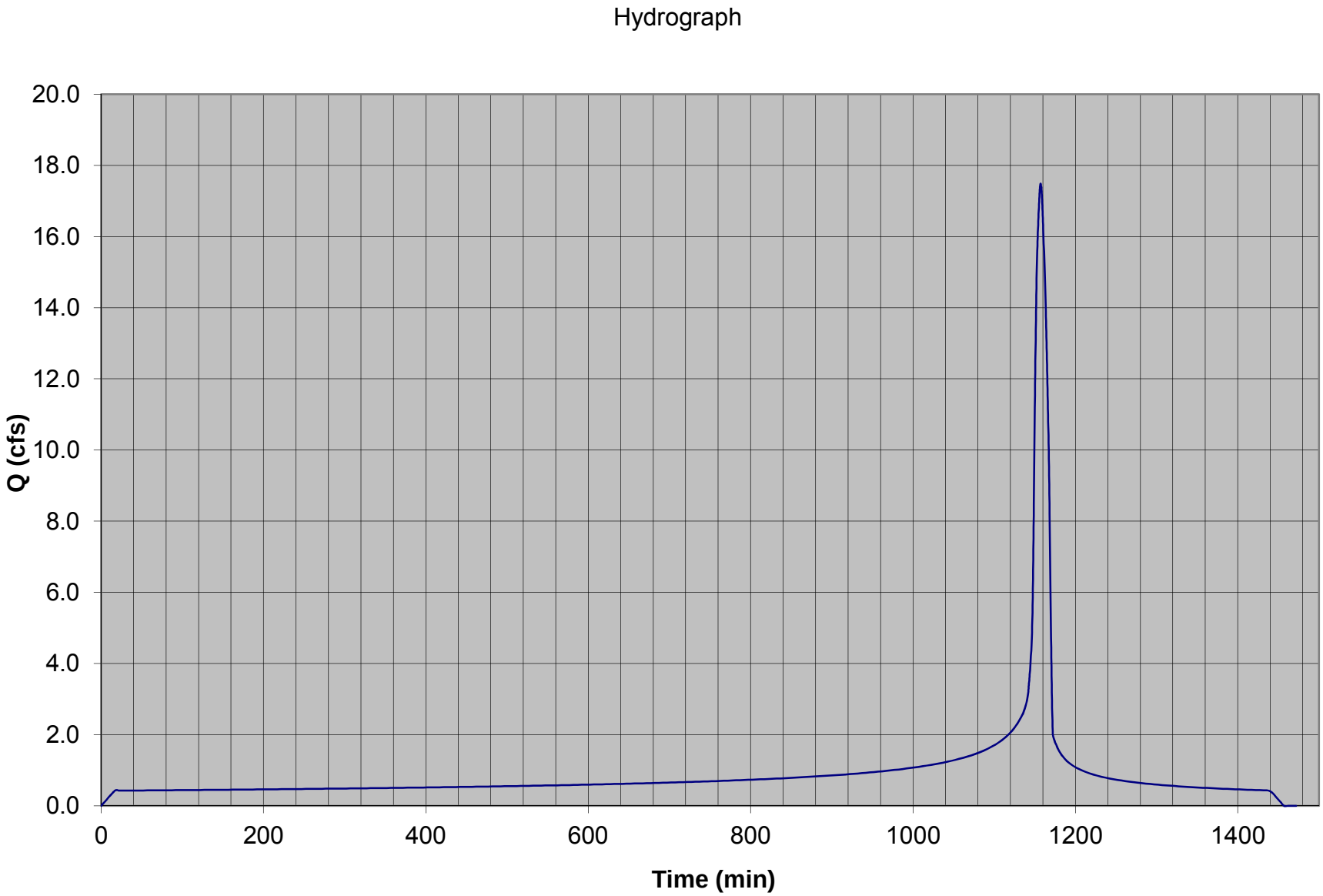

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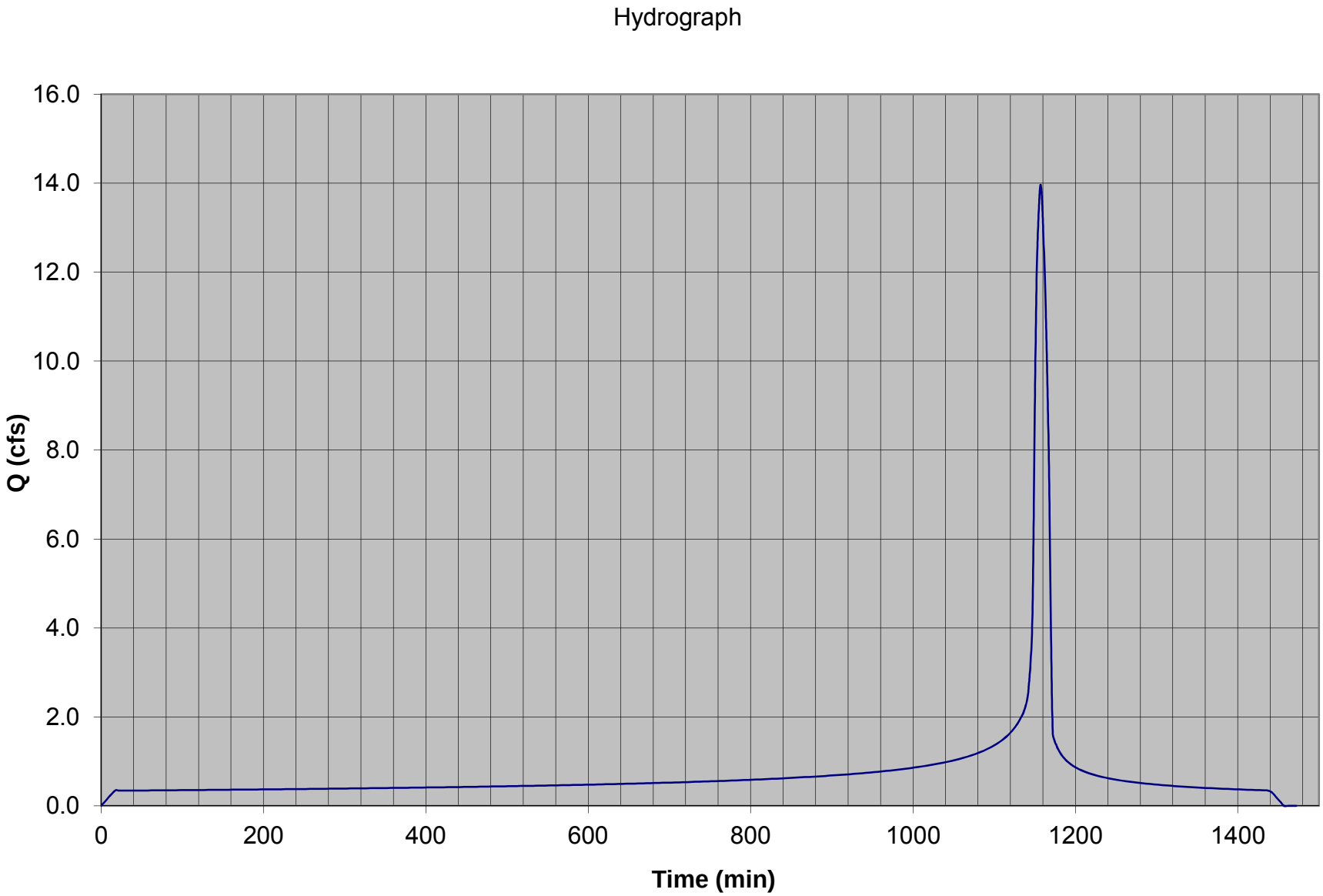

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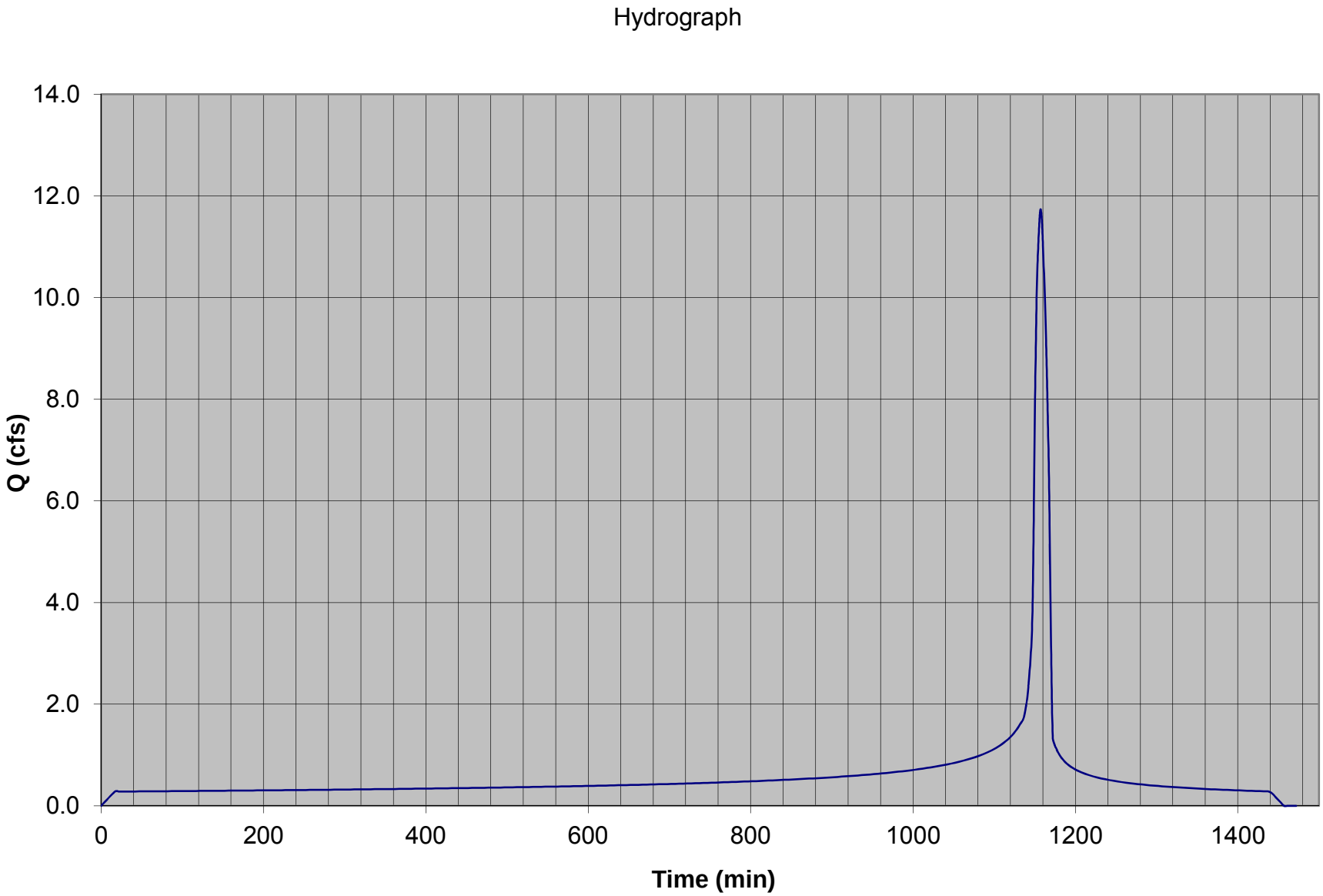

APPENDIX E:
IMPACT ANALYSIS CALCULATIONS

TETRATECH

Sheet No. 1 of 2 Date:
Checked By: Office:
Telephone:
Engineer: Job No.:
Subject: IMPACT ANALYSIS

(1) CHECK DEVELOPMENT'S IMPACT ON FLOW RATES & FLOW VOLUMES

* IGNORE EFFECT OF BASINS TO BE CONSERVATIVE SINCE BASINS REDUCE POST-DEVELOPMENT FLOW RATES & VOLUMES.

FLOWLINE #1:

PRE-DEVELOPMENT:

Q_{50} = 3201.39 CFS

V_{50} = 146.27 AC·FT

POST-DEVELOPMENT:

Q_{50} = 3206.1 CFS

V_{50} = 147.33 AC·FT

% INC:

$Q_{50} \Rightarrow \frac{3206.1\ CFS - 3201.39\ CFS}{3201.39\ CFS} = 0.1\% < 10\%$ OK

$V_{50} \Rightarrow \frac{147.33\ AC\cdot FT - 146.27\ AC\cdot FT}{146.27\ AC\cdot FT} = 0.7\% < 10\%$ OK

FLOWLINE # 2:

PRE-DEVELOPMENT:

Q_{50} = 3125.64 CFS

V_{50} = 141.23 AC·FT

POST-DEVELOPMENT:

Q_{50} = 3137.84 CFS

V_{50} = 144.11 AC·FT

% INC:

$Q_{50} \Rightarrow \frac{3137.84\ CFS - 3125.64\ CFS}{3125.64\ CFS} = 0.4\% < 10\%$ OK

$V_{50} \Rightarrow \frac{144.11\ AC\cdot FT - 141.23\ AC\cdot FT}{141.23\ AC\cdot FT} = 2.0\% < 10\%$ OK

FLOWLINE # 3:

PRE-DEVELOPMENT:

Q_{50} = 2350 CFS

V_{50} = 112.76 AC-FT

POST-DEVELOPMENT:

Q_{50} = 2351.14 CFS

V_{50} = 113.2 AC-FT

% INC:

$Q_{50} \Rightarrow \frac{2351.14 \text{ CFS} - 2350 \text{ CFS}}{2350 \text{ CFS}} = 0.0\% < 10\%$ OK

$V_{50} \Rightarrow \frac{113.2 \text{ AC-FT} - 112.76 \text{ AC-FT}}{112.76 \text{ AC-FT}} = 0.4\% < 10\%$ OK

∴ DEVELOPMENT'S IMPACT TO FLOW RATES & VOLUMES ARE NEGLIGIBLE.

(2) CHECK DEVELOPMENT'S IMPACT ON FLOOD DEPTHS & VELOCITIES

∴ FLOOD DEPTHS & VELOCITIES LEAVING THE SITE ARE A FUNCTION OF THE FLOW RATES ABOVE. SINCE THE FLOW RATES EXPERIENCE NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION, THE CORRESPONDING DEPTHS & VELOCITIES TO THESE FLOW RATES WILL ALSO SEE NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION.

APPENDIX F:
WATER QUALITY CALCULATIONS

OWNER'S CERTIFICATION

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID

for

PROJECT 5 SILVER SUN GREENWORKS

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID for SILVER SUN GREENWORKS has been prepared for the Applicant, by Tetra Tech, Inc. This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is intended to comply with the requirements of the County of Los Angeles, requiring the preparation of a project specific HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.

I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for the gathered information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Los Angeles County Stormwater Quality Management Plan (SQMP), and the intent of the stormwater and urban runoff NPDES Permit and Waste Discharge Requirements for the County of Los Angeles, Los Angeles County Flood Control District and the incorporated Cities of Los Angeles County under the jurisdiction of the Los Angeles Regional Water Quality Control Board. A copy of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID will be maintained at the project site/office.

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party having responsibility for implementing portions of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID. At least one copy of the approved and certified copy of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID shall be available on the subject property in perpetuity. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.

OWNER:	Silverado Power
BY:	(Garret Bean)
Title:	
Address:	2 Embarcadero Center, Ste. 410
	San Francisco, California 94111
Telephone:	(415) 692 - 7740
Date:	

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V. Best Management Practices

VI. Implementation, Maintenance and Inspection Responsibility for BMPs

VII. Appendices

Appendix A: Operations and Maintenance Plan

Appendix B: Treatment BMPs Calculations

Background

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is prepared by the developer's engineer. These are documents required by the Stormwater Quality Management Program (SQMP). It requires run-off, from all new development or significant re-development, to be managed during a project's planning phase, implemented during construction and ultimately maintained for the life of the project.

The HYDROLOGY STUDY/DRAINAGE CONCEPT/LID deals with the long-term post-construction of a project and describes the commitment to installation and maintenance of appropriate structural and non-structural Best Management Practices (BMPs).

BMPs are intended to provide measures that minimize or eliminate the introduction of pollutants into the storm water system. Non-Structural and Structural BMPs include education, clean up, and facility maintenance to prevent pollutants from entering the storm water system.

Compliance is MANDATORY and severe penalties may be levied for any violations. It is the duty of the owner or his designated representative to ensure that all BMPs are followed.

Discretionary Permit(s) and Water Quality Conditions

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is intended to comply with the requirements of the County of Los Angeles.

Project Description

The name of the project is Silver Sun Greenworks. The applicant is the owner of the property. The project is located west of 110th Street, between West Avenue I to the north and Lancaster Blvd. to the south (see Location Map, Appendix A). The property is currently a dirt lot with scarce native vegetation. Site soils consist of silty fine to coarse sand. The site experiences an infiltration rate of 5 min/in, which equates to 12.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 2.63 in/hr (see Geotechnical Report, Appendix H). The property is predominantly flat (1.75% slopes or less) and therefore will only be minimally graded to avoid ponding. The property will accommodate 9 foot wide arrays of solar panels spaced at approximately 11 feet (see On-Site Drainage Map, Appendix G). The post development project area is approximately 161.2 acres with 90% of the site being pervious. Construction of the solar panel arrays and other miscellaneous development accounts for the Los Angeles County approved 10% impervious surface. This combined impervious foot print equates to approximately 16.1 acres.

In the post-development condition, the majority of the runoff sheet flows off the site from west to east, therefore mimicking pre-development conditions. As calculated later in this report, the ΔQ_{25} and $\Delta V_{25,}$ which are greater than the peak mitigation flow rate (Q_{PM}) and the mitigation volume (V_M), will be collected onsite with the help of 4 reinforced elevated road sections that run north to south at various locations along the site (see On-Site Drainage Map, Appendix G). The required treatment runoff (Q_{PM} & V_M) consists of the initial 0.75 inches of rain, which will infiltrate in the existing soil and also be treated by the existing soil due to being less than the delta runoff.

The project will have a substation for utility interconnection on the site. The majority of the area within the substation fence will be soil, covered with a layer of gravel. The majority of the substation equipment will be supported on steel or concrete piers or footings, with the exception of the main step-up transformer. The transformer will be located on a reinforced concrete slab and subsurface foundation, and enclosed in a secondary containment structure. The impervious area from the transformer footprint will be covered with the secondary containment structure, and any rain falling on the transformer area will be collected and held in the containment basin until the rainstorm has passed and the water can be inspected. If the collected water shows any oil sheen it will be pumped out and disposed at a permitted, offsite treatment facility by a licensed hazardous waste contractor. If the rainwater does not exhibit any sheen it will either be allowed to evaporate, or will be manually pumped out onto the ground and allowed to infiltrate. Any transformer oil that is released into the containment will be vacuumed out and disposed at a permitted, offsite treatment facility by a licensed hazardous waste contractor.

The applicant, the property owner, is responsible for all on-site maintenance activities.

Per the U.S. Census Bureau, the 2007 Standard Industrial Classification (SIC) Code is 221119 – "Other Electric Power Generation" for solar power sites.

The Anticipated and Potential Pollutants Generated by the proposed facility may be: TSS, nutrients, heavy metals, bacteria/virus, pesticides, organic compounds, trash and debris (litter), oxygen-demanding substances, and oil and grease.

The storage of outdoor materials is not a planned activity. Car washing, auto repair and/or vehicle fueling are also not a part of this facility.

The 85th % BMP peak mitigation flow rate (Q_{PM}) is 5.51 cfs, while ΔQ_{25} is 16.14 cfs.

The mitigation volume (V_M) for the on-site watershed area of 161.2 acres is 1.79 ac-ft and ΔV_{25} is 3.90 ac-ft. The ΔV_{25} will be split among 4 infiltration basins, resulting in approximately 0.98 ac-ft (42,471 cf) per individual mitigation area.

Site Description

The site is approximately 161.2 acres and is located west of 110th Street, between West Avenue I to the north and Lancaster Blvd. to the south, and within an unincorporated region of Los Angeles County (see Location Map, Appendix A). The site is predominantly flat (1.75% slopes or less).

The site is located within the Antelope Valley Watershed.

The site does not appear to have been previously graded. No pre–existing watershed problems seem to be present.

Per the Geotechnical Report (see Appendix H) and per LA County Hydrology Manual, the project soil type consists of the following:

- Silty Fine to Coarse Sand

Soil Type 100, 120, and 134 were used in the hydrology calculations.

Drainage and Permeability: Well-drained; slow runoff, good soil permeability. Infiltration rates of 5 min/in, which is equivalent to 12.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 2.63 in/hr.

The Total Maximum Daily Loads (TMDLs) have been established as “not applicable” for the Antelope Valley Watershed. The 303(d) List has no pollutants of concern for the Antelope Valley Watershed.

The Project site is not within the immediate vicinity of any known Environmentally Sensitive Areas (ESAs) and Areas of Special Biological Significance (ASBSs).

Best Management Practices

The following indicates the source control BMPs (routine non-structural and routine structural) included in this project and those that were not included.

Routine Non-Structural BMPs

Education for Property Owners, Tenants, Occupants and Employees. Best Management Practices (BMP) Fact Sheets for preventing stormwater pollution from the California Stormwater Best Management Practice Handbooks can be found at www.cabmphandbooks.com.

Activity Restrictions. The list of restrictions and guidelines for implementation and maintenance of all Best Management Practices specified herein include, but will not be limited to:

- TRASH: No rubbish, trash or other material shall be kept on site or on any street abutting the properties, except in sanitary containers located in an appropriate trash containment area.
- DRAINAGE: There shall be no interference or alteration of the established drainage pattern unless an alternative is approved by the regulatory agency.
- DUMPSTER LIDS: Dumpster lids shall be closed at all times.
- DEBRIS: No blowing or sweeping of litter anywhere at the site.

BMP Maintenance. Appendix A indicates the person(s) responsible for the implementation and maintenance of the non-structural and structural BMPs.

Title 22 CCR Compliance. Not applicable, per Title 22., Division 4.5., Chapter 11. of the California Code of Regulations definition of hazardous wastes. No Hazardous Materials are anticipated to be onsite.

Local Industrial Permit Compliance. Not applicable, there are no fuel dispensing areas and/or other areas of concern to the public proposed.

Spill Contingency Plan. A spill contingency plan will be prepared by the owner/building operator. As a minimum the Spill Contingency Plan will "mandate the stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials and documentation."

Hazardous Materials Disclosure Compliance. No hazardous materials are anticipated to be stored on-site. If deemed otherwise, a designated representative of the owner shall provide information to the Fire Authority in accordance with requirements of the Health & Safety Code.

Uniform Fire Code Implementation. A designated representative of the owner shall provide information to the Fire Authority in compliance with Article 80 of the UNIFORM FIRE CODE (UFC).

Common Area Litter Control. Site litter shall be strictly controlled by onsite maintenance personnel (not yet determined).

Employee Training. A representative of the owner will provide information available from the City/County on education regarding good housekeeping practices that contribute to the protection of storm water quality. Practical information material will be provided to employees on general good housekeeping practices. These materials will describe, but are not limited to, spill prevention and control and the use of chemicals, petroleum products, pesticides and fertilizers that should be limited to the property, with no discharge of wastes directly or indirectly to gutters, catch basins or the storm drain system. Information will be distributed directly to the employees as well as being posted in public areas. In addition to the attachments, the following resource can be contacted to obtain updated educational materials at no cost: American Oceans – www.americanoceans.org/runoff/epa-bro.htm

Routine Non-Structural BMPs

Properly Design Trash Storage Areas. Site waste receptacles shall be emptied on a weekly basis or more often if containers are overflowing. Upon inspection any debris or rubbish will be picked up and the site cleaned. The trash area/room is NOT to be cleaned by hosing down. The type of materials used to clean the area and storage of said materials will be determined by the Contractor. Signage will be posted that lids shall be kept closed at all times. The trash room(s) will be located inside the parking structures.

Protect Slopes and Channels. The protection of slopes and irrigation shall be implemented as indicated on the County of Los Angeles' approved Landscape Plans and shall be consistent with the County Water Conservation Resolution or County equivalent. Slope protection will be achieved through landscaping of the slopes. Runoff from irrigation shall be kept to a minimum. A designated representative of the owner will be responsible for continual maintenance of landscaped areas.

Site Design BMPs

The following table shows the site design BMPs that are included in this project. A description of each BMPs follows:

Technique	Included		Brief Description of Method
	Yes	No	
Minimize Impervious Area/Maximize Permeability (C-Factor Reduction)		√	
Minimize Directly Connected Impervious Areas (DCIAs) (C-Factor Reduction)		√	
Create Reduced or "Zero Discharge" Areas (Runoff Volume Reduction)	√		Infiltration basins
Conserve Natural Areas (C-Factor Reduction)		√	

The site design BMPs that were used extensively in this design were to create "Runoff Volume Reduction" by utilizing the infiltration basin system design concept. The mitigation volume is captured behind the reinforced elevated roads and is allowed to infiltrate in the ground.

Treatment BMPs

The following table shows the treatment BMPs that are included in this project. A description of each BMPs follows:

Name	Included		If not applicable, state brief description
	Yes	No	
Vegetated (Grass) Strips		√	Not proposed.
Vegetated (Grass) Swales		√	Not proposed.
Proprietary Control Measures		√	Not proposed.
Dry Detention Basin		√	Not proposed.
Wet Detention Basin		√	Not proposed.
Constructed Wetland		√	Not proposed.
Detention Basin/Sand Filter		√	Not proposed.
Porous Pavement Detention		√	Not proposed.
Porous Landscape Detention		√	Not proposed.
Infiltration Basin	√		
Infiltration Trench		√	Not proposed.
Media Filter		√	Not proposed.
Proprietary Control Measures		√	Not proposed.

This Project is considered a Priority Project. This section of the HYDROLOGY STUDY/DRAINAGE CONCEPT/LID addresses Treatment Control BMPs. The primary control strategy for design Treatment Control BMPs is to treat the frequent, low-flow storm events. The selected treatment controls for this project is the Infiltration Basins. Appendix B – Verification Calculation for Treatment BMPs has the Calculations and Detail Drawings for these Treatment BMPs.

Implementation, Maintenance and Inspection Responsibility for BMPs

A schedule will be established for all maintenance and a log for all cleanups shall be recorded (see Appendix A – Operations and Maintenance Plan). All documents relating to site maintenance and Best Management Practices (BMP) will be kept for a minimum of 5 years and be made available to Federal, State, County, or City Inspectors upon request.

The party responsible for all structural and non-structural BMPs and contact information for site maintenance records is as follows:

SILVERADO POWER

2 Embarcadero Center, STE. 410
SAN FRANCISCO, CA 94111
(415) 692 - 7740

Contact Person: Garret Bean

Appendices

APPENDIX A

Operations and Maintenance Plan

OPERATIONS AND MAINTENANCE PLAN

BMP Applicable? Yes/No	BMP Name and Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	Non-Structural Source Control BMPs		
Yes	Education for Property Owners, Tenants and Occupants Applicant will educate all onsite occupants. Education shall be given using the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.	New onsite employees to be educated within 2 weeks of hire. Each onsite employee shall receive an annual review	Applicant is responsible for educating all onsite occupants.
Yes	Activity Restrictions Ensure all users are adhering to activity restrictions as outlined in the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID and the County of Los Angeles' zoning ordinance and standards.	If a user is observed engaging in activity that may adverse impacts on stormwater, the authorized representative shall take corrective actions as necessary. Ongoing basis.	Applicant is responsible for educating all onsite employees.
Yes	Spill Containment Plan A spill contingency plan is not available. As a minimum the spill contingency plan will "mandate the stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials and documentation."	When spill occurs.	Through a maintenance firm that will be contracted with applicant.
Yes	Common Area Litter Control Perform parking lot/common area maintenance that will include the removal of litter from around the trash storage receptacles, drive aisles, parking lot and outdoor areas. All litter shall be placed in appropriate trash receptacles.	Weekly	Through a maintenance firm that will be contracted with applicant.
Yes	Employee Training Applicant will educate all onsite employees. Education shall be given using the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.	New onsite employees to be educated within 2 weeks of hire. Each onsite employee shall receive an annual review	Applicant is responsible for educating all onsite employees.
Yes	Design and Construct Trash and Waste Storage Areas to Reduce Pollution Introduction Site waste receptacles shall be emptied on a weekly basis or more often if overflowing. Signage will be posted that lids shall be kept closed at all times. Inspect the waste receptacles area for any loose trash on the ground. Inspect for damage to the structural elements of the waste receptacles.	Daily and weekly basis. Replace/Repair structural elements as needed.	Applicant through a maintenance firm.

BMP Applicable? Yes/No	BMP Name and Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	Non-Structural Source Control BMPs		
Yes	Protect Slopes and Channels The protection of slopes shall be implemented as indicated on the County of Los Angeles' approved Landscape Plans and shall be consistent with the County Water Conservation Resolution or County equivalent.	After each major storm event	Applicant through a maintenance firm.
	Treatment BMPs		
Yes	Infiltration Basin Infiltration basins shall be constructed concurrently with the solar arrays and shall be inspected of and cleaned from heavy silt deposits.	After each major storm event	Applicant through a maintenance firm.

APPENDIX B
Verification Calculations for Treatment BMPs

1.0 HYDROLOGIC ANALYSIS

The project size is 161.2 acres. Utilizing Appendix A of the Los Angeles County Department of Public Works- Hydrology Manual and a Geotechnical Report for the site (see Appendix H), predominating soil types of 100, 120, and 134 and an infiltration rate of 5 min/in were found, which is equivalent to 12.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 2.63 in/hr. A small portion of the site, amounting to the Los Angeles County approved value of 10%, is impervious with the remaining balance being pervious.

On-Site Hydrology Maps showing the drainage area, BMP and Drainage Structures are found in Appendix G. The peak mitigation flow rate (Q_{PM}) and the mitigation volume (V_M) found in Appendix D of this report are based on 0.75-inches of rainfall.

2.0 BMP SIZING

Infiltration Basins

Using the LA County Modified Rational Method TC Calculator, the Peak Mitigation Flow Rate (Q_{PM}) based on 0.75-inches of rainfall is 5.51 cfs and the total Mitigation Volume (V_M) 1.79 ac-ft (see Post-Development On-Site Hydrologic Calculation, Appendix D). Since ΔV_{25} exceeds the mitigation volume (see Appendix D), it will be captured in 4 infiltration basins designed per the 2009 Los Angeles County LID Manual and Los Angeles County Stormwater BMP Design and Maintenance Manual; therefore the required individual basin capacity is 0.98 ac-ft (42,471 cf). By infiltrating the ΔV_{25}, the V_M will also infiltrate and be treated by the existing soils.

The proposed LID infiltration basins span north to south in various locations along the site. The basins are created by constructing reinforced elevated road sections. 3 road sections spans 580 feet and are raised by 10.25 inches. The flood width is approximately 85 feet. The fourth road section spans 440 feet and is raised by 12.25 inches. The flood width is approximately 102 feet. The infiltration areas created are 49,230 square feet and 44,827 square feet respectively. The mitigation volume will infiltrate in a maximum 4.5 hours at a Los Angeles County approved rate of 2.63 in/hr.

Treatment BMPs Calculations

TETRA TECH, INC.

CLIENT SILVERADO POWER JOB NO. 135-04546-12001 PAGE 1 OF 2

PROJECT PROJECT 5 DATE CHECKED DATE DECEMBER 2013

DETAIL INFILTRATION BASIN CHECKED BY JD COMPUTED BY JS

LINE ID	DESCRIPTION	VALUE	COMMENTS:
A	MITIGATION VOLUME (AC-FT)	1.79	PER POST DEVELOPMENT ON-SITE HYDROLOGIC CALCS, APPENDIX D
B	ΔV25 (AC*FT)	3.9	PER PRE/POST DEVELOPMENT ON-SITE HYDROLOGIC CALCS, APPENDIX D
C	NUMBER OF BASINS	4	PER ON-SITE DRAINAGE MAP, APPENDIX F

SINCE ΔV25>MITIGATION VOLUME, ΔV25 TO BE MITIGATED BY 4 INFILTRATION BASINS CREATED BY 4 N-S REINFORCED ELEVATED ROADS

BASINS #1-3

D	INFILTRATION RATE (IN/HR)	2.63	PER GEOTECHNICAL REPORT, APPENDIX H (5 MIN/IN = 12 IN/HR) * FACTORS
E	BASIN LENGTH (FT)	580	PER ON-SITE DRAINAGE MAP, APPENDIX F
F	VOLUME OF BASIN (CF)	42471	(F) = (B) / (C)

BASIN SIZED ACCORDING TO THE LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL

G	REQUIRED DRAIN TIME (HR)	72	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
H	MAX. PONDING DEPTH (FT)	15.78	PER EQUATION 6-3, (H) = (D) / 12 * (G)
I	BASIN PONDING DEPTH (IN)	5.09	INITIAL ASSUMED AVERAGE PONDING DEPTH CREATED BY RAISED ROAD SECTION

SINCE THE BASIN HAS A TRIANGULAR CROSS-SECTION, THE AVERAGE PONDING DEPTH OF THE BASIN WILL BE USED TO FIND THE INFILTRATING SURFACE AREA. IN ORDER TO USE THE AVERAGE PONDING DEPTH OF 5.09 IN., THE REINFORCED ROAD SECTIONS WILL NEED TO BE RAISED BY 10.25 IN.

J	MAX. BASIN FILL TIME (HR)	2	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
K	BASIN SURFACE AREA (SF)	49229.6	PER EQUATION 6-6, (K) = (F) / ((J) * (D) / 12 + (I) / 12)
L	FLOOD WIDTH (FT)	84.9	(L) = (K) / (E)

CHECK TO SEE IF INFILTRATION BASIN SLOPE MATCHES EXISTING AVERAGE SLOPE OF SITE.

M	SITE SLOPE (%)	1.00	PER ON-SITE DRAINAGE MAP, APPENDIX F
N	INFIL. BASIN SLOPE (%)	1.00	(N) = ((I) * 2 / (L) * 12) * 100
O	TOTAL DRAINAGE TIME (HR)	3.94	(O) = (F) / ((K) * (D) /12), MAX = 72 HRS

BASIN #4

Da	INFILTRATION RATE (IN/HR)	2.63	PER GEOTECHNICAL REPORT, APPENDIX H (5 MIN/IN = 12 IN/HR) * FACTORS
Ea	BASIN LENGTH (FT)	440	PER ON-SITE DRAINAGE MAP, APPENDIX F
Fa	VOLUME OF BASIN (CF)	42471	(F) = (B) / (C)

BASIN SIZED ACCORDING TO THE LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL

Ga	REQUIRED DRAIN TIME (HR)	72	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
Ha	MAX. PONDING DEPTH (FT)	15.78	PER EQUATION 6-3, (Ha) = (Da) / 12 * (Ga)
Ia	BASIN PONDING DEPTH (IN)	6.11	INITIAL ASSUMED AVERAGE PONDING DEPTH CREATED BY RAISED ROAD SECTION

SINCE THE BASIN HAS A TRIANGULAR CROSS-SECTION, THE AVERAGE PONDING DEPTH OF THE BASIN WILL BE USED TO FIND THE INFILTRATING SURFACE AREA. IN ORDER TO USE THE AVERAGE PONDING DEPTH OF 6.11 IN., THE REINFORCED ROAD SECTION WILL NEED TO BE RAISED BY 12.25 IN.

Ja	MAX. BASIN FILL TIME (HR)	2	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
Ka	BASIN SURFACE AREA (SF)	44827.2	PER EQUATION 6-6, (Ka) = (Fa) / ((Ja) * (Da) / 12 + (Ia) / 12)
La	FLOOD WIDTH (FT)	101.9	(La) = (Ka) / (Ea)

CHECK TO SEE IF INFILTRATION BASIN SLOPE MATCHES EXISTING AVERAGE SLOPE OF SITE.

Ma	SITE SLOPE (%)	1.00	PER ON-SITE DRAINAGE MAP, APPENDIX F
Na	INFIL. BASIN SLOPE (%)	1.00	(Na) = ((Ia) * 2 / (La) * 12) * 100
Oa	TOTAL DRAINAGE TIME (HR)	4.32	(Oa) = (Fa) / ((Ka) * (Da) /12), MAX = 72 HRS

Conclusion:

ΔV25 INFILTRATED BY 4 INFILTRATION BASINS WITH VARIABLE LENGTH (580 FT & 440 FT) AND VARIABLE FLOOD WIDTH (85 FT & 102 FT) CREATED BY 4 REINFORCED ELEVATED ROAD SECTIONS WITH VARIABLE HEIGHT (10.25 IN & 12.25 IN).

TETRATECH

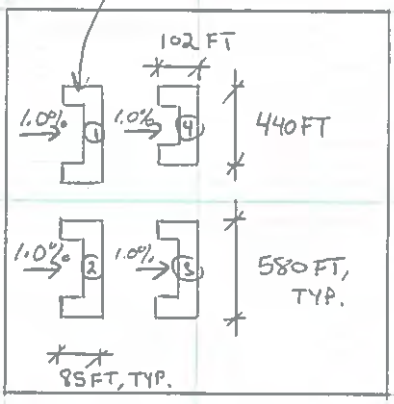
Sheet No. _____ of _____ Date: _____

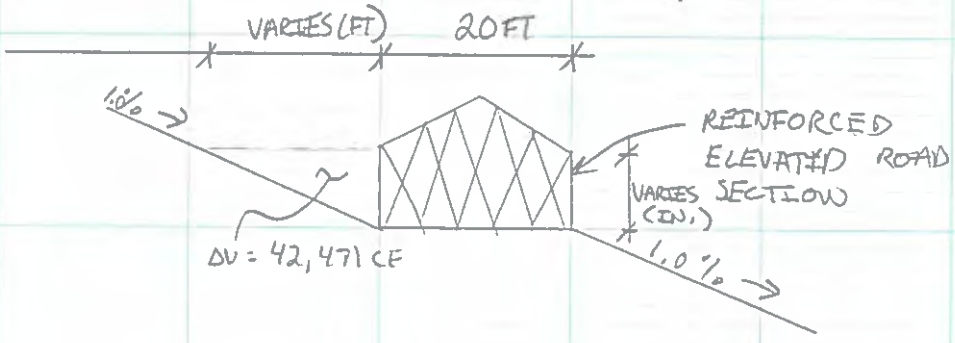
Checked By: _____ Office: _____

Telephone: _____

Engineer: _____ Job No.: _____

Subject: SILVER SKIN GREENWORKS ELEVATED ROAD SECTION AND INFILTRATION BASIN





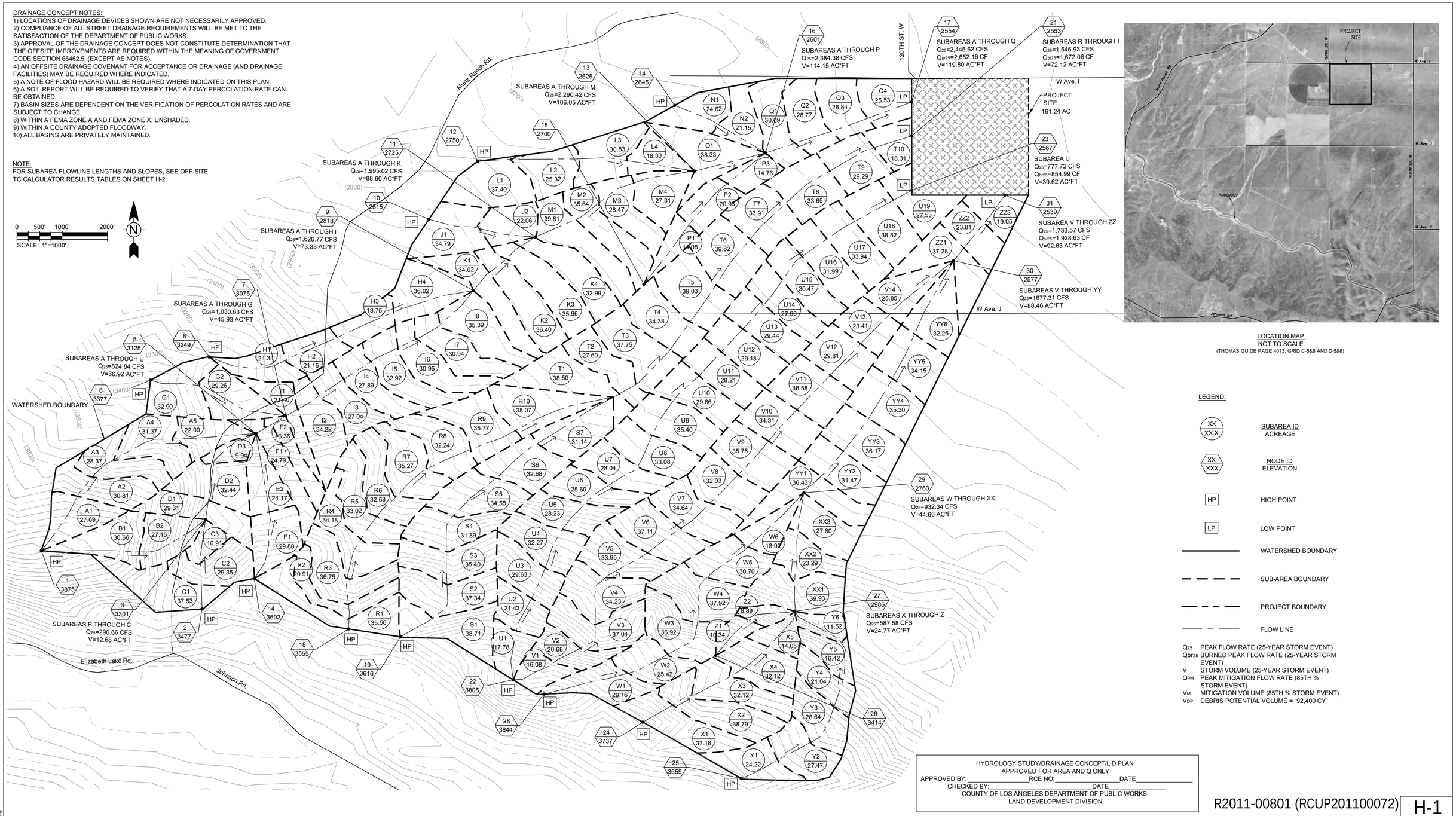
APPENDIX G:
DRAINAGE MAPS (ON-/OFF-SITE)

OFF-SITE DRAINAGE MAP

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) WITHIN A FEMA ZONE A AND FEMA ZONE X, UNSHADED.
9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.

NOTE:
FOR SUBAREA FLOWLINE LENGTHS AND SLOPES, SEE OFF-SITE TC CALCULATOR RESULTS TABLES ON SHEET H-2

0 500' 1000' 2000'
SCALE: 1"=1000'



LOCATION MAP
NOT TO SCALE
(THOMAS GUIDE PAGE 4013, GRID C-5&6 AND D-5&6)

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- SUB-AREA BOUNDARY
- PROJECT BOUNDARY
- FLOW LINE

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = 92,400 CY

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00801 (RCUP201100072) H-1

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs: 3267-003-001, 3267-003-002 & 3267-003-003
SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks
Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100072
OFF-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN
GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\04546\\135--04546--12001\SUPPORT\DOCS\CALCS\HYDROLOGY\11\FINAL DESIGN\OFFSITE HYDROLOGY H-1.DWG
PLOT/UPDATE: Dec 3, 2013 3:47:53 PM

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

OFF-SITE HYDROLOGY

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 5	A1	27.69	0.01	25	100	1391	0.1299	7.0	10	3.03	0.62	0.62	52.02	0.34	56.29	2.66
Project 5	A2	30.81	0.01	25	100	534	0.2405	6.8	5	4.09	0.69	0.69	86.95	0.34	92.42	2.88
Project 5	A3	28.37	0.01	25	120	601	0.1488	6.8	5	4.03	0.71	0.71	81.18	0.34	85.81	2.66
Project 5	A4	31.37	0.01	25	120	1405	0.0940	6.7	11	2.75	0.62	0.62	53.49	0.34	57.81	2.84
Project 5	A5	22.00	0.01	25	120	1859	0.1141	6.5	13	2.47	0.60	0.60	32.60	0.34	35.42	1.96
Project 5	B1	30.66	0.01	25	100	2168	0.1213	7.0	13	2.67	0.59	0.59	48.30	0.34	52.71	2.97
Project 5	B2	27.16	0.01	25	100	1672	0.1860	6.8	11	2.82	0.60	0.60	45.95	0.34	50.02	2.50
Project 5	C1	37.53	0.01	25	100	535	0.0631	6.9	6	3.80	0.67	0.67	95.55	0.34	102.08	3.53
Project 5	C2	29.35	0.01	25	100	485	0.1684	6.8	5	4.03	0.68	0.68	80.43	0.34	85.73	2.69
Project 5	C3	10.91	0.01	25	100	963	0.0631	6.7	9	3.02	0.62	0.62	20.43	0.34	22.11	0.99
Project 5	D1	29.31	0.01	25	100	435	0.0128	6.8	7	3.44	0.65	0.65	65.54	0.34	70.36	2.74
Project 5	D2	32.44	0.01	25	100	815	0.0432	6.6	9	2.98	0.61	0.61	58.97	0.34	64.01	2.87
Project 5	D3	9.94	0.01	25	120	1178	0.1443	6.5	9	2.94	0.64	0.64	18.70	0.34	20.11	0.89
Project 5	E1	29.80	0.01	25	100	1554	0.1545	6.6	11	2.71	0.59	0.59	47.65	0.34	52.01	2.59
Project 5	E2	24.17	0.01	25	100	1754	0.1352	6.6	12	2.60	0.59	0.59	37.08	0.34	40.45	2.15
Project 5	F1	24.79	0.01	25	120	294	0.0633	6.5	5	3.88	0.70	0.70	67.33	0.34	71.34	2.21
Project 5	F2	16.36	0.01	25	120	472	0.0654	6.4	6	3.51	0.68	0.68	39.05	0.34	41.57	1.41
Project 5	G1	32.90	0.01	25	120	1103	0.1301	6.5	9	2.94	0.64	0.64	61.90	0.34	66.55	2.93
Project 5	G2	29.25	0.01	25	120	2059	0.0769	6.3	15	2.25	0.57	0.57	37.51	0.34	41.13	2.46
Project 5	H1	21.34	0.01	25	134	1765	0.0903	6.2	22	1.85	0.28	0.29	11.45	0.34	14.91	1.37
Project 5	H2	21.15	0.01	25	120	1243	0.1011	6.1	11	2.53	0.61	0.61	32.64	0.34	35.36	1.71
Project 5	H3	18.75	0.01	25	120	1367	0.0394	6.1	14	2.23	0.57	0.57	23.83	0.34	26.13	1.50
Project 5	H4	36.02	0.01	25	120	1830	0.0504	6.0	16	2.06	0.55	0.55	40.81	0.34	45.01	2.78
Project 5	I1	21.40	0.01	25	120	302	0.0344	6.3	5	3.77	0.70	0.70	56.47	0.34	59.83	1.83
Project 5	I2	34.22	0.01	25	120	563	0.0476	6.3	7	3.22	0.66	0.66	72.72	0.34	77.79	2.99
Project 5	I3	27.04	0.01	25	120	652	0.1290	6.2	6	3.41	0.68	0.68	62.70	0.34	66.73	2.24
Project 5	I4	27.89	0.01	25	120	712	0.0742	6.1	8	2.94	0.64	0.64	52.48	0.34	56.42	2.34
Project 5	I5	32.92	0.01	25	120	669	0.0611	6.1	8	2.94	0.64	0.64	61.94	0.34	66.59	2.76
Project 5	I6	30.95	0.01	25	120	453	0.0629	6.1	6	3.32	0.67	0.67	68.85	0.34	73.45	2.47
Project 5	I7	30.94	0.01	25	120	602	0.0608	6.1	7	3.09	0.65	0.65	62.14	0.34	66.64	2.55
Project 5	I8	35.39	0.01	25	120	1068	0.0258	6.1	12	2.40	0.59	0.59	50.11	0.34	54.61	2.86
Project 5	J1	34.79	0.01	25	120	1137	0.0408	6.0	12	2.36	0.59	0.59	48.44	0.34	52.78	2.76
Project 5	J2	22.06	0.01	25	120	1257	0.0351	5.8	14	2.13	0.56	0.56	26.31	0.34	28.93	1.66
Project 5	K1	34.02	0.01	25	120	529	0.0450	6.0	7	3.04	0.65	0.65	67.22	0.34	72.08	2.74
Project 5	K2	36.40	0.01	25	120	483	0.0550	6.0	6	3.27	0.67	0.67	79.75	0.34	85.08	2.84
Project 5	K3	35.96	0.01	25	120	417	0.0534	5.9	6	3.22	0.66	0.66	76.42	0.34	81.75	2.75
Project 5	K4	32.99	0.01	25	120	390	0.0512	5.9	6	3.22	0.66	0.66	70.11	0.34	75.00	2.52
Project 5	L1	37.40	0.01	25	120	716	0.0348	5.8	9	2.62	0.61	0.61	59.77	0.34	64.78	2.84
Project 5	L2	25.32	0.01	25	120	1522	0.0184	5.6	19	1.79	0.51	0.51	23.11	0.34	25.84	1.81
Project 5	L3	30.83	0.01	25	120	1068	0.0284	5.4	14	2.00	0.55	0.55	33.91	0.34	37.39	2.13
Project 5	L4	18.30	0.01	25	120	1510	0.0277	5.3	19	1.68	0.49	0.49	15.06	0.34	16.97	1.20
Project 5	M1	39.81	0.01	25	120	971	0.0180	5.8	13	2.21	0.57	0.57	50.15	0.34	54.97	3.03
Project 5	M2	35.64	0.01	25	120	644	0.0384	5.6	9	2.54	0.61	0.61	55.22	0.34	59.82	2.60
Project 5	M3	28.47	0.01	25	120	890	0.0255	5.4	12	2.15	0.56	0.56	34.28	0.34	37.69	1.99
Project 5	M4	27.31	0.01	25	120	1374	0.0255	5.4	18	1.75	0.50	0.50	23.90	0.34	26.82	1.85
Project 5	N1	24.62	0.01	25	120	1018	0.0235	4.9	16	1.70	0.49	0.49	20.51	0.34	23.11	1.46
Project 5	N2	21.15	0.01	25	134	1234	0.0162	4.9	30	1.26	0.12	0.13	3.46	0.34	6.13	0.95
Project 5	O1	38.33	0.01	25	120	1617	0.0150	5.1	24	1.45	0.45	0.45	25.01	0.34	28.62	2.37
Project 5	P1	14.08	0.01	25	120	1644	0.0298	5.6	18	1.84	0.52	0.52	13.47	0.34	15.01	1.01
Project 5	P2	20.93	0.01	25	120	1253	0.0255	5.3	17	1.77	0.51	0.51	18.89	0.34	21.12	1.38
Project 5	P3	14.76	0.01	25	120	1079	0.0170	5.1	17	1.71	0.50	0.50	12.62	0.34	14.16	0.93
Project 5	Q1	30.69	0.01	25	120	685	0.0123	4.8	14	1.78	0.51	0.51	27.86	0.34	31.15	1.80
Project 5	Q2	28.77	0.01	25	134	840	0.0151	4.7	30	1.20	0.10	0.11	3.80	0.34	7.30	1.21
Project 5	Q3	26.84	0.01	25	120	861	0.0141	4.5	18	1.46	0.45	0.45	17.63	0.34	20.18	1.42
Project 5	Q4	25.53	0.01	25	120	1032	0.0117	4.2	24	1.20	0.38	0.39	11.95	0.34	14.08	1.22
Project 5	R1	35.56	0.01	25	100	230	0.0808	6.6	5	3.93	0.68	0.68	95.03	0.34	101.26	3.15
Project 5	R2	20.91	0.01	25	100	315	0.1493	6.6	5	3.93	0.68	0.68	55.88	0.34	59.54	1.85
Project 5	R3	36.75	0.01	25	100	578	0.2332	6.5	5	3.88	0.67	0.67	95.54	0.34	102.08	3.20
Project 5	R4	34.18	0.01	25	100	929	0.0676	6.5	9	2.94	0.61	0.61	61.30	0.34	66.53	2.97
Project 5	R5	33.02	0.01	25	120	612	0.1326	6.4	6	3.51	0.68	0.68	78.81	0.34	83.90	2.84
Project 5	R6	32.58	0.01	25	120	626	0.1659	6.3	6	3.46	0.68	0.68	76.65	0.34	81.59	2.76
Project 5	R7	35.27	0.01	25	120	914	0.0661	6.3	9	2.86	0.63	0.63	63.55	0.34	68.51	3.02
Project 5	R8	32.24	0.01	25	120	1049	0.0643	6.2	10	2.69	0.62	0.62	53.77	0.34	58.11	2.68
Project 5	R9	35.77	0.01	25	120	1077	0.0687	6.2	10	2.69	0.62	0.62	59.66	0.34	64.47	2.97
Project 5	R10	38.07	0.01	25	120	2302	0.0522	6.1	19	1.96	0.54	0.54	40.29	0.34	44.58	3.07
Project 5	S1	38.71	0.01	25	100	821	0.0961	6.4	8	3.07	0.62	0.62	73.68	0.34	79.75	3.36
Project 5	S2	37.34	0.01	25	100	900	0.1400	6.4	8	3.07	0.62	0.62	71.07	0.34	76.93	3.24
Project 5	S3	35.40	0.01	25	100	730	0.2090	6.4	6	3.51	0.66	0.66	82.01	0.34	87.80	2.98
Project 5	S4	31.89	0.01	25	100	841	0.1413	6.3	8	3.02	0.62	0.62	59.71	0.34	64.62	2.72
Project 5	S5	34.55	0.01	25	120	1252	0.1225	6.3	10	2.72	0.62	0.62	58.27	0.34	62.97	2.93
Project 5	S6	32.68	0.01	25	120	1205	0.0802	6.2	11	2.57	0.61	0.61	51.23	0.34	55.51	2.71
Project 5	S7	31.14	0.01	25	120	1961	0.0539	6.1	16	2.12	0.56	0.56	36.97	0.34	40.64	2.51
Project 5	T1	38.50	0.01	25	120	149	0.0413	6.1	5	3.61	0.69	0.69	95.90	0.34	101.83	3.11
Project 5	T2	27.60	0.01	25	120	418	0.0602	6.0	6	3.27	0.67	0.67	60.47	0.34	64.51	2.15
Project 5	T3	37.75	0.01	25	120	1081	0.0285	5.9	13	2.24	0.57	0.57	48.20	0.34	52.84	2.93
Project 5	T4	34.38	0.01	25	120	758	0.0382	5.8	10	2.50	0.60	0.60	51.57	0.34	56.04	2.58
Project 5	T5	39.03	0.01	25	120	997	0.0306	5.6	12	2.22	0.57	0.57	49.39	0.34	54.14	2.85
Project 5	T6	39.82	0.01	25	120	1261	0.0234	5.4	16	1.88	0.53	0.53	39.68	0.34	44.04	2.71
Project 5	T7	33.91	0.01	25	120	1125	0.0203	5.3	16	1.82	0.51	0.51	31.48	0.34	35.20	2.20
Project 5	T8	33.65	0.01	25	120	1207	0.0179	5.0	19	1.59	0.48	0.48	25.68	0.34	29.03	2.05
Project 5	T9	29.29	0.01	25	120	1108	0.0156	4.7	20	1.45	0.45	0.45	19.11	0.34	21.87	1.61
Project 5	T10	18.31	0.01	25	120	872	0.0140	4.5	18	1.46	0.45	0.45	12.03	0.34	13.77	0.97
Project 5	U1	17.78	0.01	25	100	1093	0.1646	6.4	9	2.90	0.61	0.61	31.45	0.34	34.13	1.52
Project 5	U2	21.42	0.01	25	100	800	0.2260	6.3	7	3.22	0.63	0.63	43.45	0.34	46.91	1.83
Project 5	U3	29.63	0.01	25	100	739	0.2324	6.3	6	3.46	0.65	0.65	66.64	0.34	71.55	2.45
Project 5	U4	32.27	0.01	25	120	935	0.1545	6.2	8	2.98	0.64	0.64	61.55	0.34	66.17	2.75
Project 5	U5	28.23	0.01	25	120	773	0.2019	6.2	6	3.41	0.68	0.68	65.46	0.34	69.66	2.33
Project 5	U6	25.60	0.01	25	120	651	0.0970	6.2	7	3.18	0.66	0.66	53.73	0.34	57.47	2.19
Project 5	U7	28.04	0.01	25	120	777	0.0674	6.1	8	2.94	0.64	0.64	52.76	0.34	56.72	2.35
Project 5	U8	33.08	0.01	25	120	759	0.0642	6.1	8	2.90	0.64	0.64	61.40	0.34	65.99	2.71
Project 5	U9	35.40	0.01	25	120	894	0.0478	6.1	10	2.61	0.61	0.61	56.36	0.34	61.08	2.84
Project 5	U10	29.66	0.01	25	120	798	0.0367	5.9	10	2.53	0.61	0.61	45.77	0.34	49.59	2.28
Project 5	U11	28.21	0.01	25	120	722	0.0358	5.8	9	2.62	0.61	0.61	45.09	0.34	48.86	2.14
Project 5	U12	29.18	0.01	25	120	692	0.0362	5.7	9	2.58	0.61	0.61	45.92	0.34	49.76	2.18
Project 5	U13	29.44	0.01	25	120	718	0.0292	5.6	10	2.42	0.59	0.59	42.03	0.34	45.81	2.12
Project 5	U14	27.90	0.01	25	120	672	0.0236	5.4	10	2.34	0.59	0.59	38.52	0.34	41.96	1.92
Project 5	U15	30.47	0.01	25	134	687	0.0205	5.4	18	1.75	0.26	0.27	14.40	0.34	19.16	1.64
Project 5	U16	31.99	0.01	25	134	673	0.0198	5.2	21	1.57	0.21	0.22	11.05	0.34	15.75	1.59
Project 5	U17	33.94	0.01	25	134	729	0.0192	5.0	30	1.29	0.13	0.14	6.13	0.34	10.48	1.55
Project 5	U18	38.52	0.01	25	134	968	0.0166	4.8	30	1.24	0.11	0.12	5.73	0.34	10.55	1.69
Project 5	U19	27.53	0.01	25	120	466	0.0163	4.7	10	2.00	0.55	0.55	30.28	0.34	33.39	1.54
Project 5	V1	16.08	0.01	25	100	993	0.1072	6.4	9	2.90	0.61	0.61	28.45	0.34	30.87	1.37
Project 5	V2	20.68	0.01	25	100	665	0.2624	6.3	6	3.46	0.65	0.65	46.51	0.34	49.94	1.71
Project 5	V3	37.04	0.01	25	100	707	0.2447	6.3	6	3.46	0.65	0.65	83.30	0.34	89.44	3.06
Project 5	V4	34.23	0.01	25	100	1131	0.1368	6.2	9	2.82	0.60	0.60	57.92	0.34	63.04	2.81
Project 5	V5	33.95	0.01	25	120	1077	0.1339	6.2	9	2.82	0.63	0.63	60.32	0.34	65.01	2.86
Project 5	V6	37.11	0.01	25	120	912	0.1447	6.1	8	2.94	0.64	0.64	69.83	0.34	75.07	3.11
Project 5	V7	34.64	0.01	25	120	865	0.0922	6.1	8	2.90	0.64	0.64	64.29	0.34	69.11	2.84
Project 5	V8	32.03	0.01	25	120	874	0.0579	6.1	9	2.74	0.62	0.62	54.41	0.34	58.81	2.58
Project 5	V9	35.75	0.01	25	120	1005	0.0429	6.0	11	2.46	0.60	0.60	52.77	0.34	57.33	2.77
Project 5	V10	34.31	0.01	25	120	930	0.0394	5.9	11	2.42	0.59	0.59	48.99	0.34	53.39	2.62
Project 5	V11	36.58	0.01	25	120	1060	0.0338	5.8	12	2.29	0.58	0.58	48.59	0.34	53.09	2.78
Project 5	V12	29.81	0.01	25	134	968	0.0277	5.5	22	1.64	0.24	0.25	12.22	0.34	16.68	1.62
Project 5	V13	23.41	0.01	25	134	881	0.0280	5.3	27	1.42	0.17	0.18	5.98	0.34	9.21	1.16
Project 5	V14	25.85	0.01	25	134	1876	0.0187	5.0	30	1.29	0.13	0.14	4.67	0.34	7.98	1.18
Project 5	W1	29.16	0.01	25	100	1918	0.1393	6.4	13	2.44	0.57	0.57	40.56	0.34	44.52	2.49
Project 5	W2	25.42	0.01	25	100	973	0.1263	6.3	8	3.02	0.62	0.62	47.60	0.34	51.51	2.17
Project 5	W3	36.92	0.01	25	100	1060	0.2106	6.2	8	2.98	0.61	0.61	67.11	0.34	72.85	3.09
Project 5	W4	37.92	0.01	25	120	1042	0.2183	6.1	8	2.94	0.64	0.64	71.35	0.34	76.71	3.18
Project 5	W5	30.70	0.01	25	134	1143	0.1251	6.1	14	2.23	0.35	0.36	24.65	0.34	30.24	1.97
Project 5	W6	18.92	0.01	25	134	1714	0.0626	6.1	25	1.70	0.25	0.26	8.36	0.34	11.26	1.14
Project 5	X1	37.18	0.01	25	100	760	0.2156	6.3	6	3.46	0.65	0.65	83.62	0.34	89.78	3.07
Project 5	X2	38.79	0.01	25	100	478	0.2206	6.2	5	3.72	0.67	0.67	96.68	0.34	103.26	3.18
Project 5	X3	32.12	0.01	25	100	925	0.0713	6.2	9	2.82	0.60	0.60	54.35	0.34	59.15	2.64
Project 5	X4	32.12	0.01	25	120	1102	0.1379	6.1	9	2.78	0.63	0.63	56.25	0.34	60.62	2.65
Project 5	X5	14.05	0.01	25	120	1002	0.3057	6.1	7	3.09	0.65	0.65	28.22	0.34	30.26	1.16
Project 5	Y1	24.22	0.01	25	100	901	0.1255	6.2	8	2.98	0.61	0.61	44.03	0.34	47.79	2.02
Project 5	Y2	27.47	0.01	25	100	833	0.1255	6.2	8	2.98	0.61	0.61	49.93	0.34	54.20	2.30
Project 5	Y3	28.64	0.01	25	120	969	0.1488	6.1	8	2.94	0.64	0.64	53.89	0.34	57.93	2.40
Project 5	Y4	21.04	0.01	25	120	630	0.2093	6.1	6	3.32	0.67	0.67	46.80	0.34	49.93	1.68
Project 5	Y5	16.42	0.01	25	120	850	0.1343	6.1	8	2.90	0.64	0.64	30.48	0.34	32.76	1.35
Project 5	Y6	11.52	0.01	25	134	1264	0.0843	6.0	17	2.00	0.31	0.32	7.37	0.34	9.34	0.72
Project 5	Z1	10.34	0.01	25	120	1080	0.1914	6.1	8	2.94	0.64	0.64	19.46	0.34	20.92	0.87
Project 5	Z2	8.89	0.01	25	120	1052	0.2202	6.1	8	2.90	0.64	0.64	16.50	0.34	17.74	0.73
Project 5	XX1	39.93	0.01	25	134	683	0.1097	6.1	9	2.74	0.42	0.42	45.95	0.34	54.33	2.63
Project 5	XX2	23.29	0.01	25	134	1083	0.0684	6.0	16	2.06	0.32	0.33	15.83	0.34	19.88	1.44
Project 5	XX3	27.80	0.01	25	134	869	0.0609	6.0	13	2.27	0.36	0.37	23.35	0.34	28.44	1.78
Project 5	YY1	36.43	0.01	25	134	522	0.0465	6.0	9	2.70	0.42	0.42	41.31	0.34	48.83	2.35
Project 5	YY2	31.47	0.01	25	134	746	0.0393	5.8	13	2.21	0.34	0.35	24.34	0.34	30.11	1.94
Project 5	YY3	36.17	0.01	25	134	914	0.0359	5.6	18	1.84	0.28	0.29	19.30	0.34	25.14	2.08
Project 5	YY4	35.30	0.01	25	134	1024	0.0289	5.4	29	1.42	0.17	0.18	9.02	0.34	13.88	1.81
Project 5	YY5	34.15	0.01	25	134	1102	0.0293	5.3	30	1.35	0.14	0.15	6.92	0.34	11.49	1.67
Project 5	YY6	32.26	0.01	25	134	1835	0.0193	5.0	30	1.29	0.13	0.14	5.83	0.34	9.96	1.48
Project 5	ZZ1	37.28	0.01	25	134	359	0.0192	4.8	12	1.91	0.29	0.30	21.36	0.34	27.56	1.83
Project 5	ZZ2	23.81	0.01	25	120	716	0.0181	4.7	14	1.71	0.50	0.50	20.36	0.34	22.84	1.33
Project 5	ZZ3	19.05	0.01	25	120	763	0.0159	4.5	15	1.59	0.48	0.48	14.54	0.34	16.43	1.01

OFF-SITE HYDROLOGY

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 5	A1	27.69	0.01	50	100	1391	0.1299	8.0	9	3.62	0.66	0.66	66.16	0.34	70.85	3.24
Project 5	A2	30.81	0.01	50	100	534	0.2405	7.8	5	4.65	0.71	0.71	101.72	0.34	107.65	3.46
Project 5	A3	28.37	0.01	50	120	601	0.1488	7.7	5	4.59	0.74	0.74	96.36	0.34	101.18	3.21
Project 5	A4	31.37	0.01	50	120	1405	0.0940	7.6	9	3.44	0.68	0.68	73.38	0.34	78.10	3.49
Project 5	A5	22.00	0.01	50	120	1859	0.1141	7.4	11	3.05	0.65	0.65	43.62	0.34	46.77	2.31
Project 5	B1	30.66	0.01	50	100	2168	0.1213	8.0	12	3.16	0.63	0.63	61.04	0.34	65.88	3.58
Project 5	B2	27.16	0.01	50	100	1672	0.1860	7.8	9	3.53	0.66	0.66	63.28	0.34	67.75	3.07
Project 5	C1	37.53	0.01	50	100	535	0.0631	7.9	5	4.71	0.71	0.71	125.50	0.34	132.83	4.29
Project 5	C2	29.35	0.01	50	100	485	0.1684	7.7	5	4.59	0.71	0.71	95.65	0.34	101.21	3.23
Project 5	C3	10.91	0.01	50	100	963	0.0631	7.6	8	3.64	0.66	0.66	26.21	0.34	28.07	1.20
Project 5	D1	29.31	0.01	50	100	435	0.0128	7.7	6	4.22	0.69	0.69	85.34	0.34	90.74	3.20
Project 5	D2	32.44	0.01	50	100	815	0.0432	7.5	8	3.59	0.66	0.66	76.86	0.34	82.31	3.51
Project 5	D3	9.94	0.01	50	120	1178	0.1443	7.4	8	3.54	0.69	0.69	24.28	0.34	25.78	1.08
Project 5	E1	29.80	0.01	50	100	1554	0.1545	7.5	9	3.39	0.65	0.65	65.66	0.34	70.49	3.17
Project 5	E2	24.17	0.01	50	100	1754	0.1352	7.5	11	3.09	0.62	0.62	46.30	0.34	50.12	2.53
Project 5	F1	24.79	0.01	50	120	294	0.0633	7.4	5	4.42	0.73	0.73	79.99	0.34	84.18	2.65
Project 5	F2	16.36	0.01	50	120	472	0.0654	7.3	5	4.36	0.73	0.73	52.07	0.34	54.79	1.72
Project 5	G1	32.90	0.01	50	120	1103	0.1301	7.4	8	3.54	0.69	0.69	80.36	0.34	85.32	3.59
Project 5	G2	29.25	0.01	50	120	2059	0.0769	7.2	13	2.74	0.62	0.62	49.69	0.34	53.71	3.01
Project 5	H1	21.34	0.01	50	134	1765	0.0903	7.1	16	2.45	0.39	0.40	20.91	0.34	24.98	1.66
Project 5	H2	21.15	0.01	50	120	1243	0.1011	7.0	9	3.17	0.66	0.66	44.25	0.34	47.33	2.09
Project 5	H3	18.75	0.01	50	120	1367	0.0394	6.9	12	2.73	0.62	0.62	31.74	0.34	34.30	1.82
Project 5	H4	36.02	0.01	50	120	1830	0.0504	6.8	14	2.50	0.60	0.60	54.03	0.34	58.71	3.39
Project 5	I1	21.40	0.01	50	120	302	0.0344	7.2	5	4.30	0.73	0.73	67.17	0.34	70.68	2.20
Project 5	I2	34.22	0.01	50	120	563	0.0476	7.2	6	3.94	0.71	0.71	95.73	0.34	101.18	3.48
Project 5	I3	27.04	0.01	50	120	652	0.1290	7.1	5	4.24	0.72	0.72	82.55	0.34	87.07	2.72
Project 5	I4	27.89	0.01	50	120	712	0.0742	7.0	7	3.57	0.69	0.69	68.70	0.34	72.94	2.82
Project 5	I5	32.92	0.01	50	120	669	0.0611	7.0	7	3.57	0.69	0.69	81.09	0.34	86.10	3.32
Project 5	I6	30.95	0.01	50	120	453	0.0629	6.9	5	4.12	0.72	0.72	91.81	0.34	96.82	3.00
Project 5	I7	30.94	0.01	50	120	602	0.0608	6.9	6	3.78	0.70	0.70	81.87	0.34	86.73	2.96
Project 5	I8	35.39	0.01	50	120	1068	0.0258	6.9	11	2.84	0.63	0.63	63.32	0.34	68.25	3.37
Project 5	J1	34.79	0.01	50	120	1137	0.0408	6.8	11	2.80	0.63	0.63	61.37	0.34	66.14	3.24
Project 5	J2	22.06	0.01	50	120	1257	0.0351	6.6	12	2.61	0.61	0.61	35.12	0.34	38.06	2.01
Project 5	K1	34.02	0.01	50	120	529	0.0450	6.8	6	3.72	0.70	0.70	88.59	0.34	93.84	3.20
Project 5	K2	36.40	0.01	50	120	483	0.0550	6.8	6	3.72	0.70	0.70	94.79	0.34	100.40	3.42
Project 5	K3	35.96	0.01	50	120	417	0.0534	6.7	5	4.00	0.71	0.71	102.13	0.34	107.95	3.34
Project 5	K4	32.99	0.01	50	120	390	0.0512	6.7	5	4.00	0.71	0.71	93.69	0.34	99.04	3.07
Project 5	L1	37.40	0.01	50	120	716	0.0348	6.6	8	3.16	0.66	0.66	78.00	0.34	83.42	3.47
Project 5	L2	25.32	0.01	50	120	1522	0.0184	6.4	16	2.21	0.57	0.57	31.90	0.34	34.96	2.16
Project 5	L3	30.83	0.01	50	120	1068	0.0284	6.2	12	2.45	0.60	0.60	45.32	0.34	49.24	2.58
Project 5	L4	18.30	0.01	50	120	1510	0.0277	6.0	16	2.07	0.55	0.55	20.83	0.34	22.98	1.42
Project 5	M1	39.81	0.01	50	120	971	0.0180	6.6	12	2.61	0.61	0.61	63.38	0.34	68.69	3.63
Project 5	M2	35.64	0.01	50	120	644	0.0384	6.4	8	3.06	0.65	0.65	70.89	0.34	76.01	3.17
Project 5	M3	28.47	0.01	50	120	890	0.0255	6.2	11	2.55	0.61	0.61	44.29	0.34	47.98	2.34
Project 5	M4	27.31	0.01	50	120	1374	0.0255	6.1	15	2.17	0.57	0.57	33.78	0.34	37.02	2.19
Project 5	N1	24.62	0.01	50	120	1018	0.0235	5.6	13	2.13	0.56	0.56	29.37	0.34	32.29	1.79
Project 5	N2	21.15	0.01	50	134	1234	0.0162	5.6	30	1.44	0.17	0.18	5.48	0.34	8.43	1.12
Project 5	O1	38.33	0.01	50	120	1617	0.0150	5.8	20	1.80	0.51	0.51	35.19	0.34	39.34	2.84
Project 5	P1	14.08	0.01	50	120	1644	0.0298	6.4	16	2.21	0.57	0.57	17.74	0.34	19.44	1.20
Project 5	P2	20.93	0.01	50	120	1253	0.0255	6.0	14	2.21	0.57	0.57	26.37	0.34	28.90	1.65
Project 5	P3	14.76	0.01	50	120	1079	0.0170	5.8	14	2.13	0.56	0.56	17.61	0.34	19.36	1.11
Project 5	Q1	30.69	0.01	50	120	685	0.0123	5.5	12	2.17	0.57	0.57	37.96	0.34	41.60	2.17
Project 5	Q2	28.77	0.01	50	134	840	0.0151	5.3	30	1.36	0.15	0.16	6.26	0.34	10.10	1.42
Project 5	Q3	26.84	0.01	50	120	861	0.0141	5.1	15	1.82	0.51	0.51	24.91	0.34	27.86	1.68
Project 5	Q4	25.53	0.01	50	120	1032	0.0117	4.8	19	1.53	0.47	0.47	18.36	0.34	20.83	1.48
Project 5	R1	35.56	0.01	50	100	230	0.0808	7.5	5	4.47	0.71	0.71	112.86	0.34	119.40	3.78
Project 5	R2	20.91	0.01	50	100	315	0.1493	7.5	5	4.47	0.71	0.71	66.36	0.34	70.21	2.22
Project 5	R3	36.75	0.01	50	100	578	0.2332	7.4	5	4.42	0.70	0.70	113.70	0.34	120.61	3.82
Project 5	R4	34.18	0.01	50	100	929	0.0676	7.4	8	3.54	0.66	0.66	79.86	0.34	85.50	3.63
Project 5	R5	33.02	0.01	50	120	612	0.1326	7.3	5	4.36	0.73	0.73	105.10	0.34	110.59	3.46
Project 5	R6	32.58	0.01	50	120	626	0.1659	7.2	5	4.30	0.73	0.73	102.27	0.34	107.61	3.35
Project 5	R7	35.27	0.01	50	120	914	0.0661	7.2	8	3.44	0.68	0.68	82.50	0.34	87.81	3.69
Project 5	R8	32.24	0.01	50	120	1049	0.0643	7.1	9	3.21	0.66	0.66	68.30	0.34	73.06	3.25
Project 5	R9	35.77	0.01	50	120	1077	0.0687	7.1	9	3.21	0.66	0.66	75.78	0.34	81.06	3.61
Project 5	R10	38.07	0.01	50	120	2302	0.0522	7.0	16	2.42	0.59	0.59	54.36	0.34	59.24	3.68
Project 5	S1	38.71	0.01	50	100	821	0.0961	7.3	7	3.72	0.67	0.67	96.48	0.34	103.05	4.04
Project 5	S2	37.34	0.01	50	100	900	0.1400	7.3	7	3.72	0.67	0.67	93.07	0.34	99.40	3.89
Project 5	S3	35.40	0.01	50	100	730	0.2090	7.3	5	4.36	0.70	0.70	108.04	0.34	114.59	3.62
Project 5	S4	31.89	0.01	50	100	841	0.1413	7.2	7	3.67	0.66	0.66	77.24	0.34	82.74	3.27
Project 5	S5	34.55	0.01	50	120	1252	0.1225	7.2	9	3.26	0.66	0.66	74.34	0.34	79.53	3.56
Project 5	S6	32.68	0.01	50	120	1205	0.0802	7.1	9	3.21	0.66	0.66	69.24	0.34	74.06	3.30
Project 5	S7	31.14	0.01	50	120	1961	0.0539	7.0	14	2.57	0.61	0.61	48.82	0.34	52.89	3.06
Project 5	T1	38.50	0.01	50	120	149	0.0413	6.9	5	4.12	0.72	0.72	114.21	0.34	120.44	3.73
Project 5	T2	27.60	0.01	50	120	418	0.0602	6.8	5	4.06	0.71	0.71	79.56	0.34	84.11	2.61
Project 5	T3	37.75	0.01	50	120	1081	0.0285	6.7	11	2.76	0.62	0.62	64.60	0.34	69.83	3.45
Project 5	T4	34.38	0.01	50	120	758	0.0382	6.6	8	3.16	0.66	0.66	71.70	0.34	76.69	3.19
Project 5	T5	39.03	0.01	50	120	997	0.0306	6.4	11	2.64	0.62	0.62	63.88	0.34	69.02	3.34
Project 5	T6	39.82	0.01	50	120	1261	0.0234	6.2	14	2.28	0.58	0.58	52.66	0.34	57.54	3.29
Project 5	T7	33.91	0.01	50	120	1125	0.0203	6.0	14	2.21	0.57	0.57	42.72	0.34	46.82	2.68
Project 5	T8	33.65	0.01	50	120	1207	0.0179	5.7	16	1.97	0.54	0.54	35.80	0.34	39.61	2.44
Project 5	T9	29.29	0.01	50	120	1108	0.0156	5.3	17	1.78	0.51	0.51	26.59	0.34	29.72	1.95
Project 5	T10	18.31	0.01	50	120	872	0.0140	5.1	15	1.82	0.51	0.51	17.00	0.34	19.01	1.15
Project 5	U1	17.78	0.01	50	100	1093	0.1646	7.3	8	3.49	0.65	0.65	40.33	0.34	43.31	1.85
Project 5	U2	21.42	0.01	50	100	800	0.2260	7.2	6	3.94	0.68	0.68	57.39	0.34	61.15	2.12
Project 5	U3	29.63	0.01	50	100	739	0.2324	7.2	5	4.30	0.70	0.70	89.19	0.34	94.58	2.97
Project 5	U4	32.27	0.01	50	120	935	0.1545	7.1	7	3.62	0.69	0.69	80.60	0.34	85.59	3.32
Project 5	U5	28.23	0.01	50	120	773	0.2019	7.1	6	3.89	0.70	0.70	76.87	0.34	81.45	2.82
Project 5	U6	25.60	0.01	50	120	651	0.0970	7.1	6	3.89	0.70	0.70	69.71	0.34	73.87	2.56
Project 5	U7	28.04	0.01	50	120	777	0.0674	7.0	7	3.57	0.69	0.69	69.07	0.34	73.33	2.83
Project 5	U8	33.08	0.01	50	120	759	0.0642	6.9	7	3.51	0.68	0.68	78.96	0.34	84.05	3.27
Project 5	U9	35.40	0.01	50	120	894	0.0478	6.9	9	3.12	0.65	0.65	71.79	0.34	77.00	3.43
Project 5	U10	29.66	0.01	50	120	798	0.0367	6.7	9	3.03	0.65	0.65	58.42	0.34	62.63	2.76
Project 5	U11	28.21	0.01	50	120	722	0.0358	6.6	8	3.16	0.66	0.66	58.83	0.34	62.92	2.61
Project 5	U12	29.18	0.01	50	120	692	0.0362	6.5	8	3.11	0.65	0.65	58.99	0.34	63.26	2.64
Project 5	U13	29.44	0.01	50	120	718	0.0292	6.4	9	2.90	0.64	0.64	54.64	0.34	58.73	2.57
Project 5	U14	27.90	0.01	50	120	672	0.0236	6.2	9	2.81	0.63	0.63	49.39	0.34	53.23	2.33
Project 5	U15	30.47	0.01	50	134	687	0.0205	6.1	13	2.32	0.36	0.37	26.16	0.34	31.88	2.01
Project 5	U16	31.99	0.01	50	134	673	0.0198	5.9	14	2.17	0.34	0.35	24.30	0.34	30.03	1.98
Project 5	U17	33.94	0.01	50	134	729	0.0192	5.7	17	1.91	0.29	0.30	19.45	0.34	25.09	2.00
Project 5	U18	38.52	0.01	50	134	968	0.0166	5.5	30	1.41	0.16	0.17	9.23	0.34	14.53	1.99
Project 5	U19	27.53	0.01	50	120	466	0.0163	5.3	9	2.40	0.59	0.59	38.98	0.34	42.48	1.85
Project 5	V1	16.08	0.01	50	100	993	0.1072	7.3	8	3.49	0.65	0.65	36.48	0.34	39.17	1.67
Project 5	V2	20.68	0.01	50	100	665	0.2624	7.2	5	4.30	0.70	0.70	62.25	0.34	66.01	2.07
Project 5	V3	37.04	0.01	50	100	707	0.2447	7.2	5	4.30	0.70	0.70	111.49	0.34	118.24	3.71
Project 5	V4	34.23	0.01	50	100	1131	0.1368	7.1	8	3.40	0.65	0.65	75.65	0.34	81.21	3.43
Project 5	V5	33.95	0.01	50	120	1077	0.1339	7.1	8	3.40	0.68	0.68	78.49	0.34	83.53	3.48
Project 5	V6	37.11	0.01	50	120	912	0.1447	7.0	7	3.57	0.69	0.69	91.41	0.34	97.06	3.75
Project 5	V7	34.64	0.01	50	120	865	0.0922	6.9	7	3.51	0.68	0.68	82.68	0.34	88.01	3.42
Project 5	V8	32.03	0.01	50	120	874	0.0579	6.9	8	3.30	0.67	0.67	70.82	0.34	75.56	3.16
Project 5	V9	35.75	0.01	50	120	1005	0.0429	6.8	10	2.93	0.64	0.64	67.04	0.34	72.07	3.36
Project 5	V10	34.31	0.01	50	120	930	0.0394	6.7	9	3.03	0.65	0.65	67.57	0.34	72.45	3.20
Project 5	V11	36.58	0.01	50	120	1060	0.0338	6.6	11	2.72	0.62	0.62	61.69	0.34	66.67	3.27
Project 5	V12	29.81	0.01	50	134	968	0.0277	6.3	16	2.18	0.34	0.35	22.75	0.34	28.12	1.97
Project 5	V13	23.41	0.01	50	134	881	0.0280	6.0	16	2.07	0.32	0.33	15.99	0.34	20.09	1.45
Project 5	V14	25.85	0.01	50	134	1876	0.0187	5.7	30	1.47	0.18	0.19	7.22	0.34	10.87	1.40
Project 5	W1	29.16	0.01	50	100	1918	0.1393	7.3	12	2.89	0.61	0.61	51.41	0.34	55.78	2.98
Project 5	W2	25.42	0.01	50	100	973	0.1263	7.2	7	3.67	0.66	0.66	61.57	0.34	65.95	2.61
Project 5	W3	36.92	0.01	50	100	1060	0.2106	7.1	7	3.62	0.66	0.66	88.21	0.34	94.47	3.71
Project 5	W4	37.92	0.01	50	120	1042	0.2183	7.0	7	3.57	0.69	0.69	93.41	0.34	99.17	3.83
Project 5	W5	30.70	0.01	50	134	1143	0.1251	6.9	11	2.84	0.44	0.44	38.36	0.34	44.85	2.33
Project 5	W6	18.92	0.01	50	134	1714	0.0626	6.9	18	2.25	0.35	0.36	15.33	0.34	18.81	1.42
Project 5	X1	37.18	0.01	50	100	760	0.2156	7.2	6	3.94	0.68	0.68	99.61	0.34	106.15	3.68
Project 5	X2	38.79	0.01	50	100	478	0.2206	7.1	5	4.24	0.69	0.69	113.48	0.34	120.67	3.80
Project 5	X3	32.12	0.01	50	100	925	0.0713	7.1	8	3.40	0.65	0.65	70.99	0.34	76.20	3.22
Project 5	X4	32.12	0.01	50	120	1102	0.1379	7.0	8	3.35	0.67	0.67	72.09	0.34	76.93	3.23
Project 5	X5	14.05	0.01	50	120	1002	0.3057	6.9	6	3.78	0.70	0.70	37.18	0.34	39.38	1.35
Project 5	Y1	24.22	0.01	50	100	901	0.1255	7.1	7	3.62	0.66	0.66	57.87	0.34	61.97	2.43
Project 5	Y2	27.47	0.01	50	100	833	0.1255	7.1	7	3.62	0.66	0.66	65.63	0.34	70.29	2.76
Project 5	Y3	28.64	0.01	50	120	969	0.1488	7.0	7	3.57	0.69	0.69	70.55	0.34	74.90	2.89
Project 5	Y4	21.04	0.01	50	120	630	0.2093	6.9	5	4.12	0.72	0.72	62.41	0.34	65.82	2.04
Project 5	Y5	16.42	0.01	50	120	850	0.1343	6.9	7	3.51	0.68	0.68	39.19	0.34	41.72	1.62
Project 5	Y6	11.52	0.01	50	134	1264	0.0843	6.8	13	2.59	0.41	0.41	12.23	0.34	14.54	0.87
Project 5	Z1	10.34	0.01	50	120	1080	0.1914	7.0	7	3.57	0.69	0.69	25.47	0.34	27.04	1.04
Project 5	Z2	8.89	0.01	50	120	1052	0.2202	6.9	7	3.51	0.68	0.68	21.22	0.34	22.59	0.88
Project 5	XX1	39.93	0.01	50	134	683	0.1097	6.9	8	3.30	0.48	0.48	63.25	0.34	72.56	3.16
Project 5	XX2	23.29	0.01	50	134	1083	0.0684	6.8	12	2.69	0.42	0.42	26.31	0.34	31.10	1.76
Project 5	XX3	27.80	0.01	50	134	869	0.0609	6.8	11	2.80	0.43	0.43	33.47	0.34	39.35	2.07
Project 5	YY1	36.43	0.01	50	134	522	0.0465	6.8	8	3.25	0.48	0.48	56.83	0.34	65.18	2.82
Project 5	YY2	31.47	0.01	50	134	746	0.0393	6.6	11	2.72	0.42	0.42	35.95	0.34	42.50	2.26
Project 5	YY3	36.17	0.01	50	134	914	0.0359	6.4	13	2.44	0.38	0.39	34.42	0.34	41.40	2.53
Project 5	YY4	35.30	0.01	50	134	1024	0.0289	6.2	17	2.08	0.32	0.33	24.23	0.34	30.44	2.31
Project 5	YY5	34.15	0.01	50	134	1102	0.0293	6.0	20	1.87	0.29	0.30	19.16	0.34	24.70	2.09
Project 5	YY6	32.26	0.01	50	134	1835	0.0193	5.7	30	1.47	0.18	0.19	9.01	0.34	13.56	1.75
Project 5	ZZ1	37.28	0.01	50	134	359	0.0192	5.5	9	2.49	0.39	0.40	37.13	0.34	44.37	2.18
Project 5	ZZ2	23.81	0.01	50	120	716	0.0181	5.3	12	2.10	0.56	0.56	28.00	0.34	30.78	1.60
Project 5	ZZ3	19.05	0.01	50	120	763	0.0159	5.1	13	1.94	0.54	0.54	19.96	0.34	22.07	1.22

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:________________RCE NO:________________DATE_______________
CHECKED BY:___________________________DATE______________
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00801 (RCUP201100072) H-2

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PLOT/UPDATE: Sep 9, 2013 1:6:21 PM

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER
JOSEPH E. DIETZ
No. 67032
EXP: 9-30-14
CIVIL
STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs: 3267-003-001, 3267-003-002 & 3267-003-003

SCH # 2012061068

Project Name: Project 5 Silver Sun Greenworks

Project Address: 120TH ST W & W AVE I Lancaster, Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100072 OFF-SITE DRAINAGE MAP

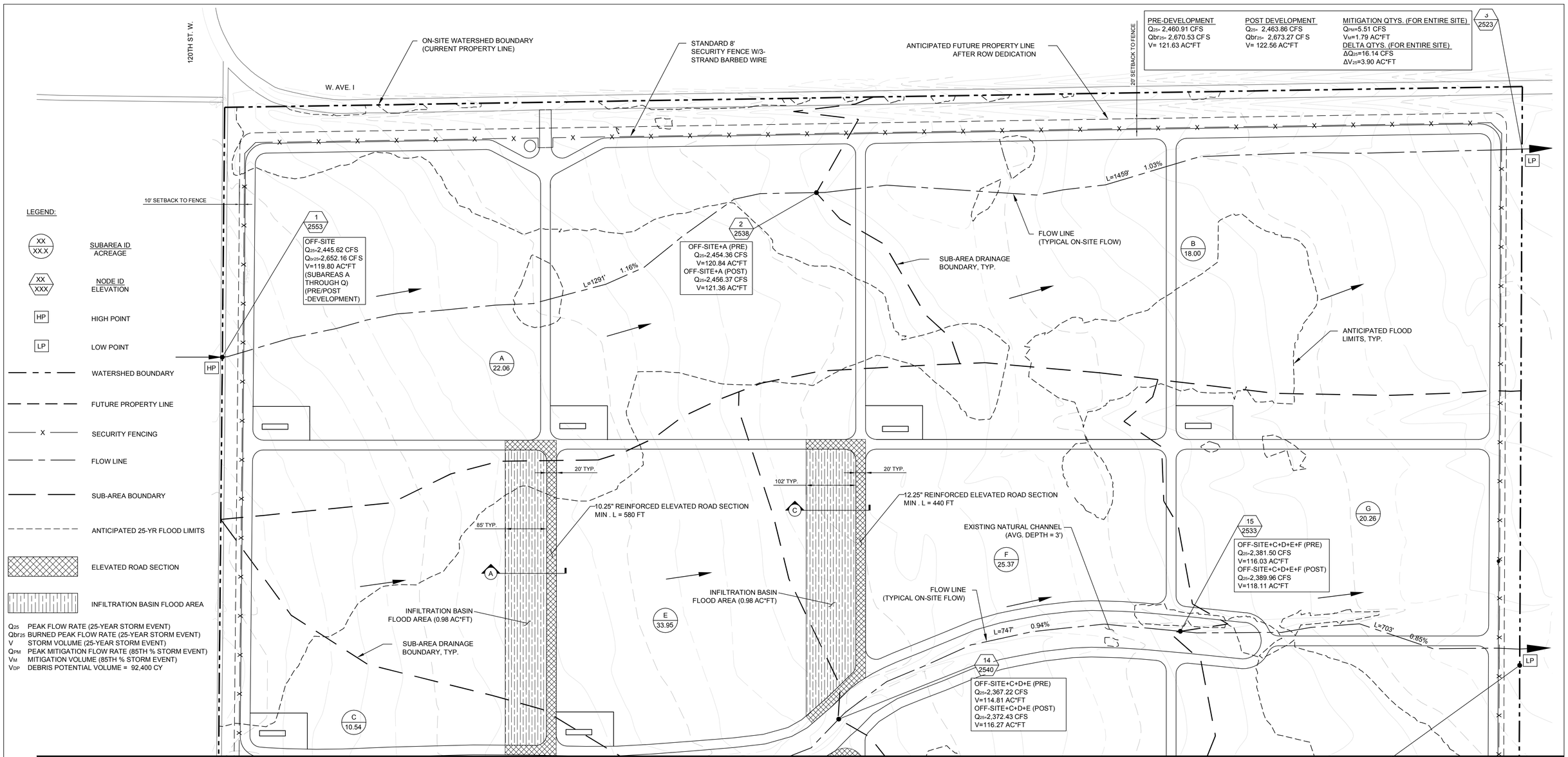
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN
GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

ON-SITE DRAINAGE MAP



MATCHLINE: SEE SHEET C-04

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) WITHIN A FEMA ZONE A AND ZONE X, UNSHADED.
9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 0.4%, AND THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 2.0%. SIMILAR INCREASES ARE ANTICIPATED FOR THE DEPTHS AND VELOCITIES DUE TO THE SMALL INCREASE IN PEAK FLOW RATES (<1%). THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. THE POST-DEVELOPMENT DOES NOT INCLUDE THE MITIGATION EFFECTS OF THE BASINS. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

PRE-DEVELOPMENT
Q25= 2,392.9 CFS
Qbr25= 2,605.25 CF S
V= 117.01 AC*FT

POST DEVELOPMENT
Q25= 2,403.96 CFS
Qbr25= 2,615.46 CF S
V= 119.58 AC*FT

MITIGATION QTYS. (FOR ENTIRE SITE)
QPM=5.51 CFS
VM=1.79 AC*FT
DELTA QTYS. (FOR ENTIRE SITE)
ΔQ25=16.14 CFS
ΔV25=3.90 AC*FT

16 2527

0 50 100 200
SCALE: 100

N

R2011-00801 (RCUP201100072) C-03

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs: 3267-003-001, 3267-003-002 & 3267-003-003

SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks

Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100072 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\04546\135-04546-12001\SUPPORTDOCS\CALCS\HYDROLOGY\11\FINAL DESIGN\ONSITE HYDROLOGY C-03.DWG
PLOT/UPDATE: Dec 12, 2013 11:0:53 AM

MATCHLINE: SEE SHEET C-03

11
2555
OFF-SITE
Q_{25}=1,546.93 CFS
Qbr_{25}=1,672.06 CFS
V=72.12 AC*FT
(SUBAREAS R THROUGH T)
(PRE/POST -DEVELOPMENT)

HP

L=852' 1.29%

EXISTING NATURAL CHANNEL
(AVG. DEPTH = 3')

10.25" REINFORCED ELEVATED ROAD SECTION
MIN . L = 580 FT

A

C
10.54

20' TYP.

INFILTRATION BASIN
FLOOD AREA (0.98 AC*FT)

D
15.03

L=1485' 1.68%

85' TYP.

FLOW LINE
(TYPICAL ON-SITE FLOW)

L=456' 0.88%

13
2544
OFF-SITE+C+D (PRE)
Q_{25}=2,337.68 CFS
V=113.03 AC*FT
OFF-SITE+C+D (POST)
Q_{25}=2,340.53 CFS
V=113.66 AC*FT

10.25" REINFORCED ELEVATED ROAD SECTION
MIN . L = 580 FT

SUB-AREA DRAINAGE
BOUNDARY, TYP.

85' TYP.

20' TYP.

E
33.95

INFILTRATION BASIN
FLOOD AREA (0.98 AC*FT)

A

F
25.37

SUB-AREA DRAINAGE
BOUNDARY, TYP.

H
16.02

ANTICIPATED FLOOD
LIMITS, TYP.

G
20.26

SUBSTATION AREA

L=872' 1.38%

FLOW LINE
(TYPICAL ON-SITE FLOW)

LP

12
2569
OFF-SITE
Q_{25}=777.72 CFS
Qbr_{25}=854.99 CFS
V=39.62 AC*FT
(SUBAREA U)
(PRE/POST -DEVELOPMENT)

HP

10' SETBACK
TO FENCE

ON-SITE WATERSHED BOUNDARY
(CURRENT PROPERTY LINE)

STANDARD 8'
SECURITY FENCE W/3-
STRAND BARBED WIRE

ANTICIPATED FUTURE PROPERTY LINE
AFTER ROW DEDICATION

21
2540
OFF-SITE
Q_{25}=1,733.57 CFS
Qbr_{25}=1,928.63 CFS
V=92.63 AC*FT
(SUBAREAS V THROUGH ZZ)
(PRE/POST -DEVELOPMENT)

HP

22
2528

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION QTYS. (FOR ENTIRE SITE)
Q_{25}= 1,743.21 CFS	Q_{25}= 1,745.34 CFS	Q_{PM}=5.51 CFS
Qbr_{25}= 1,939.77 CFS	Qbr_{25}= 1,941.77 CFS	V_M=1.79 AC*FT
V= 93.45 AC*FT	V= 93.85 AC*FT	DELTA QTYS. (FOR ENTIRE SITE)
		ΔQ_{25}=16.14 CFS
		ΔV_{25}=3.90 AC*FT

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- X — SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Qbr_{25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = 92,400 CY

DRAINAGE CONCEPT NOTES:
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8) WITHIN A FEMA ZONE A AND ZONE X, UNSHADED.
9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 0.4%, AND THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 2.0%. SIMILAR INCREASES ARE ANTICIPATED FOR THE DEPTHS AND VELOCITIES DUE TO THE SMALL INCREASE IN PEAK FLOW RATES (<1%). THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. THE POST-DEVELOPMENT DOES NOT INCLUDE THE MITIGATION EFFECTS OF THE BASINS. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

0 50 100 200
SCALE: 100

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R2011-00801 (RCUP201100072) C-04

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PLOT/UPDATE: Dec 6, 2013 1:41:23 PM

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER
JOSEPH E. DIETZ
No. 67032
EXP: 9-30-14
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STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs: 3267-003-001, 3267-003-002 & 3267-003-003

SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks

Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR RUP-201100072
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN
GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 5	A	22.06	0.01	25	120	1291	0.0116	4.2	29	1.10	0.35	0.36	8.74	0.34	10.47	1.04
Project 5	B	18.00	0.01	25	120	1459	0.0103	4.0	30	1.06	0.34	0.35	6.55	0.34	7.90	0.79
Project 5	C	10.54	0.01	25	120	852	0.0129	4.4	19	1.40	0.43	0.43	6.35	0.34	7.33	0.54
Project 5	D	15.03	0.01	25	120	1485	0.0166	4.4	28	1.17	0.37	0.38	6.68	0.34	7.92	0.75
Project 5	E	33.95	0.01	25	120	456	0.0066	4.4	12	1.74	0.50	0.50	29.54	0.34	33.15	1.78
Project 5	F	25.37	0.01	25	120	747	0.0094	4.2	19	1.34	0.42	0.42	14.28	0.34	16.57	1.22
Project 5	G	20.26	0.01	25	120	706	0.0085	4.2	19	1.34	0.42	0.42	11.40	0.34	13.23	0.98
Project 5	H	16.02	0.01	25	120	872	0.0138	4.4	19	1.40	0.43	0.43	9.64	0.34	11.14	0.82
Project 5	A	22.06	0.01	50	120	1291	0.0116	4.8	24	1.37	0.43	0.43	13.00	0.34	15.01	1.23
Project 5	B	18.00	0.01	50	120	1459	0.0103	4.6	29	1.20	0.38	0.39	8.42	0.34	9.93	0.95
Project 5	C	10.54	0.01	50	120	852	0.0129	5.0	15	1.78	0.51	0.51	9.57	0.34	10.70	0.64
Project 5	D	15.03	0.01	50	120	1485	0.0166	5.0	22	1.49	0.46	0.46	10.30	0.34	11.74	0.91
Project 5	E	33.95	0.01	50	120	456	0.0066	5.0	11	2.06	0.55	0.55	38.47	0.34	42.43	2.08
Project 5	F	25.37	0.01	50	120	747	0.0094	4.8	16	1.66	0.49	0.49	20.64	0.34	23.24	1.46
Project 5	G	20.26	0.01	50	120	706	0.0085	4.8	15	1.71	0.50	0.50	17.32	0.34	19.43	1.17
Project 5	H	16.02	0.01	50	120	872	0.0138	5.0	15	1.78	0.51	0.51	14.54	0.34	16.26	0.98

ON-SITE HYDROLOGY (POST-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frecuency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 5	A	22.06	0.1	25	120	1291	0.0116	4.2	26	1.16	0.37	0.42	10.25	0.34	12.40	1.56
Project 5	B	18.00	0.1	25	120	1459	0.0103	4.0	30	1.06	0.34	0.40	7.49	0.34	8.73	1.20
Project 5	C	10.54	0.1	25	120	852	0.0129	4.4	17	1.47	0.45	0.50	7.75	0.34	8.65	0.80
Project 5	D	15.03	0.1	25	120	1485	0.0166	4.4	25	1.23	0.39	0.44	8.13	0.34	9.30	1.12
Project 5	E	33.95	0.1	25	120	456	0.0066	4.4	12	1.74	0.50	0.54	31.90	0.34	35.15	2.61
Project 5	F	25.37	0.1	25	120	747	0.0094	4.2	17	1.41	0.44	0.49	17.53	0.34	19.63	1.84
Project 5	G	20.26	0.1	25	120	706	0.0085	4.2	17	1.41	0.44	0.49	14.00	0.34	15.68	1.47
Project 5	H	16.02	0.1	25	120	872	0.0138	4.4	17	1.47	0.45	0.50	11.72	0.34	13.14	1.23
Project 5	A	22.06	0.1	50	120	1291	0.0116	4.8	21	1.46	0.45	0.50	16.10	0.34	17.97	1.85
Project 5	B	18.00	0.1	50	120	1459	0.0103	4.6	26	1.26	0.40	0.45	10.21	0.34	11.62	1.41
Project 5	C	10.54	0.1	50	120	852	0.0129	5.0	14	1.84	0.52	0.56	10.86	0.34	11.89	0.94
Project 5	D	15.03	0.1	50	120	1485	0.0166	5.0	21	1.52	0.46	0.50	11.42	0.34	12.76	1.32
Project 5	E	33.95	0.1	50	120	456	0.0066	5.0	10	2.15	0.56	0.59	43.07	0.34	46.78	3.02
Project 5	F	25.37	0.1	50	120	747	0.0094	4.8	15	1.71	0.50	0.54	23.43	0.34	25.81	2.14
Project 5	G	20.26	0.1	50	120	706	0.0085	4.8	14	1.77	0.51	0.55	19.72	0.34	21.66	1.72
Project 5	H	16.02	0.1	50	120	872	0.0138	5.0	15	1.78	0.51	0.55	15.66	0.34	17.23	1.42
Project 5	A	22.06	0.1	MIT.	120	1291	0.0116	0.75	30	0.33	0.10	0.18	0.75	0.34	0.98	0.24
Project 5	B	18.00	0.1	MIT.	120	1459	0.0103	0.75	30	0.33	0.10	0.18	0.62	0.34	0.80	0.20
Project 5	C	10.54	0.1	MIT.	120	852	0.0129	0.75	30	0.33	0.10	0.18	0.36	0.34	0.47	0.12
Project 5	D	15.03	0.1	MIT.	120	1485	0.0166	0.75	30	0.33	0.10	0.18	0.51	0.34	0.67	0.17
Project 5	E	33.95	0.1	MIT.	120	456	0.0066	0.75	30	0.33	0.10	0.18	1.16	0.34	1.51	0.38
Project 5	F	25.37	0.1	MIT.	120	747	0.0094	0.75	30	0.33	0.10	0.18	0.87	0.34	1.13	0.28
Project 5	G	20.26	0.1	MIT.	120	706	0.0085	0.75	30	0.33	0.10	0.18	0.69	0.34	0.90	0.22
Project 5	H	16.02	0.1	MIT.	120	872	0.0138	0.75	30	0.33	0.10	0.18	0.55	0.34	0.71	0.18

NOTE: FOR INFILTRATION BASIN MITIGATION VOLUME, SUM MIT. FREQUENCY VOLUMES UNDER POST-DEVELOPMENT TABLE. V_{PM}=1.79 AC*FT.

DELTA QUANTITIES FOR DRAINAGE AREA A:
ΔQ25 = 10.75 - 8.74 = 2.01 CFS
ΔV25 = 1.56 - 1.04 = 0.52 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA B:
ΔQ25 = 7.49 - 6.55 = 0.94 CFS
ΔV25 = 1.20 - 0.79 = 0.41 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA C
ΔQ25 = 7.75 - 6.35 = 1.40 CFS
ΔV25 = 0.80 - 0.54 = 0.26 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA D
ΔQ25 = 8.13 - 6.68 = 1.45 CFS
ΔV25 = 1.12 - 0.75 = 0.37 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA E
ΔQ25 = 31.90 - 29.54 = 2.36 CFS
ΔV25 = 2.61 - 1.78 = 0.83 AC*FT

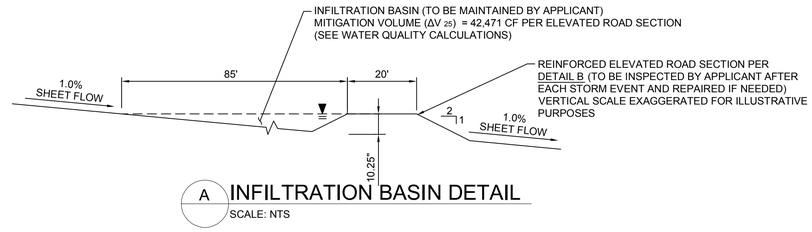
DELTA QUANTITIES FOR DRAINAGE AREA F
ΔQ25 = 17.53 - 14.28 = 3.25 CFS
ΔV25 = 1.84 - 1.22 = 0.62 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA G
ΔQ25 = 14.00 - 11.40 = 2.60 CFS
ΔV25 = 1.47 - 0.98 = 0.49 AC*FT

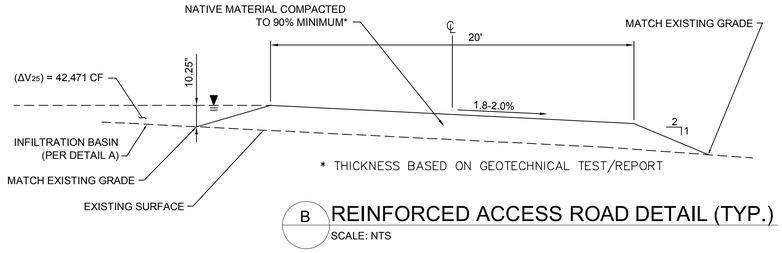
DELTA QUANTITIES FOR DRAINAGE AREA H
ΔQ25 = 11.77 - 9.64 = 2.13 CFS
ΔV25 = 1.22 - 0.82 = 0.40 AC*FT

TOTAL DELTA QUANTITIES
ΔQ25 = 16.14 CFS
ΔV25 = 3.90 AC*FT

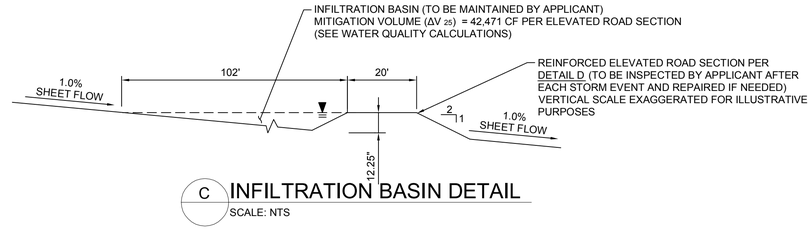
NOTE: DUE TO THE LID Δ QUANTITIES ABOVE BEING GREATER THAN THE MITIGATION QUANTITIES (Q_{PM} AND V_{PM}) THEY REPRESENT THE WORST CASE SCENARIO BETWEEN THE PRE-/POST DEVELOPMENT CONDITIONS AND THEREFORE SHALL BE USED FOR SIZING THE INFILTRATION BASINS.



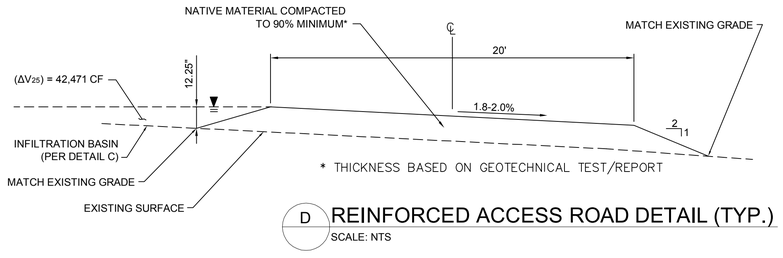
A INFILTRATION BASIN DETAIL
SCALE: NTS



B REINFORCED ACCESS ROAD DETAIL (TYP.)
SCALE: NTS



C INFILTRATION BASIN DETAIL
SCALE: NTS



D REINFORCED ACCESS ROAD DETAIL (TYP.)
SCALE: NTS

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00801 (RCUP201100072) C-05

P:\245445\135-44545-12001\SUPPORTDOCS\CALCS\HYDROLOGY\11\FINAL DESIGN\ONSITE HYDROLOGY C-05.DWG
PLOT UPDATE: Dec 3, 2013 4:8:2 PM

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs: 3267-003-001, 3267-003-002 & 3267-003-003
SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks
Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100072
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN
GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

APPENDIX H:
GEOTECHNICAL REPORT

TETRA TECH

August 7, 2013

Brian Smith
County of Los Angeles
Department of Public Works
900 South Fremont Ave
Alhambra, CA 91803

Reference: **Infiltration Rates for Silverado Solar Project Sites, Antelope Valley, CA**

Dear Brian:

The purpose of this letter is to establish a basis for the infiltration rates to be used for various Low Impact Development facilities to treat and infiltrate storm water to meet the Standard Urban Stormwater Mitigation Plan requirements. Currently, LA County Public Works has provided guidance to use an infiltration rate equal to .25 in/hr. We feel this value is extremely conservative based on our experience in the area, and in other high desert areas in the region. Bruin GSI performed preliminary percolation testing at each of the six solar project sites based on the Excavation Percolation Testing Procedure or Ryon Method as outlined in LA County Administrative Manual GS200.1. The results of these preliminary tests show percolation rates much higher than the LA County provided rate of .25 in/hr. The table below shows the preliminary percolation rates recorded by Bruin GSI, the corresponding Reduction Factor, Factor of Safety and requested site specific Infiltration Rate:

Project Site	Absorption Rate (minutes/inch)[1]	Preadjusted Percolation Rate (in/hr)	Reduction Factor[2]	Factor of Safety[3]	Infiltration Rate[4] (in/hr)
North Lancaster Ranch (RCUP201100079)	7	8.57	1.52	3	**1.88**
Western Antelope Blue Sky Ranch (RCUP201100070)	3	20.0	1.52	3	**4.39**
American Solar Greenworks (RCUP201100071)	3	20.0	1.52	3	**4.39**
Antelope Solar Greenworks (RCUP201100076)	4	15.0	1.52	3	**3.29**
Silver Sun Greenworks (RCUP201100072)	5	12.0	1.52	3	**2.63**
Lancaster WAD (RCUP201100074)	3	20.0	1.52	3	**4.39**

[1] Absorption rate was measured between the drop from 6" to 5" above bottom of the percolation pit

[2] Reduction factor is based on Rf=(2di-�d)/13.5 + 1 per GS200.1

[3] Factor of Safety accounts for variations across the site and for silt accumulation over time.

[4] Infiltration rate = Preadjusted Percolation Rate/(Reduction Factor x Factor of Safety)

Tetra Tech, Inc.
17885 Von Karman Avenue, Suite 500, Irvine, CA 92614
Tel 949.809.5000 Fax 949.809.5004 www.tetratech.com

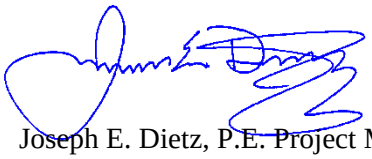
The Low Impact Development, LID, features on each project site will consist of a road that will create a berm to allow for the retention area. The road, which provides a berm of approximately 4 to 8 inches, enables run-off water to be captured and treated on-site at original grade level. Any flow in excess of retention capability of these berms will continue and normalize before it leaves the project boundaries thereby maintaining existing project conditions.

The excavations that Bruin GSI performed support our request to utilize these infiltration rates with the findings that the soil to a depth of 10 feet had no impermeable layers and the materials that were found were uniform. The density of the alluvial material, silty sand (SM) and sandy silt (ML) was generally loose to medium density with dry to moist conditions. The conditions of these materials further leads us to our conclusion that the above reference infiltration rates would be suitable to design the retention features on the respective project sites.

Groundwater conditions in the area, based on Bruin GSI review and Tetra Tech research, are at least 100 feet below ground surface elevation in the subject project areas.

As shown in the table above, the site specific infiltration rates based on preliminary testing are much higher than the .25 in/hr currently allowed. We request the use of the infiltration rates above for the design of the, LID, features at each site.

Sincerely,



Joseph E. Dietz, P.E. Project Manager

jd
P:\04546\135-04546-12001\Docs\Letters\LTR_InfiltrationRates_20130626.docx

Attachments:
Bruin GSI Preliminary Percolation Feasibility Study dated August 1, 2013

BRUIN GSI PRELIMINARY PERCOLATION FEASIBILITY STUDY DATED AUGUST 1, 2013

REVISED PRELIMINARY PERCOLATION FEASIBILITY STUDY FOR SURFACE INFILTRATION DATA FOR SILVERADO POWER ON PROPOSED SOLAR SITES

NORTH LANCASTER RANCH
WESTERN ANTELOPE BLUE SKY RANCH
AMERICAN SOLAR GREENWORKS
ANTELOPE SOLAR GREENWORKS
SILVER SUN GREENWORKS
LANCASTER WAD

LANCASTER, LOS ANGELES COUNTY
CALIFORNIA

Prepared by:
Bruin Geotechnical Services, Inc.
1817 East Avenue Q, Unit A1
Palmdale, California 93550

August 1, 2013
J.N. 12-59

BRUIN GSI

SOIL AND MATERIAL
TESTING AND INSPECTIONS

August 1, 2013 J.N. 12-59

Mr. Ryan Galeria
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

Project: Proposed Solar Sites, Lancaster, California

Sites:

1- North Lancaster Ranch

2- Western Antelope Blue Sky Ranch

3- American Solar Greenworks

4- Antelope Solar Greenworks

5- Silver Sun Greenworks

6- Lancaster WAD

Subject: Revised Preliminary Percolation Feasibility Study for Surface Infiltration Data via Los Angeles County Ryon Method

Presented herewith, per your request, are the results of the percolation testing program for the referenced project. The purpose of this report is to provide preliminary surficial percolation rates for the referenced sites for use by the client to determine the infiltration rates of the existing native soils at existing grade for the proposed water run-off of impermeable areas, such as drive access roadways and small equipment pad areas. This report concludes the scope of our services per our contract.

Site Description

The subject sites are located in the southwest portion of the Antelope Valley, in the Lancaster area of Los Angeles County. The subject sites vary in size and topography. However the sites are relatively flat and level with general slopes of approximately 1-3 percent, with drainage occurring by sheetflow, except site 2, Western Antelope Blue Sky Ranch, which sloped up to the southwest with minor rolling hills.

At the time of our investigation, the sites were vacant of structures. Vegetation consisted of native desert flora, with varying amounts of shrubs, annual grass and weeds. Oak trees were not observed at the sites. The site locations and site plan are presented in Appendix A. The approximate percolation test locations for each site are also indicated on the site plan.

Proposed Development and Drainage

Based on our review of the preliminary site plan, it is our understanding that a solar farm is proposed. The impermeable areas that create water run-off consist of raised access roadways on the perimeter of the site with access roadways, which locations vary by site, dissecting the sites. In addition, concrete equipment pads at various locations on each site will create small impermeable areas. The impermeable surface areas on each site range from 7.5% to 15% of the entire site areas. It is intended that the raised access roads serve as a berm and capture the run-off water and allow it to infiltrate at existing ground elevation. The height of the roadway will range from four to eight inches in height and will create the retention basins on each site and to allow infiltration into native soil at exiting grade elevation. Any additional flow will continue over the roads, therefore maintaining existing sheet flow patterns.

Percolation Testing Protocol

Testing for percolation rates was performed in accordance with the Los Angeles County Ryon Method. This method was performed by excavating a cubic foot test hole at existing ground surface which is the anticipated elevation of the infiltration basins. The test hole is pre-soaked by filling with clean water to existing grade (12 inches). Once all the water has been absorbed, the test hole is cleaned of loose material and filled again with clean water. The percolation rate is determined by monitoring the time of drop for each inch from 0 to 6 inches. The time of absorption between the 5th to 6th inch is the percolation rate in minutes per inch.

On December 1, 2012, the field-testing program was instigated. A minimum of one (1) cubic foot percolation test hole was excavated at each site. The test holes were excavated at the existing ground elevation to a depth of one (1) foot below existing ground elevation with hand equipment. The soil types were logged by our representative. Soil profile information and classifications are presented in Appendix B.

The same day, the cubic foot hole prepared was filled to the initial fill level of existing ground elevation with clean water for pre-soaking. Pre-soaking time varied with each test hole, however all the water percolated within ten to fifteen minutes of the addition of the water. The test hole was then cleaned and re-filled with water to the initial fill level (existing ground). The drop was monitored and documented to determine the absorption rate (drop from the 5th to 5th inch). The percolation rates are provided in Appendix B. Our representative David Michel performed the tests.

Subsurface Investigation

On July 31, 2013, seven (7) additional excavations were performed utilizing a tractor-mounted backhoe to a depth of ten (10) feet below existing ground surface at the locations of each test hole. The purpose of the excavations was to log the soil types, determine the soil classifications and if any impermeable material was present below the test holes. Our representative observed the excavations and prepared field logs of the material encountered. The final logs of the excavations are presented in Appendix C.

Groundwater Conditions

A review of various website databases regarding water well data and groundwater for the Antelope Valley area was performed. The sites included the United States Geological Survey, Los Angeles County Department of Public Works, State of California Department of Conservation, and published State of California Seismic Zone Hazard Maps (Del Sur Quadrangle and West Lancaster Quadrangle), with associated reports regarding liquefaction which is relative to groundwater levels. Based on our review, groundwater in the areas of the subject sites is a minimum of 100 feet below ground surface elevation.

Conclusions

Based on the excavations performed at the subject sites, the material encountered was uniform and no impermeable layers were observed within the total depth of the excavations (10 feet bgs). The areas observed consist of alluvial material, silty sand (SM) and sandy silt (ML). This material was observed to be generally loose to medium dense and dry to moist. Some cementation was observed. The soils appeared porous and permeable.

Groundwater is over 100 feet below ground surface elevation in the subject site areas.

The percolation rates, indicated as minutes per inch, may be utilized to determine the infiltration rate of the soil at existing grade to design the specific area required for the amount of water run-off based on the size of the impermeable areas. The design should include a minimum safety factor of 2.0.

The proposed use of the project site as a solar farm is not expected to significantly change the imperviousness of the sites, with the exception of road construction, which is anticipated to cover 7-15%, depending on the site. It is our professional opinion, provided the drainage and infiltration basins are properly designed, the use of these raised roadway areas as berms to capture run-off water to allow infiltration at existing ground elevation is feasible.

Limitations

The percolation test data provided is based on Los Angeles County Health Department Guidelines (Ryon Method) typically required for septic system design to determine

in minutes per inch at the location on the site as indicated in this report only. Other areas of the each site may vary. The purpose of the testing is to provide the client with preliminary soil absorption rates for their use in preparing information in regards to water run-off and minor surficial detention of water for infiltration in order to comply with the Limited Impact Development standards. Los Angeles County may require additional testing or methodology for final approval.

If there are any changes in the proposed construction or additional testing is necessary, this office should be notified immediately. If soils encountered are different than indicated in this report, contact this office. No warranty is expressed or implied. Test results indicate the rates at the locations indicated. This report does not guarantee issuance of a permit. This report is subject to approval from the governing agency.

Closure

Information and procedures described in the report were performed in accordance with general standards of practice. We trust this reports meets your needs. If you have any questions or require additional information, Please contact our office.

Sincerely,

Bruin Geotechnical Services Inc.

Dennis J. Sloan, P.E.

REGISTERED PROFESSIONAL ENGINEER
DENNIS J. SLOAN
No. 29704
Expires 03/31/15
CIVIL
STATE OF CALIFORNIA

DJS/mes

APPENDIX A

Site Location Map
Site Plans with Approximate Test Locations

Plotting Date: 6/27/2012 4:18:17 PM
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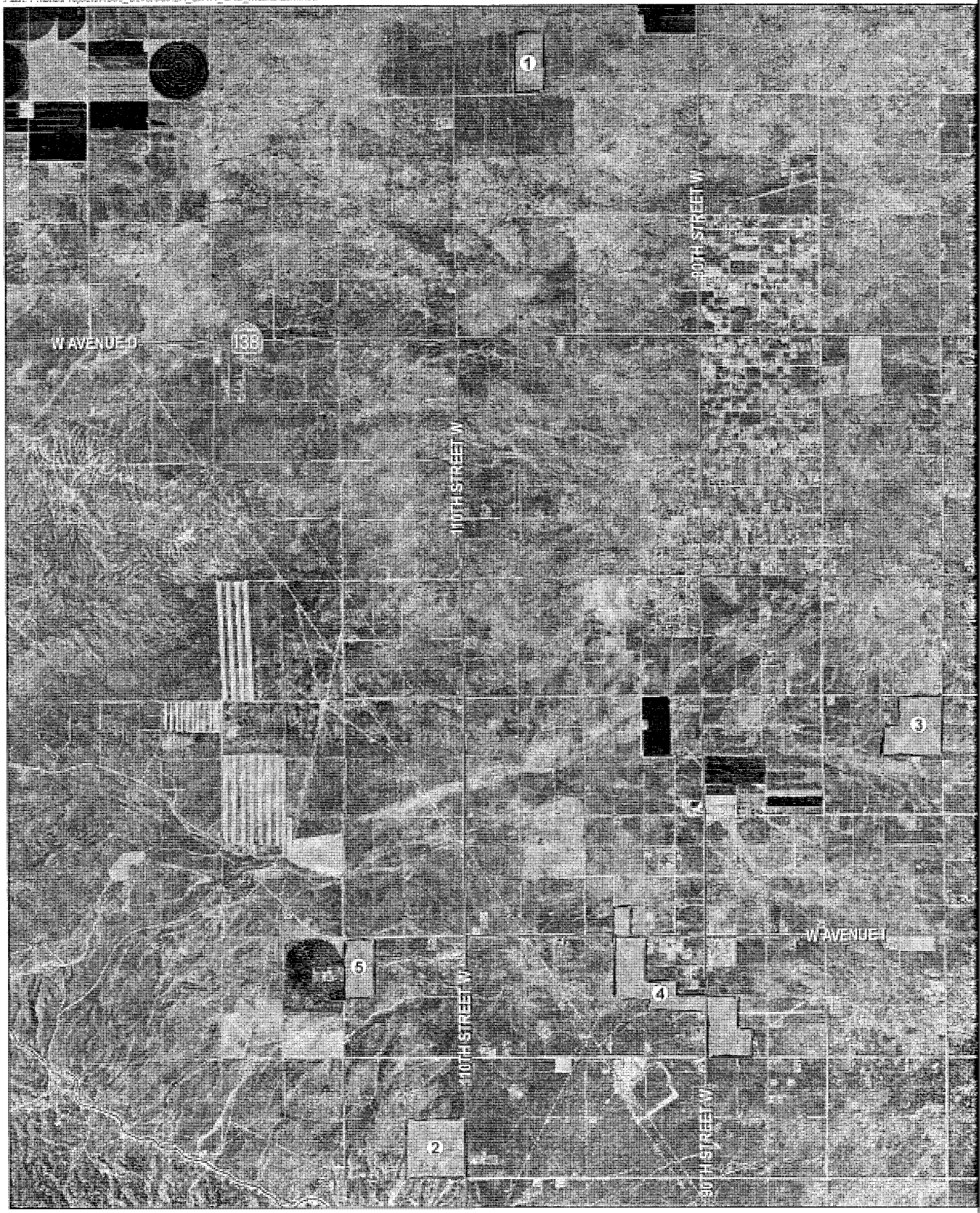
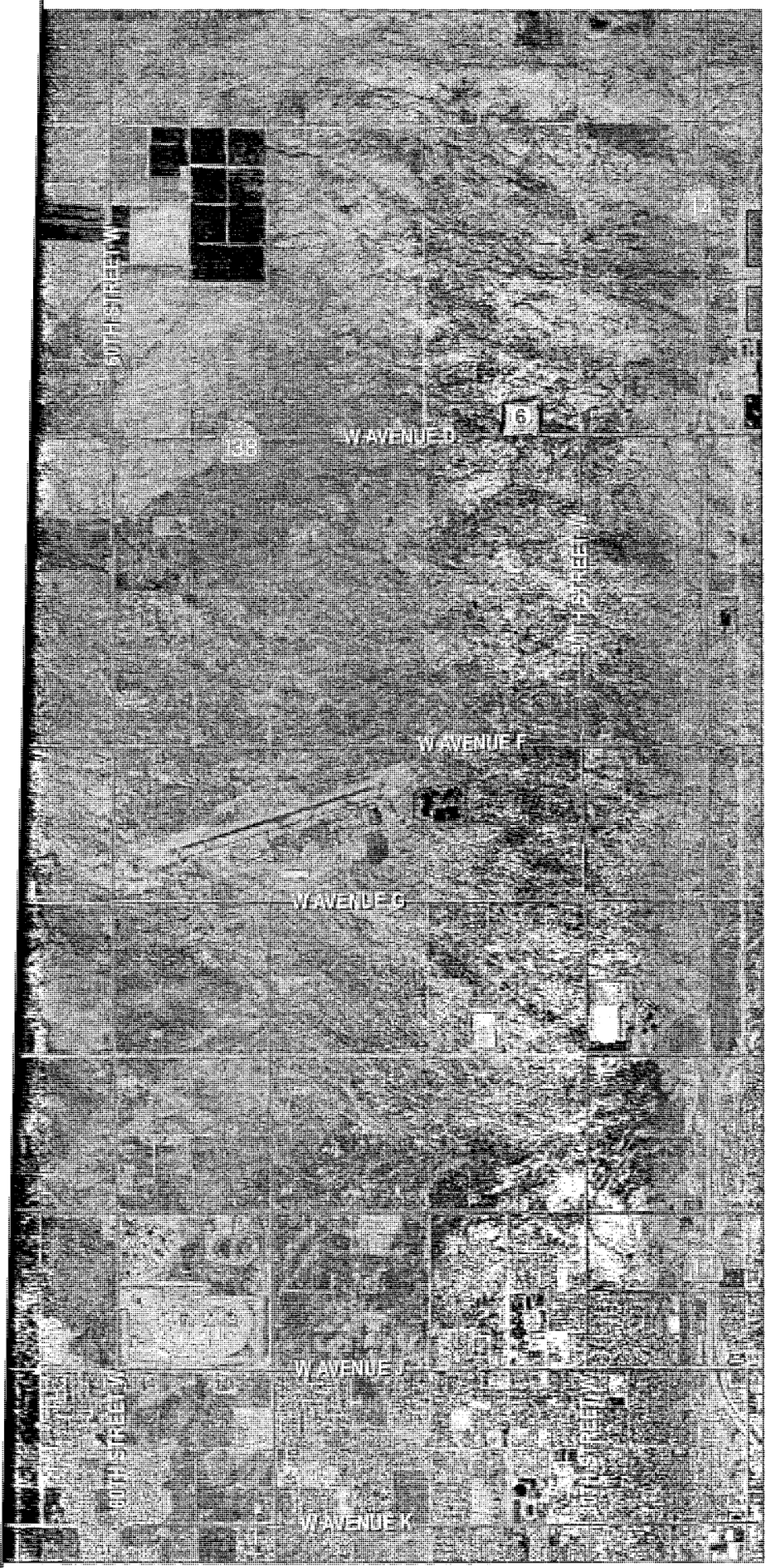
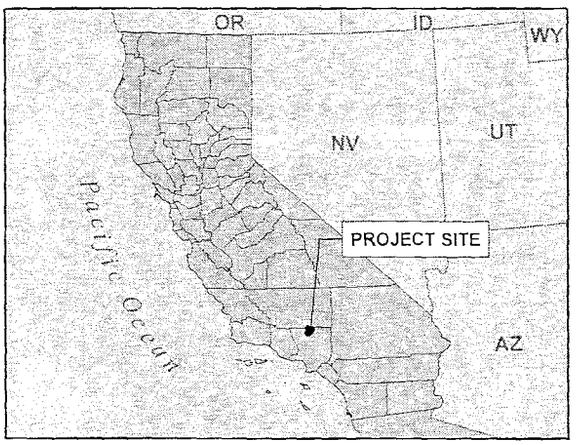




SILVERADO power

SILVERADO POWER WEST
LOS ANGELES COUNTY



LEGEND

PROJECT 1 - NORTH LANCASTER RANCH

PROJECT 2 - WESTERN ANTELOPE BLUE SKY RANCH

PROJECT 3 - AMERICAN SOLAR GREENWORKS

PROJECT 4 - ANTELOPE SOLAR GREENWORKS

PROJECT 5 - SILVER SUN GREENWORKS

PROJECT 6 - LANCASTER WAD

NOTE:
(a) State Plane, Zone V (NAD83), US Survey Feet.
(b) Source Data: ESRI, TTEC.

FIGURE 1
SILVERADO POWER WEST
LOS ANGELES COUNTY
PROJECTS

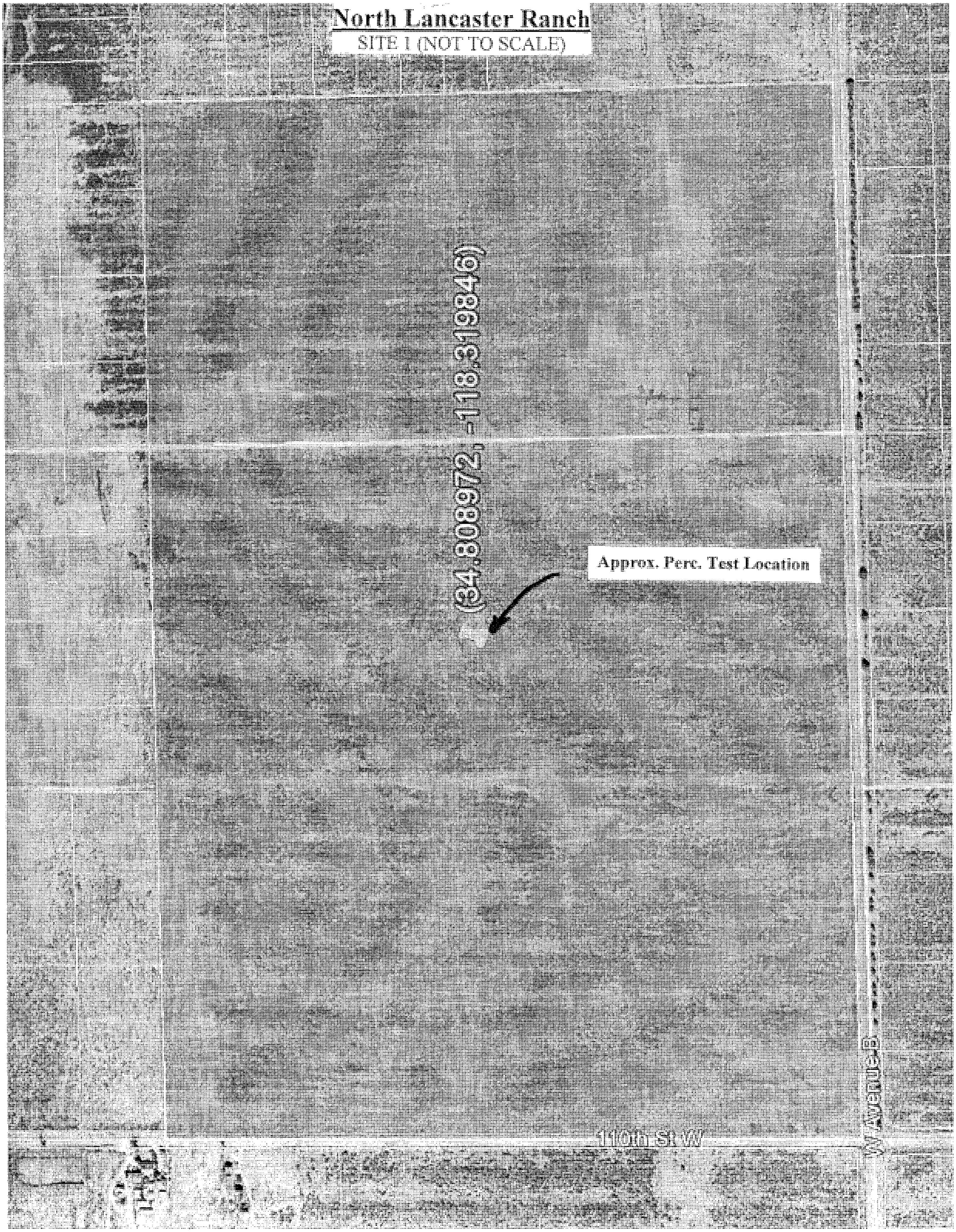
0 0.5 1 2

Miles

TETRA TECH EC, INC.

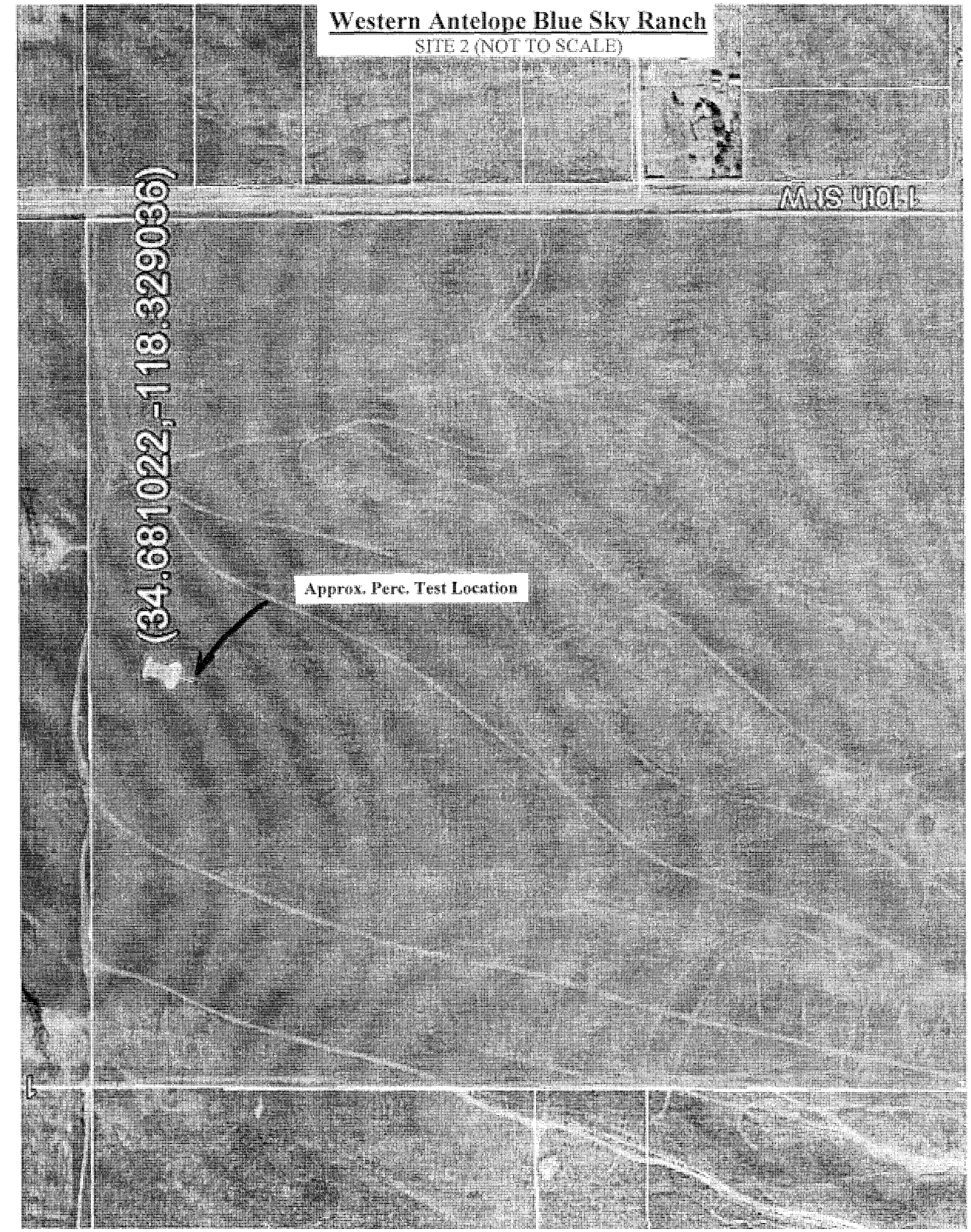
North Lancaster Ranch

SITE 1 (NOT TO SCALE)



Western Antelope Blue Sky Ranch

SITE 2 (NOT TO SCALE)

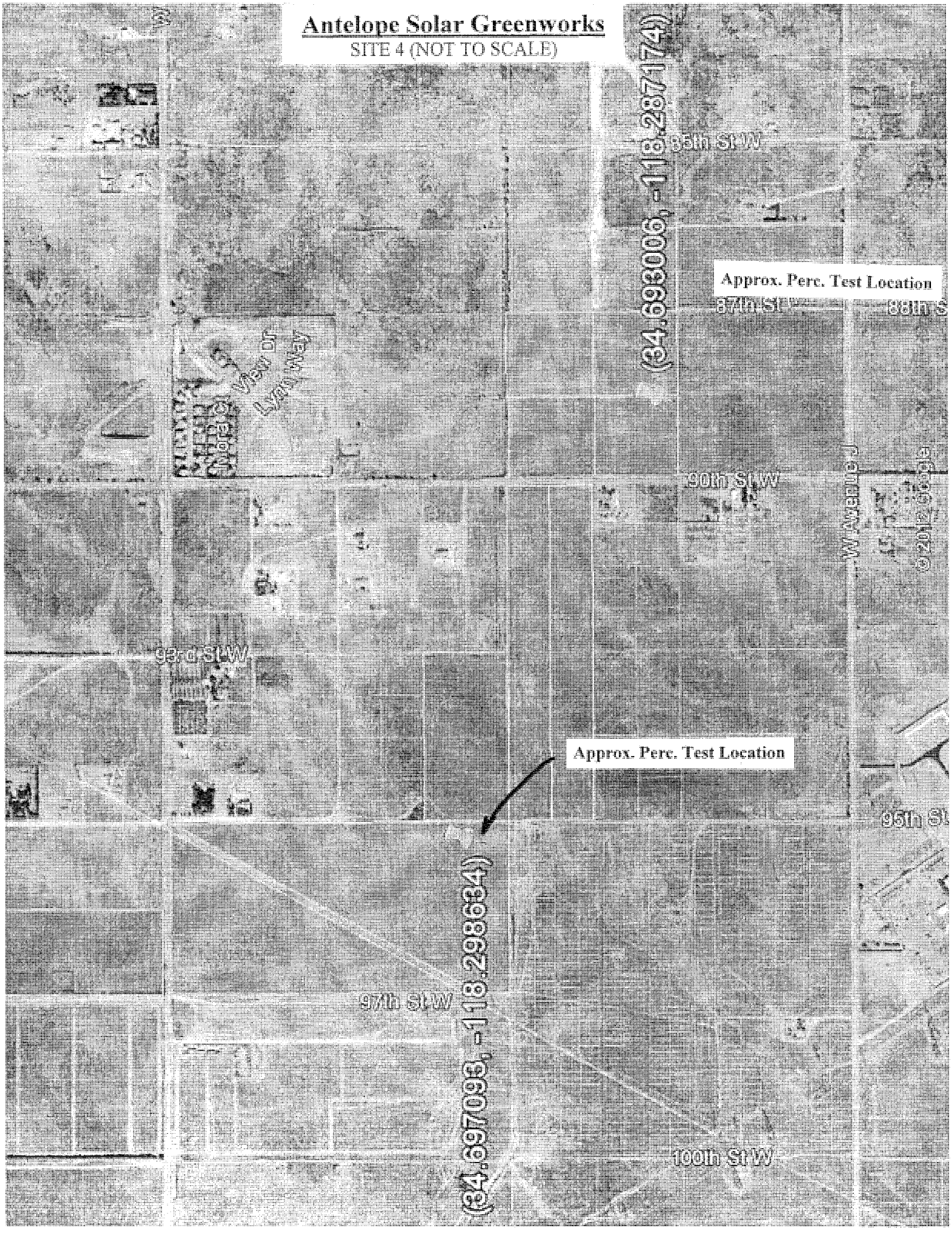


American Solar Greenworks

SITE 3 (NOT TO SCALE)

Antelope Solar Greenworks

SITE 4 (NOT TO SCALE)



Silver Sun Greenworks

SITE 5 (NOT TO SCALE)

Lancaster WAD

SITE 6 (NOT TO SCALE)

APPENDIX B

Soil Profile, Classifications and Absorption Rate

Site	Soil Description	USCS Classification	Absorption Rate (MPI)
Site 1 North Lancaster Ranch Ave. B & 110th St. West	Light brown fine sandy silt w/ medium to coarse sand (cemented)	ML	7
Site 2 Western Antelope Blue Sky Ranch Ave. K & 110th St. West	Dark Yellow brown silty fine to coarse sand	SM	3
Site 3 American Solar Greenworks Ave. G-8 & 70th St. West	Light brown silty fine to medium sand with coarse sand (slightly cemented)	SM	3
Site 4 Antelope Solar Greenworks Ave. J & 90th St. West (2 tests- A=NW portion, B=SE portion)	A-Moderate brown very silty fine to medium sand	SM	4
	B-Light brown silty fine to medium sand with coarse sand	SM	3
Site 5 Silver Sun Greenworks Ave. I & 120th St. West	Strong brown silty fine to coarse sand (slightly cemented)	SM	5
Site 6 Lancaster WAD Ave. D & 30th St. West	Light brown very silty fine to medium sand (cemented)	SM	3

APPENDIX C

Excavation Logs

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 1 North Lancaster Ranch	**Drill Type:** Case backhoe
Location: Ave. B &110th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
5'		ML	Light brown fine sandy silt w/ medium to coarse sand medium dense, dry (cemented)					
			(slightly cemented)					
10'		SM	Grey brown very silty fine sand w/ medium sand medium dense, moist (slightly cemented)					
		SM	Medium brown silty fine to medium medium dense, moist (slightly cemented)					
15'			Excavation terminated @ 10' bgs No free groundwater encountered No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 2 Western Antelope Blue Sky Ranch	**Drill Type:** Case backhoe
Location: K-8 & 110th St West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Dark yellow silty fine to medium sand w/ occasional coarse sand, medium dense, dry (slightly cemented)					
5'		SM	Reddish brown silty fine to coarse sand & clay binder medium dense, slightly moist					
		SM	Yellow brown silty fine to coarse sand w/ occasional #4 gravel medium dense moist (cemented)					
10'		SM	Yellow brown silty fine to coarse w/ occasional #4 gravel medium dense moist					
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 3 American Solar Greenworks	**Drill Type:** Case backhoe
Location: 70th st west & Ave G-8	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Light brown silty fine to medium sand medium dense, dry (slightly cemented)					
		SM	Moderate brown silty fine to coarse sand loose, moist					
5'								
		SM	Moderate brown silty fine to medium sand w/ coarse sand moist medium dense, moist (slightly cemented)					
		ML	Yellow brown silty fine to medium sand medium dense, moist					
10'								
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1 (A)

Client: Silverado Power	**Project No:** 12-59
Project: Site 4 Antelope Solar Greenworks	**Drill Type:** Case backhoe
Location: 90th West & Ave J	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
5'		SM	Moderate brown very silty fine to medium sand w/ coarse sand medium dense, dry (cemented dry)					
10'		SM	Yellow brown silty fine to medium sand w/ coarse sand loose, dry (slightly cemented)					
		SM/ML	Light brown very silty fine to medium sand w/ occasional coarse sand medium dense, moist (cemented)					
15'		SM/ML	Light brown very silty fine to medium sand w/ occasional coarse sand medium dense, moist (cemented) Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E2 (B)

Client: Silverado Power	**Project No:** 12-59
Project: Site 4 Antelope Solar Greenworks	**Drill Type:** Case backhoe
Location: 90th West & Ave J	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		ML	Light brown silty fine to medium sand medium dense, dry (slightly cemneted)					
5'		SM	Moderate brown silty fine to medium sand medium dense, moist (slightly cemented)					
		SM	Orange brown silty fine to medium sand w/ occasional #4-1/2 gravel loose, moist					
10'		SP	Yellowish brown slightly silty fine to medium sand w/ coarse sand medium dense, slightly moist					
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 5 Silver Sun Greenworks	**Drill Type:** Case backhoe
Location: Ave I & 120th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Medium brown silty fine to w/coarse sand					
			medium dense, dry (slightly cemneted)					
		SM	Dark brown silty fine to coarse sand w/ clay binder					
5'			medium dense (slightly cemented)					
		SM	Dark yellowish brown slightly silty fine to coarse sand w/ #4 gravel					
			loose, moist					
10'		SM	Dark brown slightly silty fine to coarse sand w/ #4 gravel & occasional 1"- 3" gravel					
			loose, moist					
15'			Excavation Terminated @ 10' bgs					
			No free groundwater encountered					
20'			No caving					
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 6 Lancaster WAD	**Drill Type:** Case backhoe
Location: Ave D & 30th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Light grey very silty brown fine to medium sand					
			medium dense (cemented)					
		ML	Light grey brown fine sandy silt					
			firm, slightly moist (cemented)					
5'		ML	Pale brown fine sandy silt					
			dense, dry					
		SM	Light brown silty fine sand w/ occasional medium sand					
			loose, dry					
10'		SM	Light brown silty sand w/ occasional medium sand					
			loose, dry					
			Excavation Terminated @ 10' bgs					
			No free groundwater encountered					
15'			No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

APPENDIX B-7.6

PROJECT 6 LANCASTER WAD
HYDROLOGY STUDY/DRAINAGE CONCEPT/SUSMP/LID

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HYDROLOGY STUDY/DRAINAGE CONCEPT/LID

PROJECT 6
LANCASTER WAD

R2011-00805 (RCUP201100074)

W AVENUE D & 35TH ST W.
LANCASTER
LOS ANGELES COUNTY, CA

December 2013

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID APPROVED FOR AREA AND Q ONLY

APPROVED BY: _____ RCE NO. _____DATE_____

CHECKED BY:_____ DATE_____

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS LAND DEVELOPMENT DIVISION

Prepared for:

SILVERADO power

2 Embarcadero Center, Suite 410
San Francisco, CA 94111
(415) 692-7740

Prepared by:

TETRA TECH, INC.

17885 Von Karman, Suite 500
Irvine, CA 92614
(949) 809-5000

Under the supervision of:
Joseph E. Dietz, P.E.

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.

12.6.13

Joseph E. Dietz P.E. 67032 Date Seal

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III. EXISTING DRAINAGE CONDITION **5**

IV. METHODOLOGY **5**

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B: EXISTING DRAINAGE CONDITION

C: HYDROLOGY MANUAL REFERENCES

D: PRE-/POST DEVELOPMENT ON-/OFF-SITE HYDROLOGIC CALCULATIONS – 2, 5, 10, 25, 50 YEAR EVENTS

E: IMPACT ANALYSIS CALCULATIONS

F: WATER QUALITY CALCULATIONS

G: DRAINAGE MAPS (ON-/OFF-SITE)

H: GEOTECHNICAL REPORT

I. INTRODUCTION

Project 6 Lancaster WAD is a solar power project located west of Highway 14, between W Avenue E to the south and W Avenue C to the north (see **Location Map, Appendix A**). The property is owned by Silverado Power (referred to as "applicant" for the remainder of this report). The scope of this hydrology report is to analyze the pre-development and post-development hydrological conditions (once the installation of the solar panels is complete) in order determine runoff effects on and off the site. The peak runoff calculations were developed for the 2-, 5-, 10-, 25-, and 50-year storm events. Currently, runoff from approximately 84.5 acres of offsite area enters the 38.9 acre project site from the west, creating a study watershed area of approximately 123.4 acres. Due to the elevated cross section of 40th St., some of the westerly watershed runoff does not make its way onto the site (see **Existing Drainage Condition, Appendix B).** The remaining off-site runoff was added into the on-site runoff areas as shown on the attached Drainage Maps (see **Appendix G**). The majority of the watershed consists of un-developed land.

II. PROJECT BACKGROUND

Due to the predominantly flat nature of the site (less than 0.5% longitudinal slope), the project will involve minimal grading for construction of dirt access roads between the proposed arrays of solar panels. The project site currently drains from west to east. The post-development condition will maintain this flow path. The post-development runoff will continue to sheet flow in the pre-development condition in order to avoid disturbance to downstream drainage structures and wildlife. The construction of the solar panel arrays and other miscellaneous site development will be accounted for by increasing the site's impervious percentage from 1% to the Los Angeles County approved value of 10%. Per the LACDPW Flood Control Division, the additional amount of runoff generated by this increase in impervious surface during the 25-year storm will be collected onsite with the help of 1 reinforced elevated road section that runs north to south at the center of the site (see **On-Site Drainage Map, Appendix G)**. The ponding water will infiltrate in about 2.3 hours (see **Water Quality Calculations, Appendix F**). Additionally, the basin will ensure that the flow rate, volume, velocity, and depth corresponding to the 50-year storm event at the property boundary will only exceed pre-development values by a negligible amount (see **Impact Analysis Calculations, Appendix E**). The placement of this basin within the first half of the site will allow flows to normalize before leaving the site.

III. EXISTING DRAINAGE CONDITION

In order to delineate the existing drainage conditions for the Lancaster Wad project site and its watershed, USGS and site specific topographic data were reviewed. A watershed boundary was developed for the project site (see **Off-Site Drainage Map, Appendix G)**. A site visit was conducted on January 31, 2012 by Cris Dragomir, PE to verify the delineated watersheds and to take site photos of the existing drainage features. A map showing locations where the photos were taken as well as photos identifying typical site drainage conditions are attached under the **Existing Drainage Condition Appendix B** of this report.

Review of the topographic information and results of the site survey found that storm runoff generally sheet flows in an eastern direction. Flow does not seem to concentrate anywhere on the site in any large naturally formed channels. There are no signs of erosion due to the presence of vegetation and soils with high infiltration rates.

A Geotechnical Report (see **Appendix H**) was prepared for the site. The report shows site soils consist of very silty fine to medium sand. The percolation test performed shows soil infiltration rates of 3 min/in, which is equivalent to 20 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 4.39 in/hr.

IV. METHODOLOGY

HYDROLOGIC CALCULATIONS

To determine the watershed boundaries tributary to the project site, existing USGS and site specific topographic data were reviewed. Hydrologic Calculations for the proposed project site were performed in conformance with the Los Angeles County Hydrology Manual, dated January 2006, utilizing the Modified Rational Method TC Calculator. The Modified Rational Method was used to estimate the runoff flows for each sub-area of the watershed, which were limited to 40 acres (see **Appendix D**). The Modified Rational Method equation relates rainfall intensity, time of concentration, runoff coefficient, and drainage area size to the direct runoff from each drainage sub-area. The TC Calculator along with rainfall intensity maps from the Los Angeles County Hydrology Manual were used to model the various watersheds and determine the peak flows.

Hydrologic Soil number 120 was used as the soils group for the project site per the Los Angeles County Hydrology Manual, Map 1-H1.77 (see **Appendix C**). Times of concentration for the various sub-areas were calculated by the TC Calculator based on the approximate length and the elevation difference over that length. Lastly, peak flows from each sub-area were summed in order to achieve a total peak runoff for the entire watershed. This approach is conservative due to the fact that it yields a slightly higher peak runoff if compared to an alternative approach which analyzes all sub-areas and utilizes surface routing to generate lag times.

BASIN ROUTING CALCULATIONS

The Modified Puls Routing Method per Chapter 8 of the Los Angeles County Hydrology Manual was used to determine the development's impact on the 50-year storm event flow rates leaving the project site. The method routes the 50-year post-development hydrograph (obtained from the TC Calculator results) through the proposed infiltration basin using storage-elevation and outflow-elevation relationships, along with Continuity Equation 8.1 and Equation 8.2 in a series of time steps. The results are included within **Appendix E** of this report.

FLOOD DEPTH AND VELOCITY CALCULATIONS

To determine the development's impact on the 50-year storm event flood depth and velocity leaving the site, Bently FlowMaster V8i was used to calculate the pre-development and post-development 50-year flood depths and velocities. FlowMaster uses the Manning's Formula to calculate the normal depth and velocity for a given cross-section given information for the slope, peak flow rate, and roughness coefficient for the section. The peak flow rate from the TC Calculator was used for the pre-development condition, while the peak flow rate after basin routing was used for the post-development condition. The results are included within **Appendix E** of this report.

DEBRIS POTENTIAL CALCULATIONS

A debris production rate was calculated for the site using the Debris Production Rate figure for the Antelope Valley from Appendix B of the LACDPW Sedimentation Manual (see **Appendix C**). This rate multiplied by the square mileage of the site provides the debris potential for the site (see **Appendix G**). The site does not produce high levels of debris due to its relatively flat nature. Therefore, no debris protection will be provided for the low levels of debris produced.

V. SUMMARY OF RESULTS

Hydrologic calculations were performed for the pre-/post development conditions. Summary tables and detailed calculations for the 2-, 5-, 10-, 25-, and 50-year storm events showing drainage area size, soil type, storm frequency, flow length, slope, flow rate, burned flow rate, storm volumes, etc., are located in **Appendices D and G** of this report. The pre-development 25-year storm event (including the off-site area) yielded a clean runoff of 8.01 cfs and a storm volume of 2.54 ac-ft. The proposed use of the project site as a solar farm is not expected to significantly change the imperviousness of the site. With the addition of the solar panel arrays and other miscellaneous development, the site's impervious surface was increased to the Los Angeles County approved value of 10%. With this increase in impervious surface, the post development 25-year storm event (including the off-site area) yielded a clean runoff of 9.62 cfs and a storm volume of 3.05 ac-ft. The additional runoff of 1.61 cfs and the additional storm volume of 0.51 ac-ft represent the delta quantities which require mitigation in order for the pre- and post-development flow rate and storm volume to be the same for the 25-year storm event. The off-site and on-site clean runoffs and storm volumes from the Modified Rational Method TC Calculator are shown in Table 1, 2, and 3 below.

Table 1 – Pre/Post Development Off-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A1	2-YEAR	0.53	0.17
	5-YEAR	0.80	0.26
	10-YEAR	0.98	0.31
	25-YEAR	1.21	0.38
	50-YEAR	1.49	0.44
A2	2-YEAR	1.14	0.36
	5-YEAR	1.71	0.55
	10-YEAR	2.10	0.67
	25-YEAR	2.58	0.82
	50-YEAR	3.20	0.94
A3	2-YEAR	0.75	0.24
	5-YEAR	1.12	0.36
	10-YEAR	1.38	0.44
	25-YEAR	1.69	0.54
	50-YEAR	2.10	0.62

Table 2 – Pre Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)
A	2-YEAR	1.11	0.36
	5-YEAR	1.67	0.54
	10-YEAR	2.06	0.66
	25-YEAR	2.53	0.80
	50-YEAR	3.13	0.92
	MITIGATION	0.81	0.26

Table 3 – Post Development On-Site Clean Runoff and Storm Volume

SUBAREA	FREQUENCY	FLOW RATE (CFS)	VOLUME (AC-FT)	**Δ**Q (CFS)	**Δ**V (AC-FT)
A	2-YEAR	1.82	0.58	0.71	0.22
	5-YEAR	2.73	0.88	1.06	0.34
	10-YEAR	3.36	1.07	1.30	0.41
	25-YEAR	4.14	1.31	1.61	0.51
	50-YEAR	4.96	1.50	1.83	0.58
	MITIGATION	1.33	0.43	0.52	0.17

Basin routing calculations were performed to determine the effect of the 2.2 inch tall reinforced road section (See **Appendix F**) on the post-development 50-year peak flow rate. Calculations are included within **Appendix E** of this report. After basin routing, the 50-year storm event yielded clean runoff of 10.76 cfs, which represents an 8.5% increase from the pre-development value of 9.92 cfs. Likewise, the post-development 50-year storm event yielded a flow volume of 2.99 ac-ft after accounting for the ΔV_{25} storage of the infiltration basin. This represents a 2.4% increase over the pre-development value of 2.92 ac-ft. These represent insignificant increases from the pre-development values.

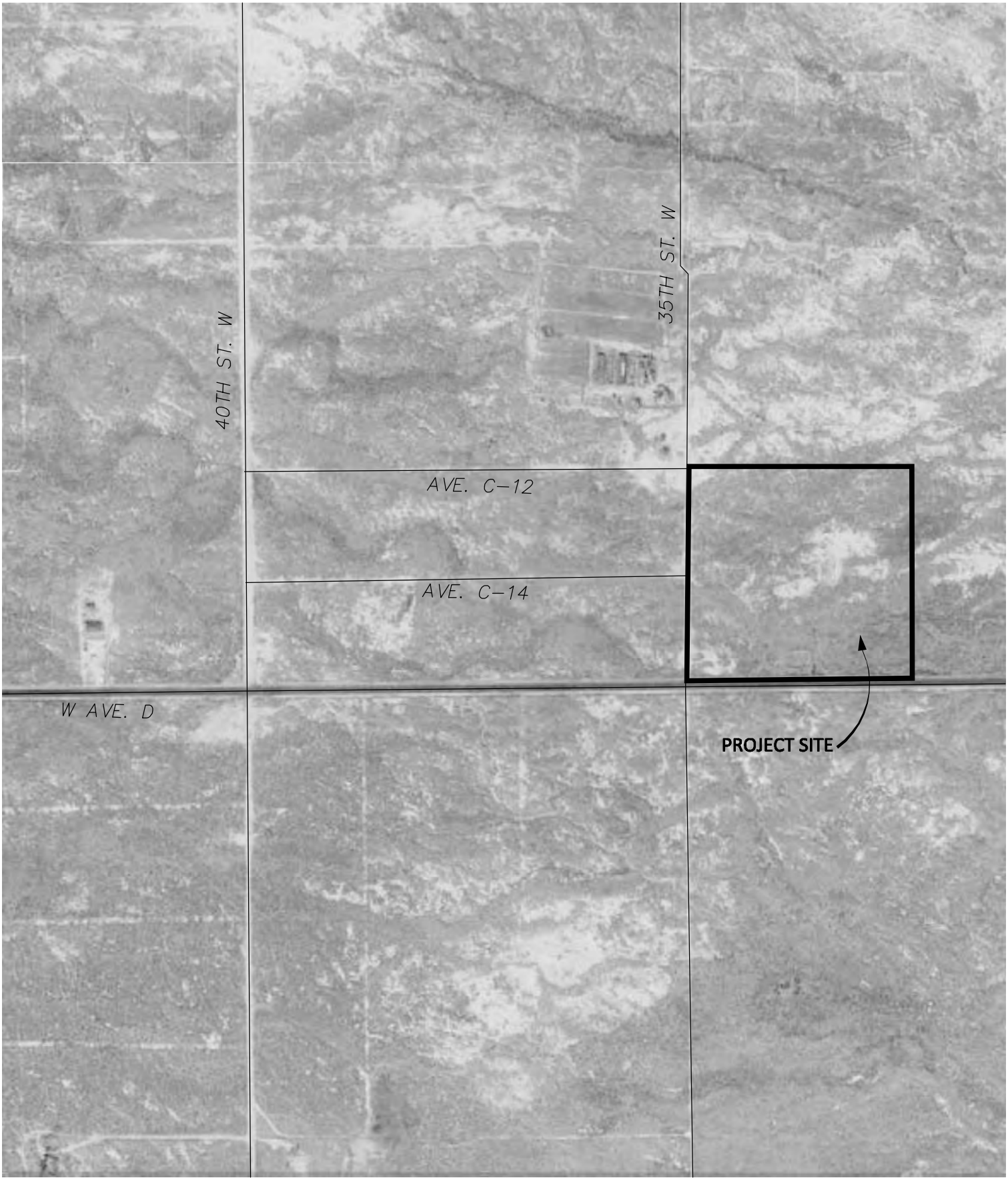
Flood depth and velocity calculations were performed for the 50-year storm event to determine the site's impact. Results are included within **Appendix E** of this report. The pre-development calculations used the peak flow results from the TC Calculator calculations, while the post-development calculations considered the peak flow rate after basin routing. The results yielded a pre-development maximum normal depth of 2 inches and a post-development maximum normal depth of 2 inches. This represents a 0% increase. Furthermore, the results yielded a pre-development velocity of 0.75 ft/s and a post-development velocity of 0.77 ft/s. This represents a 2.7% increase. These represent insignificant increases from the pre-development values.

As discussed further in the Water Quality Calculations, the peak mitigation flow rate (Q_{PM}) of 1.33 cfs and the mitigation volume (V_M) of 0.43 ac-ft from the post-development condition represent required mitigation quantities (see **Water Quality Calculations, Appendix F**). The LID mitigation measures will be sized to account for the 25-year storm event pre-/post-development delta quantities since they exceed the mitigation quantities.

The proposed infiltration basin was sized to meet the ΔV_{25} of 0.51 ac-ft. The proposed basin will be created by 1 north to south reinforced elevated access road section located in the center of the site (see **Water Quality Calculations, Appendix F**). The role of the 2.2 inch tall reinforced road section is to capture only the ΔV_{25} and allow it to infiltrate. In doing so, the whole V_M will be infiltrated and treated by the existing soils. The additional flow will continue over the road toward the eastern part of the project site, therefore mimicking pre-development sheet flow patterns. Its placement within the first half of the project site will allow flows to normalize before leaving the site.

Due to the predominantly flat nature of the site, no points of concentration exist such as large natural channels. Therefore, the 251 cubic yards of debris produced (see **Appendix G**) will be spread evenly over the 123.4 acre project site and watershed. This amounts to approximately 0.02 inches of debris depth spread evenly across the 123.4 acres. Since the debris production volume is very small, protections measures will not be implemented at the project site.

APPENDIX A:
LOCATION MAP



N

TETRA TECH
17885 VON KARMAN AVE., STE. 500
IRVINE, CA 92614-6213
949-809-5000

Scale:

Date:
9-5-2013

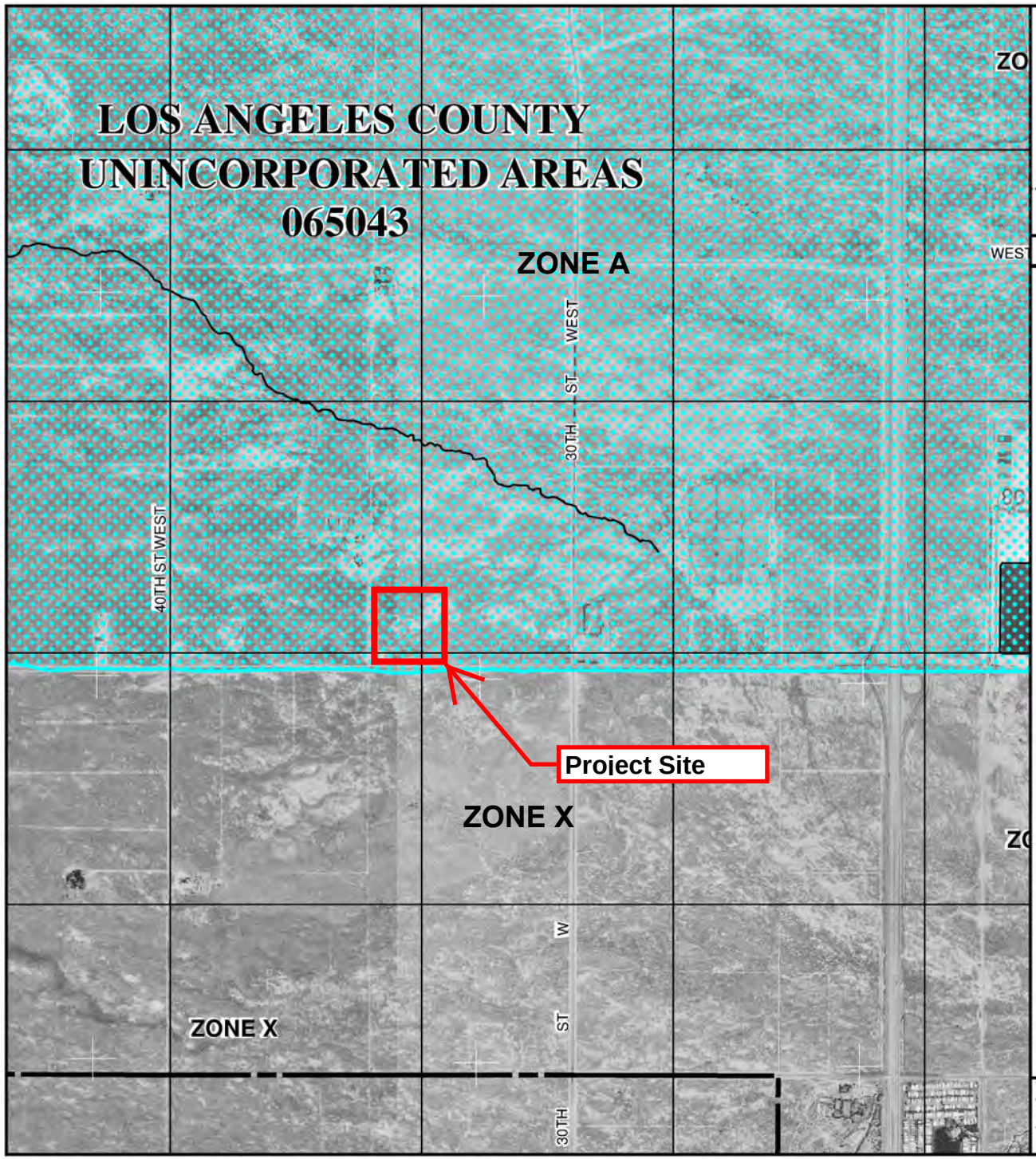
LOS ANGELES COUNTY

PROJECT 6
LANCASTER WAD
LOCATION MAP

FIGURE A

File Location:
P:\04546\135-04546-12001\SupportDocs\Calcs\Hydrology\15\FINAL DESIGN\Figure A - Location Map.dwg 09/09/2013 14:59

APPENDIX B:
EXISTING DRAINAGE CONDITION



MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0175F

FIRM

FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 175 OF 2350

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES COUNTY	065043	0175	F
LANCASTER, CITY OF	060672	0175	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06037C0175F

EFFECTIVE DATE
SEPTEMBER 26, 2008

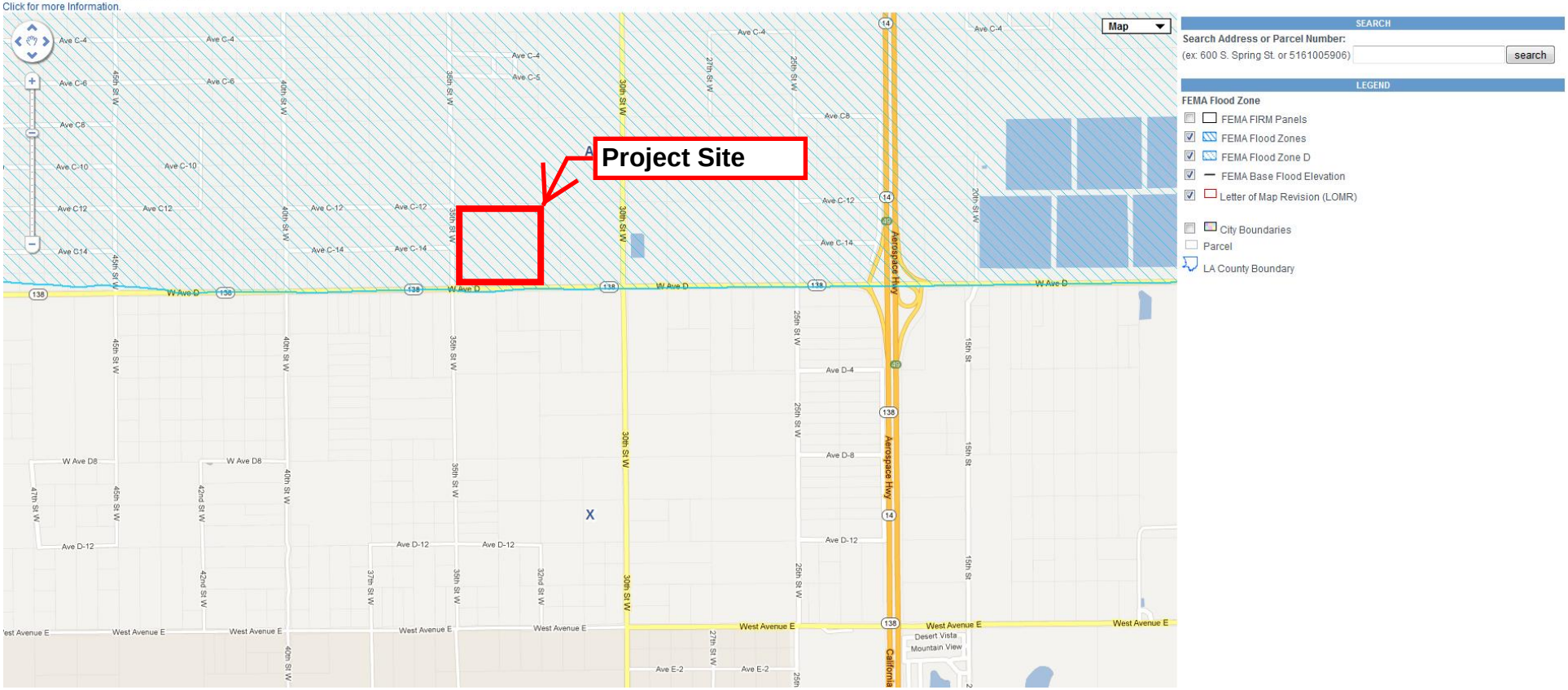
Federal Emergency Management Agency

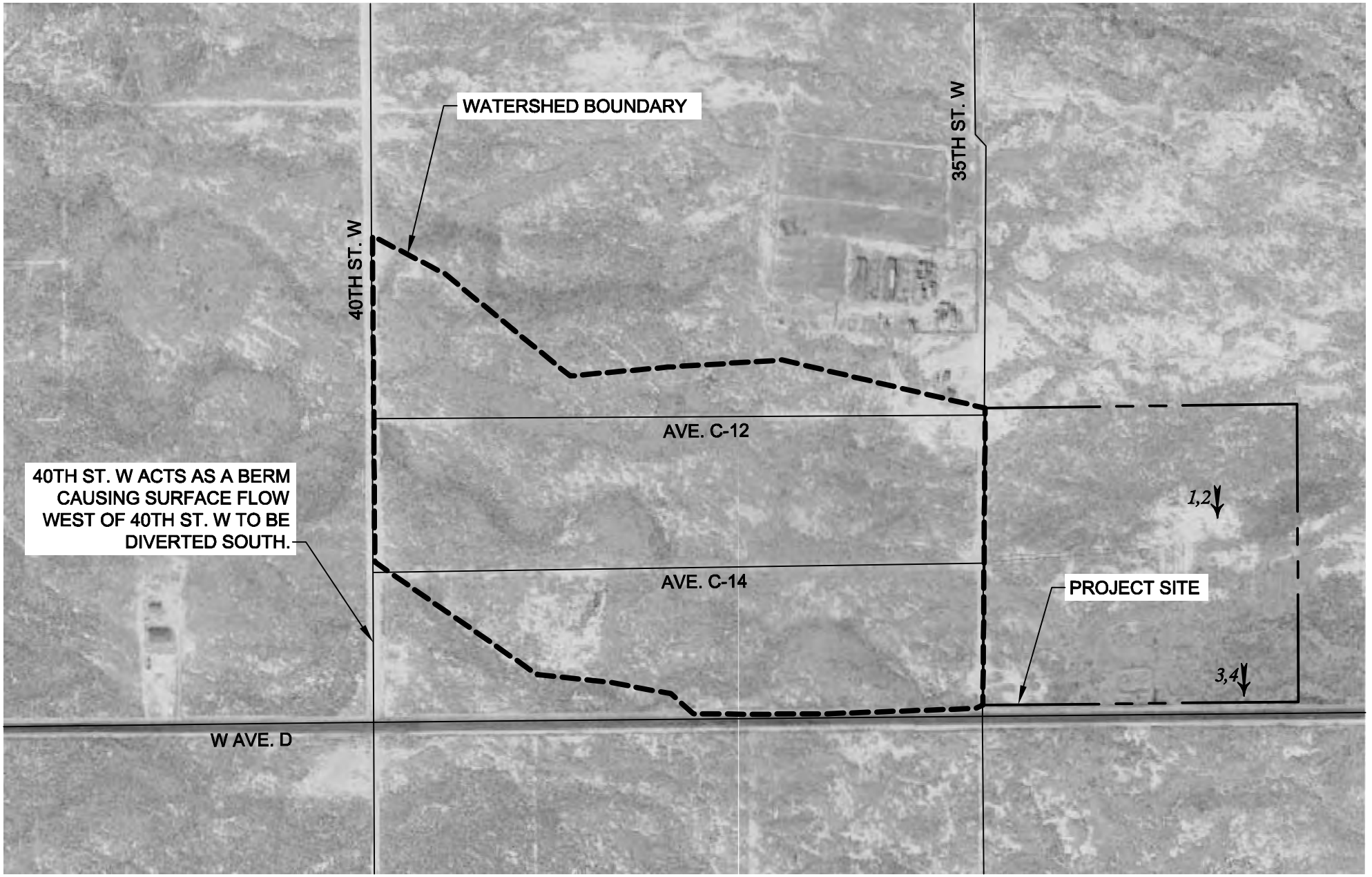
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Los Angeles County Flood Control

Flood Zone Determination Website

Click for more Information.





LEGEND

PROJECT BOUNDARY

WATERSHED BOUNDARY

3,4 PHOTO ID AND LOCATION

TETRA TECH
17885 VON KARMAN AVE., STE. 500
IRVINE, CA 92614-6213
949-809-5000

Scale: N.T.S.

Date: 9-5-2013

LOS ANGELES COUNTY

PROJECT 6 LANCASTER WAD
EXISTING DRAINAGE STRUCTURES
PHOTO LOCATIONS

FIGURE 1

File Location: P:\04546\135-04546-12001\SupportDocs\Calcs\Hydrology\15\FINAL DESIGN\Photo Locations.dwg 12/02/2013 13:57

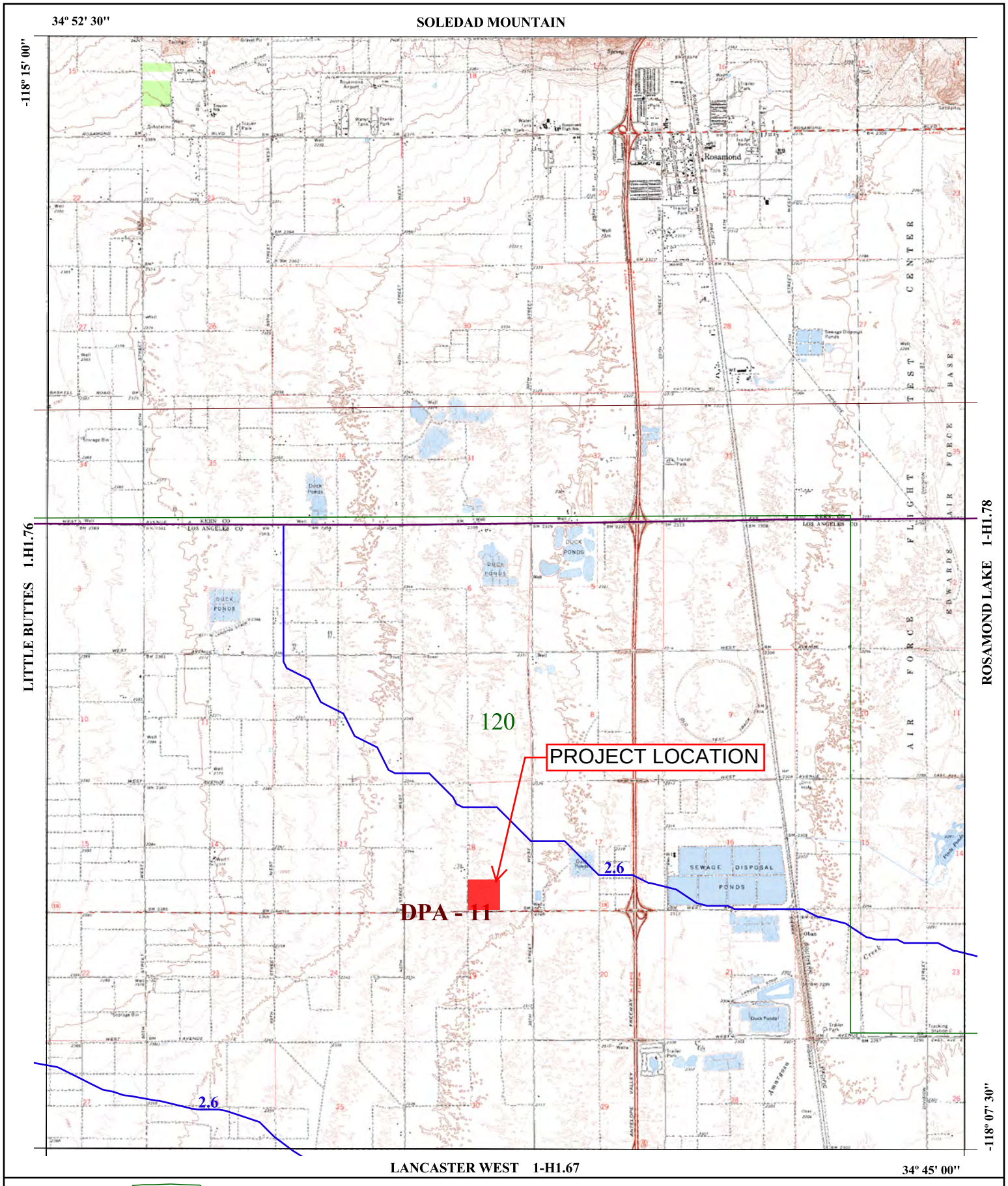
Photo 1 (Westward Facing):
Majority of the watershed experiences a typical sheet flow condition.

Photo 2 (Eastward Facing):
Vegetated trapezoidal dirt channel. Approximate dimensions: 1ft deep x 3 foot wide (bottom), 2:1 side slopes.

Photo 3 (Southward Facing):
12” CMP culvert draining south under D St.

Photo 4 (Northward Facing):
12” CMP culvert draining south under D St.

APPENDIX C:
HYDROLOGY MANUAL REFERENCES



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

ROSAMOND
50-YEAR 24-HOUR ISOHYET

1-H1.77

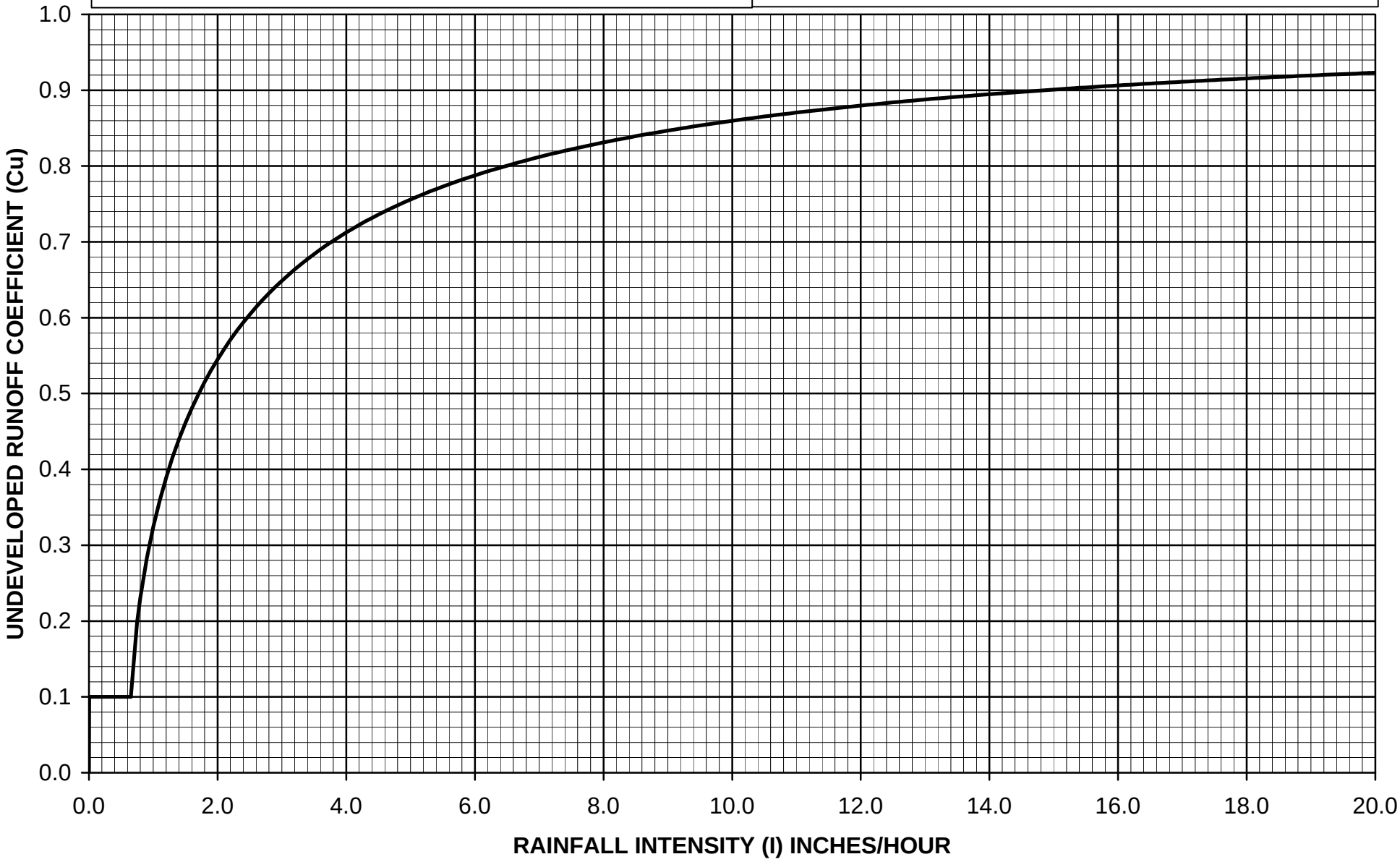
LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

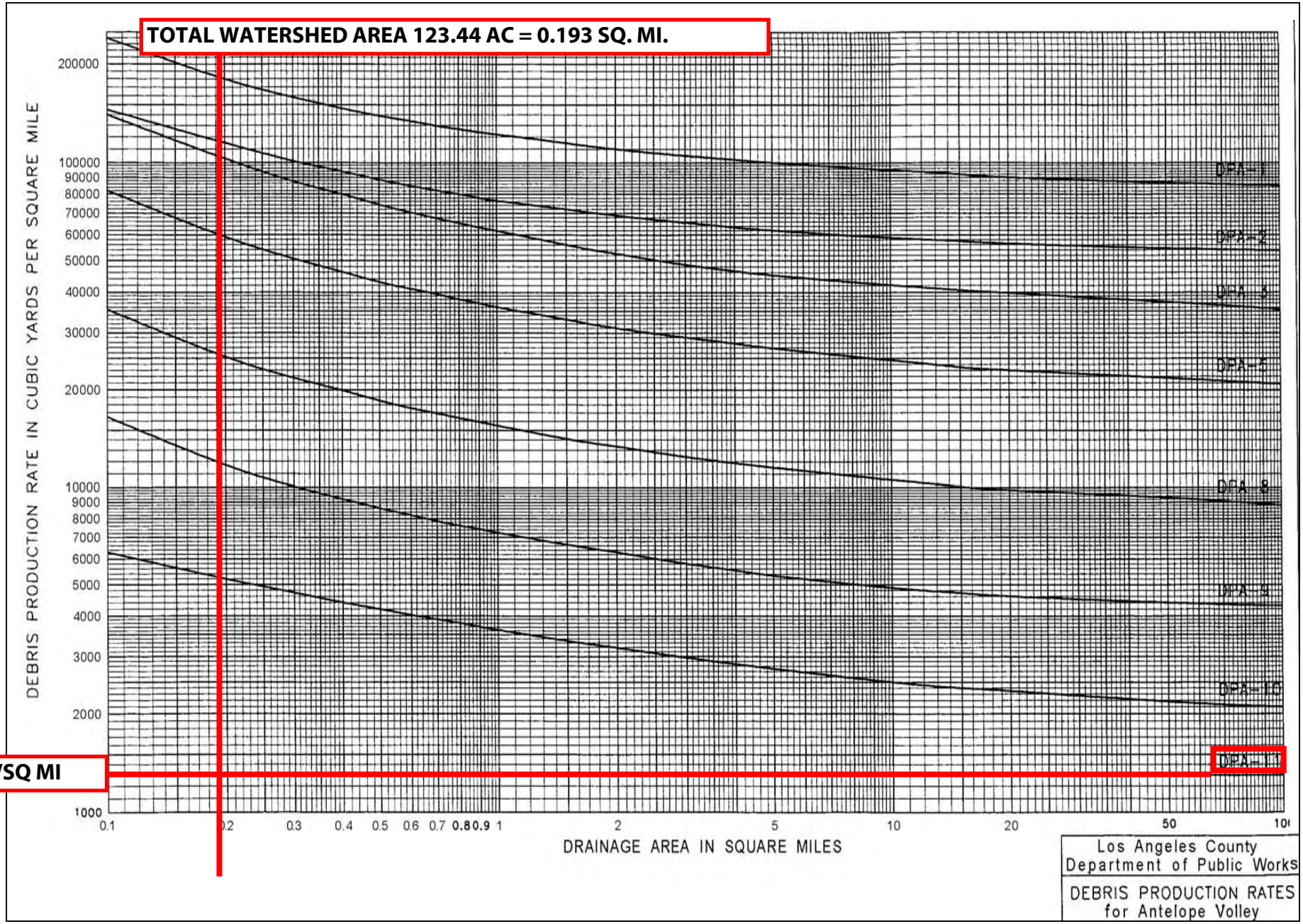
$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 120



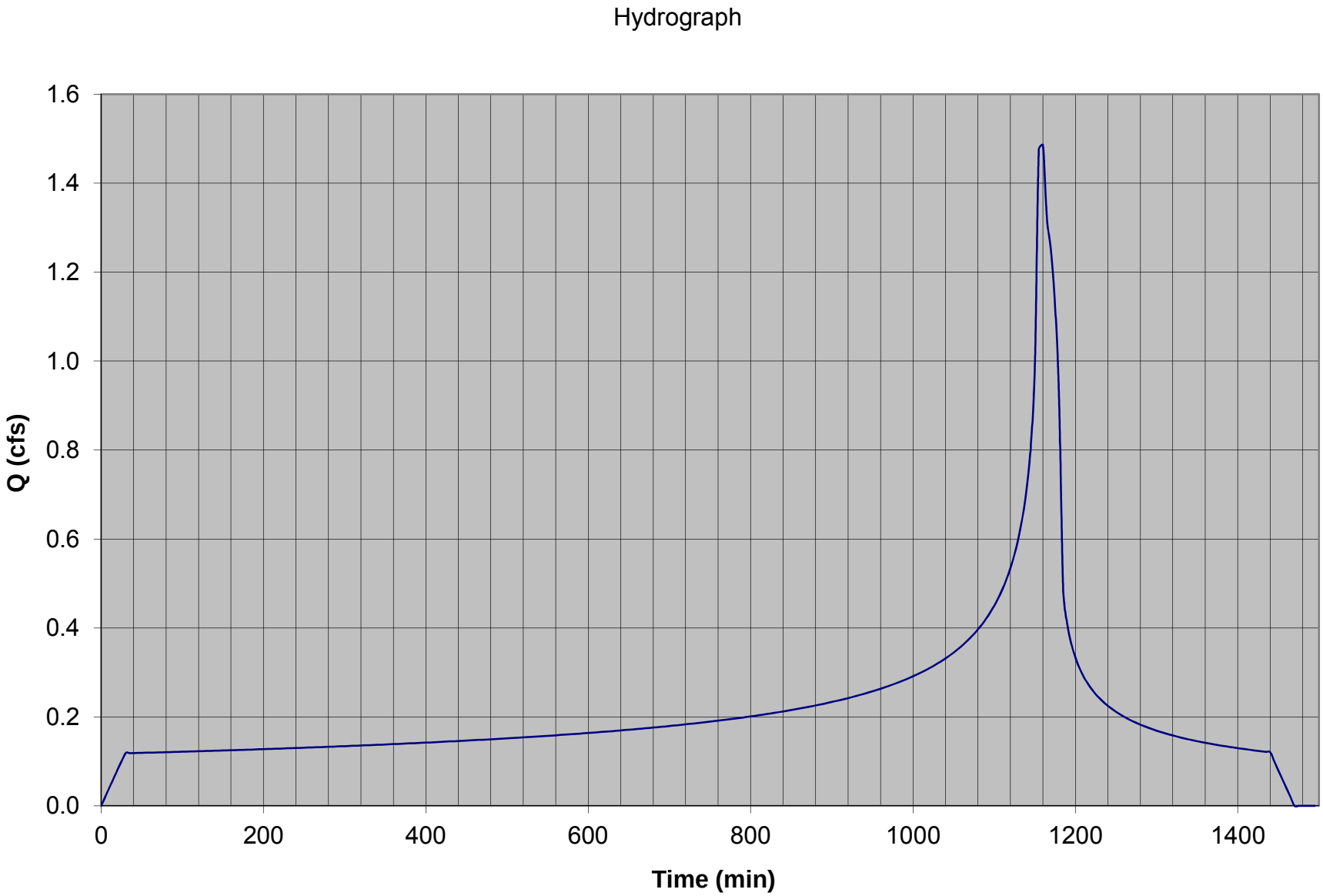

TOTAL WATERSHED AREA 123.44 AC = 0.193 SQ. MI.
1,300 CY/SQ MI
DEBRIS PRODUCTION RATE IN CUBIC YARDS PER SQUARE MILE
200000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
DPA-1
DPA-2
DPA-3
DPA-5
DPA-8
DPA-9
DPA-10
DPA-11
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
2
5
10
20
50
DRAINAGE AREA IN SQUARE MILES
Los Angeles County
Department of Public Works
DEBRIS PRODUCTION RATES
for Antelope Volley

APPENDIX D:
PRE-/POST DEVELOPMENT ON-/OFF-SITE HYDROLOGIC CALCULATIONS – 2, 5, 10, 25, 50 YEAR EVENTS

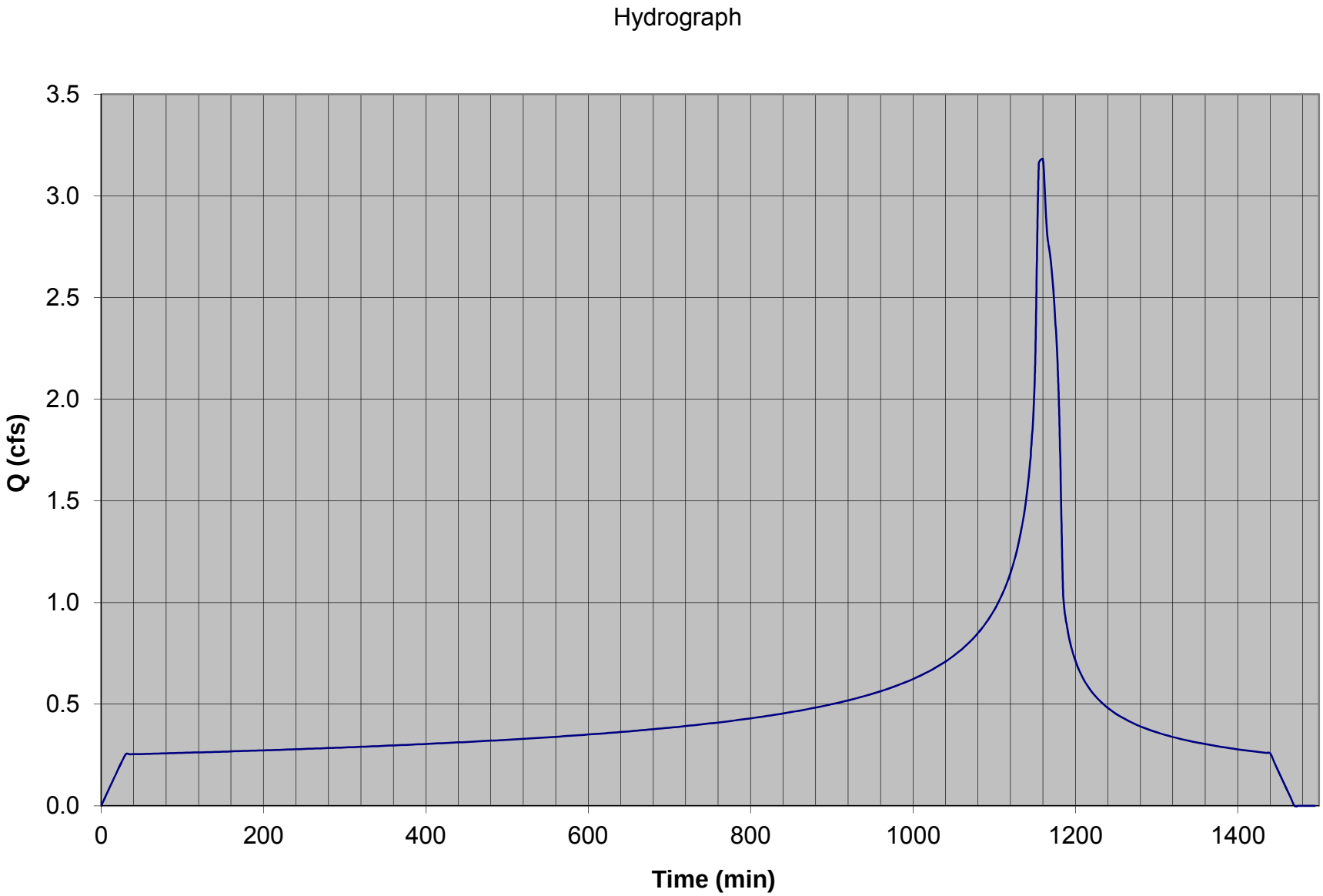
OFF-SITE PRE-/POST DEVELOPMENT HYDROLOGIC CALCULATIONS

OFF-SITE HYDROLOGY																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 6	A1	18.59	0.01	2	120	833	0.0024	1.0	30	0.26	0.10	0.11	0.53	0.34	0.86	0.17
Project 6	A2	39.80	0.01	2	120	1105	0.0036	1.0	30	0.26	0.10	0.11	1.14	0.34	1.84	0.36
Project 6	A3	26.11	0.01	2	120	805	0.0062	1.0	30	0.26	0.10	0.11	0.75	0.34	1.20	0.24
Project 6	A1	18.59	0.01	5	120	833	0.0024	1.5	30	0.39	0.10	0.11	0.80	0.34	1.36	0.26
Project 6	A2	39.80	0.01	5	120	1105	0.0036	1.5	30	0.39	0.10	0.11	1.71	0.34	2.90	0.55
Project 6	A3	26.11	0.01	5	120	805	0.0062	1.5	30	0.39	0.10	0.11	1.12	0.34	1.90	0.36
Project 6	A1	18.59	0.01	10	120	833	0.0024	1.9	30	0.48	0.10	0.11	0.98	0.34	1.71	0.31
Project 6	A2	39.80	0.01	10	120	1105	0.0036	1.9	30	0.48	0.10	0.11	2.10	0.34	3.66	0.67
Project 6	A3	26.11	0.01	10	120	805	0.0062	1.9	30	0.48	0.10	0.11	1.38	0.34	2.40	0.44
Project 6	A1	18.59	0.01	25	120	833	0.0024	2.3	30	0.59	0.10	0.11	1.21	0.34	2.15	0.38
Project 6	A2	39.80	0.01	25	120	1105	0.0036	2.3	30	0.59	0.10	0.11	2.58	0.34	4.61	0.82
Project 6	A3	26.11	0.01	25	120	805	0.0062	2.3	30	0.59	0.10	0.11	1.69	0.34	3.02	0.54
Project 6	A1	18.59	0.01	50	120	833	0.0024	2.6	30	0.67	0.11	0.12	1.49	0.34	2.59	0.44
Project 6	A2	39.80	0.01	50	120	1105	0.0036	2.6	30	0.67	0.11	0.12	3.20	0.34	5.55	0.94
Project 6	A3	26.11	0.01	50	120	805	0.0062	2.6	30	0.67	0.11	0.12	2.10	0.34	3.64	0.62

DRAINAGE AREA A1 50-YEAR STORM EVENT



DRAINAGE AREA A2 50-YEAR STORM EVENT



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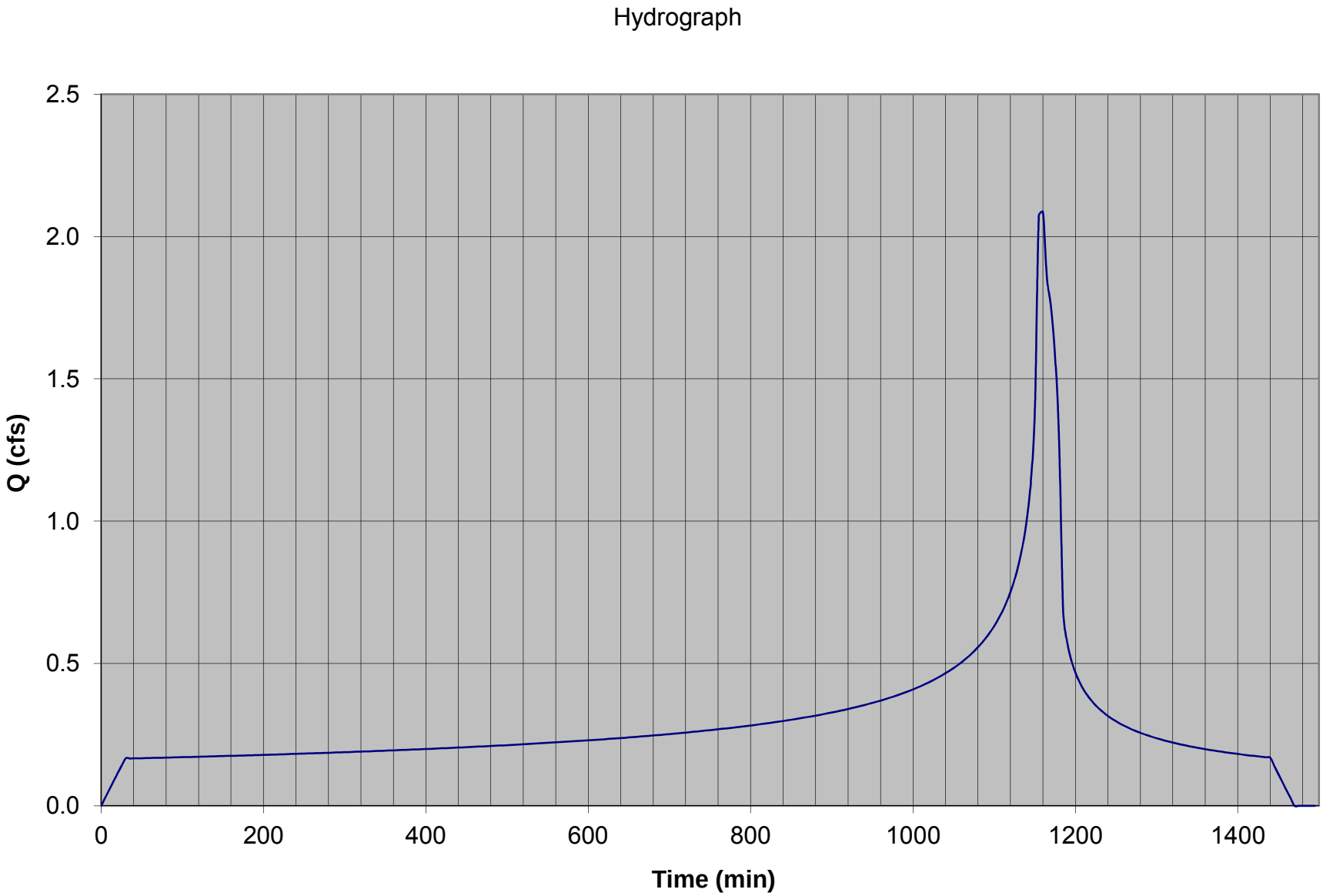
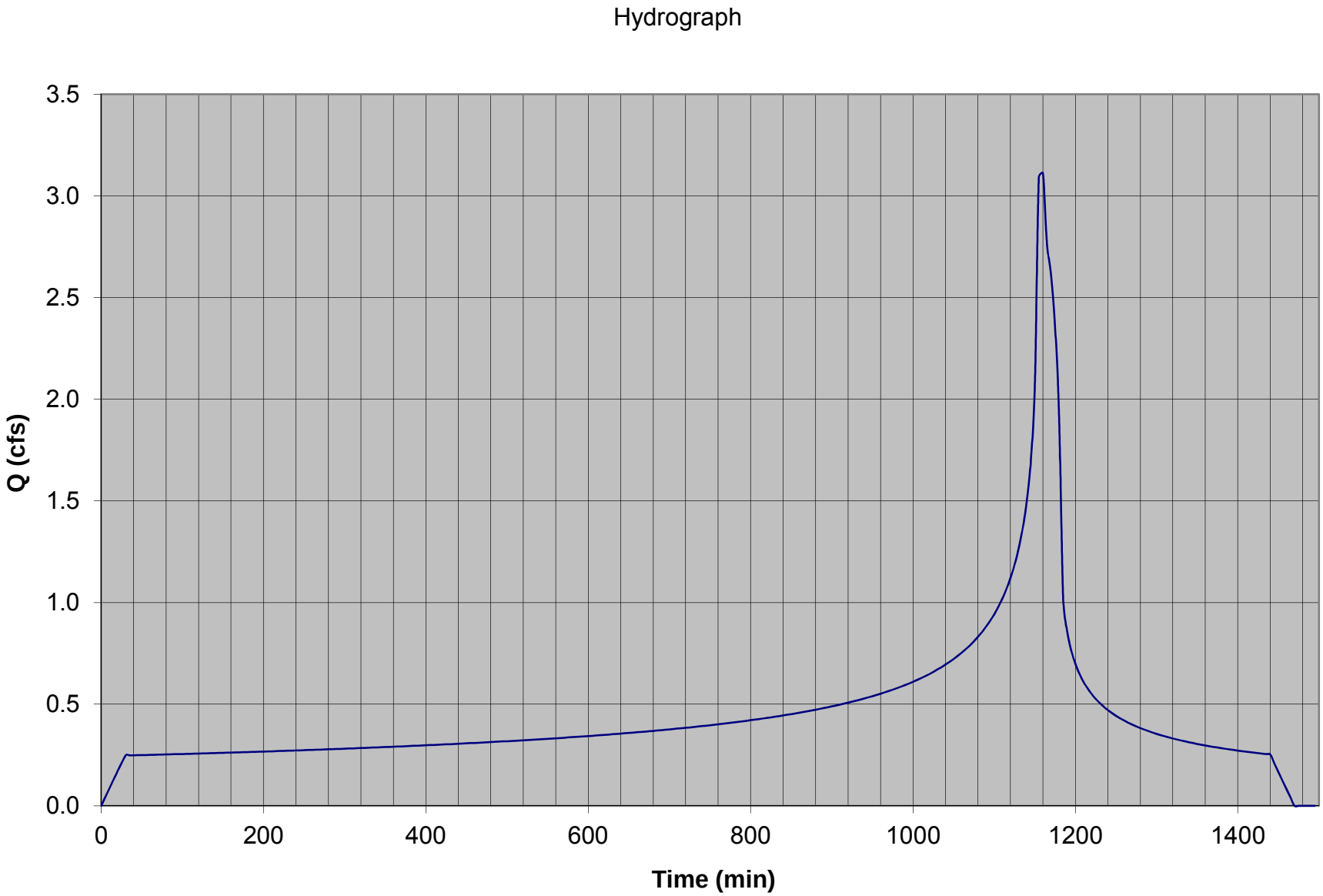


ON-SITE PRE-DEVELOPMENT HYDROLOGIC CALCULATIONS

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 6	A	38.94	0.01	2	120	1342	0.003	1.0	30	0.26	0.10	0.11	1.11	0.34	1.80	0.36
Project 6	A	38.94	0.01	5	120	1342	0.003	1.5	30	0.39	0.10	0.11	1.67	0.34	2.84	0.54
Project 6	A	38.94	0.01	10	120	1342	0.003	1.9	30	0.48	0.10	0.11	2.06	0.34	3.58	0.66
Project 6	A	38.94	0.01	25	120	1342	0.003	2.3	30	0.59	0.10	0.11	2.53	0.34	4.51	0.80
Project 6	A	38.94	0.01	50	120	1342	0.003	2.6	30	0.67	0.11	0.12	3.13	0.34	5.43	0.92
Project 6	A	38.94	0.01	MIT.	120	1342	0.003	0.75	30	0.19	0.10	0.11	0.81	0.34	1.26	0.26

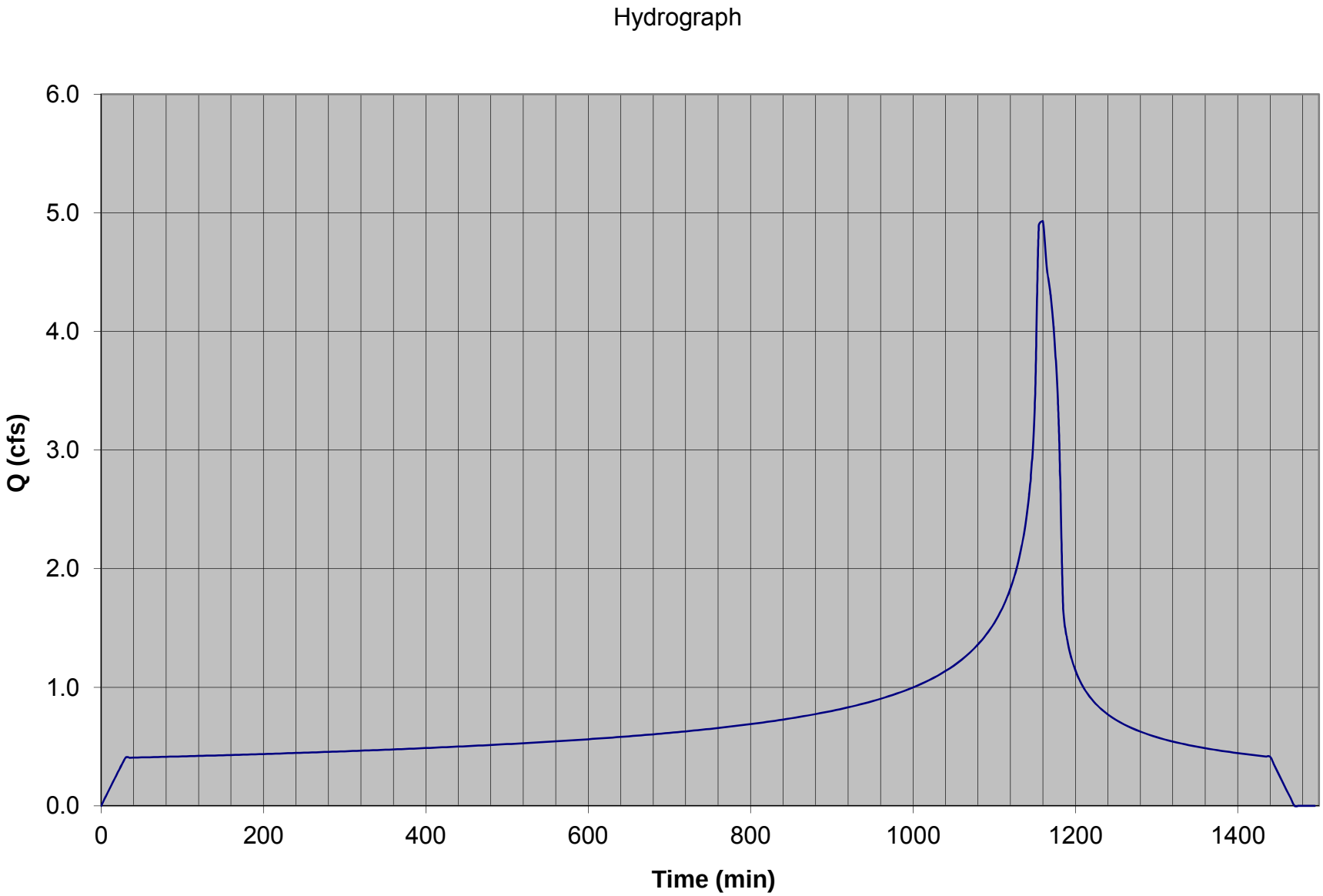
DRAINAGE AREA A 50-YEAR STORM EVENT



ON-SITE POST DEVELOPMENT HYDROLOGIC CALCULATIONS

ON-SITE HYDROLOGY (POST-DEVELOPMENT)																
Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 6	A	38.94	0.1	2	120	1342	0.003	1.0	30	0.26	0.10	0.18	1.82	0.34	2.44	0.58
Project 6	A	38.94	0.1	5	120	1342	0.003	1.5	30	0.39	0.10	0.18	2.73	0.34	3.80	0.88
Project 6	A	38.94	0.1	10	120	1342	0.003	1.9	30	0.48	0.10	0.18	3.36	0.34	4.76	1.07
Project 6	A	38.94	0.1	25	120	1342	0.003	2.3	30	0.59	0.10	0.18	4.14	0.34	5.94	1.31
Project 6	A	38.94	0.1	50	120	1342	0.003	2.6	30	0.67	0.11	0.19	4.96	0.34	7.05	1.50
Project 6	A	38.94	0.1	MIT.	120	1342	0.003	0.75	30	0.19	0.10	0.18	1.33	0.34	1.74	0.43

DRAINAGE AREA A 50-YEAR STORM EVENT



APPENDIX E:
IMPACT ANALYSIS CALCULATIONS

TETRA TECH, INC.

CLIENT SILVERADO POWER JOB NO. 135-04546-12001 PAGE 1 OF 10

PROJECT PROJECT 6 DATE CHECKED DATE DECEMBER 2013

DETAIL BASIN ROUTING CHECKED BY JD COMPUTED BY JS

Length (L)	440 ft	C	3
Depth (D)	0.18 ft	Δt	40 mins.
Slope (Sl)	0.003	Infil. (I)	0.24 ft/40 mins.

Storage and Outflow Relationships			
Water El. (H) (Ft)	Storage (S) (ft^3)	Weir Outflow (O) (cfs)	2S/Δt + O (cfs)
0.000	0.00	0.00	0.00
0.180	8712.00	0.00	7.26
0.181	8773.67	0.04	7.35
0.182	8835.49	0.12	7.48
0.183	8897.46	0.22	7.63
0.184	8959.57	0.33	7.80
0.185	9021.83	0.47	7.98
0.186	9084.24	0.61	8.18
0.187	9146.79	0.77	8.40
0.188	9209.49	0.94	8.62
0.189	9272.34	1.13	8.85
0.190	9335.33	1.32	9.10
0.191	9398.47	1.52	9.35
0.192	9461.76	1.74	9.62
0.193	9525.19	1.96	9.89
0.194	9588.77	2.19	10.18
0.195	9652.50	2.42	10.47
0.196	9716.37	2.67	10.77
0.197	9780.39	2.93	11.08
0.198	9844.56	3.19	11.39
0.199	9908.87	3.46	11.71
0.200	9973.33	3.73	12.04
0.201	10037.94	4.02	12.38
0.202	10102.69	4.31	12.73
0.203	10167.59	4.60	13.08
0.204	10232.64	4.91	13.44
0.205	10297.83	5.22	13.80
0.206	10363.17	5.53	14.17
0.207	10428.66	5.86	14.55
0.208	10494.29	6.18	14.93
0.209	10560.07	6.52	15.32
0.210	10626.00	6.86	15.71
0.211	10692.07	7.20	16.11
0.212	10758.29	7.56	16.52
0.213	10824.66	7.91	16.93
0.214	10891.17	8.28	17.35
0.215	10957.83	8.64	17.77
0.216	11024.64	9.02	18.20
0.217	11091.59	9.39	18.64
0.218	11158.69	9.78	19.08
0.219	11225.94	10.17	19.52
0.220	11293.33	10.56	19.97
0.221	11360.87	10.96	20.43
0.222	11428.56	11.36	20.89
0.223	11496.39	11.77	21.35
0.224	11564.37	12.18	21.82

$S = (1/2)*H*(H/Sl)*L + I*L*(H/Sl)$

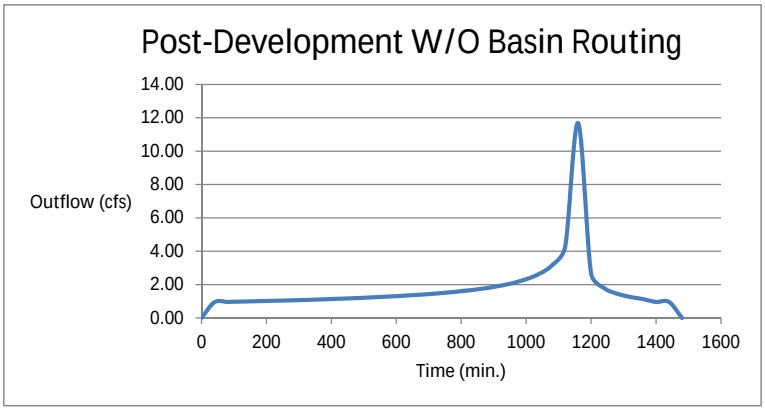
$O = C * L * (H - D)^{1.5}$

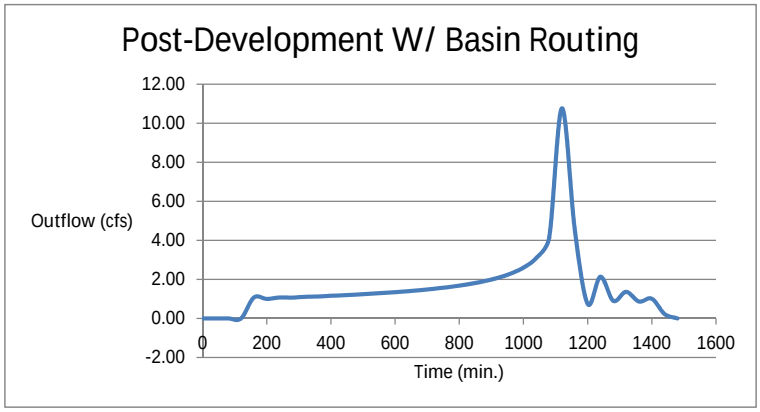
*I(n) + I(n+1) + ((2*S(n)/**Δ**t) - O(n)) =*
*((2*S(n+1)/**Δ**t) + O(n+1))*

*((2*S(n+1)/**Δ**t) - O(n+1)) =*
*((2*S(n+1)/**Δ**t) + O(n+1)) - 2* O(n+1)*

O(n+1) = See Storage and Outflow Relationships

Infiltration Basin # 1 of 1						
0	Time (min.)	I(n) (cfs)	I(n)+I(n+1) (cfs)	2S(n)/Δt-O(n) (cfs)	2S(n+1)/Δt + O(n+1) (cfs)	O(n+1) (cfs)
1	0	0.00	0.95	0.00	0.95	0.00
2	40	0.95	1.91	0.95	2.85	0.00
3	80	0.96	1.94	2.85	4.79	0.00
4	120	0.98	1.98	4.79	6.77	0.00
5	160	1.00	2.01	6.77	8.79	1.07
6	200	1.02	2.05	6.64	8.69	1.00
7	240	1.04	2.10	6.69	8.79	1.07
8	280	1.06	2.14	6.64	8.78	1.07
9	320	1.08	2.19	6.64	8.83	1.11
10	360	1.11	2.24	6.61	8.85	1.13
11	400	1.13	2.30	6.60	8.90	1.16
12	440	1.16	2.36	6.58	8.93	1.19
13	480	1.19	2.42	6.56	8.98	1.22
14	520	1.23	2.49	6.53	9.02	1.26
15	560	1.27	2.57	6.50	9.08	1.30
16	600	1.31	2.66	6.47	9.13	1.35
17	640	1.35	2.76	6.44	9.20	1.40
18	680	1.40	2.86	6.40	9.27	1.45
19	720	1.46	2.99	6.36	9.35	1.52
20	760	1.53	3.13	6.31	9.44	1.59
21	800	1.60	3.30	6.26	9.55	1.68
22	840	1.69	3.49	6.19	9.68	1.79
23	880	1.80	3.73	6.11	9.84	1.91
24	920	1.93	4.03	6.01	10.04	2.08
25	960	2.10	4.42	5.89	10.31	2.29
26	1000	2.32	4.97	5.72	10.69	2.60
27	1040	2.64	5.81	5.48	11.29	3.10
28	1080	3.16	7.43	5.09	12.51	4.13
29	1120	4.26	15.95	4.26	20.20	10.76
30	1160	11.68	14.34	-1.32	13.02	4.55
31	1200	2.66	4.45	3.91	8.36	0.75
32	1240	1.79	3.25	6.87	10.12	2.14
33	1280	1.46	2.72	5.84	8.56	0.90
34	1320	1.26	2.39	6.76	9.15	1.36
35	1360	1.13	2.09	6.43	8.52	0.87
36	1400	0.96	1.92	6.78	8.70	1.01
37	1440	0.96	0.96	6.68	7.64	0.23
38	1480	0.00	0.00	7.19	7.19	0.00


Post-Development W/O Basin Routing
Outflow (cfs)
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0
200
400
600
800
1000
1200
1400
1600
Time (min.)


Post-Development W/ Basin Routing
Outflow (cfs)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
-2.00
0
200
400
600
800
1000
1200
1400
1600
Time (min.)

Project 6 (Pre-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Discharge	9.92	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2335.00
12+00	2334.76
14+00	2334.04
16+00	2333.53
18+00	2333.02
20+00	2333.33
22+00	2333.26
23+28	2333.39

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2335.00)	(12+00, 2334.76)	0.020
(12+00, 2334.76)	(14+00, 2334.04)	0.020
(14+00, 2334.04)	(16+00, 2333.53)	0.020
(16+00, 2333.53)	(18+00, 2333.02)	0.020
(18+00, 2333.02)	(20+00, 2333.33)	0.020
(20+00, 2333.33)	(22+00, 2333.26)	0.020
(22+00, 2333.26)	(23+28, 2333.39)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Project 6 (Pre-Development)

Results

Normal Depth		0.16	ft
Elevation Range	2333.02 to 2335.00 ft		
Flow Area		13.15	ft²
Wetted Perimeter		165.16	ft
Hydraulic Radius		0.08	ft
Top Width		165.16	ft
Normal Depth		0.16	ft
Critical Depth		0.12	ft
Critical Slope		0.01498	ft/ft
Velocity		0.75	ft/s
Velocity Head		0.01	ft
Specific Energy		0.17	ft
Froude Number		0.47	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.16	ft
Critical Depth	0.12	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.01498	ft/ft

Cross Section for Project 6 (Pre-Development)

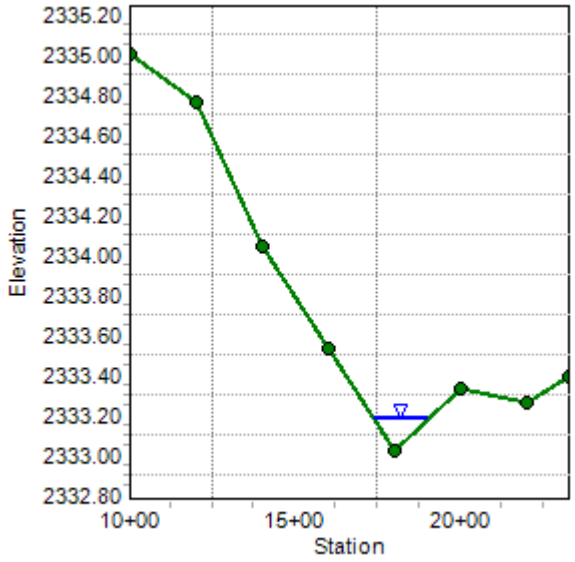
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Normal Depth	0.16	ft
Discharge	9.92	ft³/s

Cross Section Image



Project 6 (Post-Development)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Discharge	10.76	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
10+00	2335.00
12+00	2334.76
14+00	2334.04
16+00	2333.53
18+00	2333.02
20+00	2333.33
22+00	2333.26
23+28	2333.39

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(10+00, 2335.00)	(12+00, 2334.76)	0.020
(12+00, 2334.76)	(14+00, 2334.04)	0.020
(14+00, 2334.04)	(16+00, 2333.53)	0.020
(16+00, 2333.53)	(18+00, 2333.02)	0.020
(18+00, 2333.02)	(20+00, 2333.33)	0.020
(20+00, 2333.33)	(22+00, 2333.26)	0.020
(22+00, 2333.26)	(23+28, 2333.39)	0.020

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Project 6 (Post-Development)

Results

Normal Depth		0.16	ft
Elevation Range	2333.02 to 2335.00 ft		
Flow Area		13.99	ft²
Wetted Perimeter		170.37	ft
Hydraulic Radius		0.08	ft
Top Width		170.37	ft
Normal Depth		0.16	ft
Critical Depth		0.12	ft
Critical Slope		0.01482	ft/ft
Velocity		0.77	ft/s
Velocity Head		0.01	ft
Specific Energy		0.17	ft
Froude Number		0.47	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.16	ft
Critical Depth	0.12	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.01482	ft/ft

Cross Section for Project 6 (Post Development)

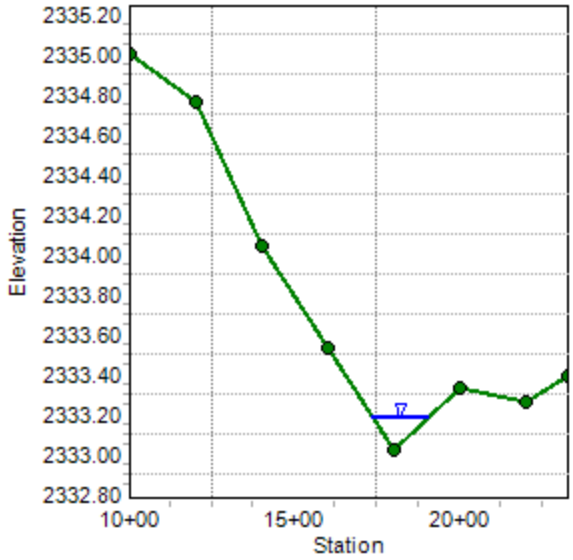
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00300	ft/ft
Normal Depth	0.16	ft
Discharge	10.76	ft³/s

Cross Section Image



PROJECT 6:

PRE-DEVELOPMENT: Q_{50} = 9.92 CFS

V_{50} = 2.92 AC·FT

POST-DEVELOPMENT: Q_{50} = 10.76 CFS (BASIN ROUTING)

V_{50} = 3.5 AC·FT − 0.51 AC·FT = 2.99 AC·FT
↳ BASIN STORAGE = ΔV_{25}

% INC: Q_{50} ⇒ $\frac{10.76\ CFS - 9.92\ CFS}{9.92\ CFS}$ = 8.5% < 10% OK

V_{50} ⇒ $\frac{2.99\ AC\cdot FT - 2.92\ AC\cdot FT}{2.92\ AC\cdot FT}$ = 2.4% < 10% OK

CHECK DEPTH & VELOCITY PER FLOWMASTER RESULTS

PRE-DEVELOPMENT: MAX. DEPTH = 0.16 FT

VELOCITY = 0.75 FT/S

POST-DEVELOPMENT: MAX. DEPTH = 0.16 FT

VELOCITY = 0.77 FT/S

% INC: DEPTH ⇒ $\frac{0.16\ FT - 0.16\ FT}{0.16\ FT}$ = 0% < 10% OK

VELOCITY ⇒ $\frac{0.77\ FT/S - 0.75\ FT/S}{0.75\ FT/S}$ = 2.7% < 10% OK

APPENDIX F:
WATER QUALITY CALCULATIONS

OWNER'S CERTIFICATION

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID

for

PROJECT 6 LANCASTER WAD

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID for LANCASTER WAD has been prepared for the Applicant, by Tetra Tech, Inc. This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is intended to comply with the requirements of the County of Los Angeles, requiring the preparation of a project specific HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.

I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for the gathered information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Los Angeles County Stormwater Quality Management Plan (SQMP), and the intent of the stormwater and urban runoff NPDES Permit and Waste Discharge Requirements for the County of Los Angeles, Los Angeles County Flood Control District and the incorporated Cities of Los Angeles County under the jurisdiction of the Los Angeles Regional Water Quality Control Board. A copy of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID will be maintained at the project site/office.

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party having responsibility for implementing portions of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID. At least one copy of the approved and certified copy of this HYDROLOGY STUDY/DRAINAGE CONCEPT/LID shall be available on the subject property in perpetuity. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.

OWNER:	Silverado Power
BY: (Garret Bean)	
Title:	
Address:	2 Embarcadero Center, Ste. 410
	San Francisco, California 94111
Telephone:	(415) 692 - 7740
Date:	

TABLE OF CONTENTS

I. Background

II. Discretionary Permit(s) and Water Quality Conditions

III. Project Description

IV. Site Description

V. Best Management Practices

VI. Implementation, Maintenance and Inspection Responsibility for BMPs

VII. Appendices

Appendix A: Operations and Maintenance Plan

Appendix B: Treatment BMPs Calculations

Background

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is prepared by the developer's engineer. These are documents required by the Stormwater Quality Management Program (SQMP). It requires run-off, from all new development or significant re-development, to be managed during a project's planning phase, implemented during construction and ultimately maintained for the life of the project.

The HYDROLOGY STUDY/DRAINAGE CONCEPT/LID deals with the long-term post-construction of a project and describes the commitment to installation and maintenance of appropriate structural and non-structural Best Management Practices (BMPs).

BMPs are intended to provide measures that minimize or eliminate the introduction of pollutants into the storm water system. Non-Structural and Structural BMPs include education, clean up, and facility maintenance to prevent pollutants from entering the storm water system.

Compliance is MANDATORY and severe penalties may be levied for any violations. It is the duty of the owner or his designated representative to ensure that all BMPs are followed.

Discretionary Permit(s) and Water Quality Conditions

This HYDROLOGY STUDY/DRAINAGE CONCEPT/LID is intended to comply with the requirements of the County of Los Angeles.

Project Description

The name of the project is LANCASTER WAD. The applicant is the owner of the property. The project is located west of Aerospace Highway 14, between W Avenue E to the south and W Avenue C to the north (see Location Map, Appendix A). The property is currently a dirt lot with scarce native vegetation. Site soils consist of very silty fine to medium sand with infiltration rates of 3 min/in, which equates to 20 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 4.39 in/hr (see Geotechnical Report, Appendix H). The property is predominantly flat (0.5% slopes or less) and therefore will only be minimally graded to avoid ponding. The property will accommodate 9 foot wide arrays of solar panels spaced at approximately 11 feet (see On-Site Drainage Map, Appendix G). The post-development project area is approximately 38.9 acres with 90% of the site being pervious. Construction of the solar panel arrays and other miscellaneous development accounts for the Los Angeles County approved 10% impervious surface. This combined impervious foot print equates to approximately 3.89 acres.

In the post-development condition, the majority of the runoff sheet flows off the site from west to east, therefore mimicking pre-development conditions. As calculated later in this report, the ΔQ_{25} and $\Delta V_{25,}$ which are greater than the peak mitigation flow rate (Q_{PM}) and the mitigation volume (V_M), will be collected onsite with the help of 1 reinforced elevated road section that runs north to south at the center of the site (see On-Site Drainage Map, Appendix G). The required treatment runoff (Q_{PM} & V_M) consists of the initial 0.75 inches of rain, which will infiltrate in the existing soil and also be treated by the existing soil due to being less than the delta runoff.

The applicant, the property owner, is responsible for all on-site maintenance activities.

Per the U.S. Census Bureau, the 2007 Standard Industrial Classification (SIC) Code is 221119 – "Other Electric Power Generation" for solar power sites.

The Anticipated and Potential Pollutants Generated by the proposed facility may be: TSS, nutrients, heavy metals, bacteria/virus, pesticides, organic compounds, trash and debris (litter), oxygen-demanding substances, and oil and grease.

The storage of outdoor materials is not a planned activity. Car washing, auto repair and/or vehicle fueling are also not a part of this facility.

The 85th % BMP peak mitigation flow rate (Q_{PM}) is 1.33 cfs, while ΔQ_{25} is 1.61 cfs.

The mitigation volume (V_M) for the on-site watershed area of 38.9 acres is 0.43 ac-ft and ΔV_{25} is 0.51 ac-ft. The ΔV_{25} will enter 1 infiltration basin, resulting in a mitigation volume of 0.51 ac-ft or 22,216 cf.

Site Description

The site is approximately 38.9 acres and is located west of Aerospace Highway 14, between W Avenue E to the south and W Avenue C to the north, within an unincorporated region of Los Angeles County (see Location Map, Appendix A). The site is predominantly flat (0.5% slopes or less).

The site is located within the Antelope Valley Watershed.

The site has previously been graded, but is mostly reverted to a naturally vegetated state. No pre–existing watershed problems seem to be present.

Per the Geotechnical Report (see Appendix H) and per LA County Hydrology Manual, the project soil type consists of the following:

- Very Silty Fine to Medium Sand

Soil Type 120 was used in the hydrology calculations.

Drainage and Permeability: Well-drained; slow runoff, fair soil permeability. Infiltration rates of 3 min/in, which is equivalent to 20 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 4.39 in/hr.

The Total Maximum Daily Loads (TMDLs) have been established as “not applicable” for the Antelope Valley Watershed. The 303(d) List has no pollutants of concern for the Antelope Valley Watershed.

The Project site is not within the immediate vicinity of any known Environmentally Sensitive Areas (ESAs) and Areas of Special Biological Significance (ASBSs).

Best Management Practices

The following indicates the source control BMPs (routine non-structural and routine structural) included in this project and those that were not included.

Routine Non-Structural BMPs

Education for Property Owners, Tenants, Occupants and Employees. Best Management Practices (BMP) Fact Sheets for preventing stormwater pollution from the California Stormwater Best Management Practice Handbooks can be found at www.cabmphandbooks.com.

Activity Restrictions. The list of restrictions and guidelines for implementation and maintenance of all Best Management Practices specified herein include, but will not be limited to:

- TRASH: No rubbish, trash or other material shall be kept on site or on any street abutting the properties, except in sanitary containers located in an appropriate trash containment area.
- DRAINAGE: There shall be no interference or alteration of the established drainage pattern unless an alternative is approved by the regulatory agency.
- DUMPSTER LIDS: Dumpster lids shall be closed at all times.
- DEBRIS: No blowing or sweeping of litter anywhere at the site.

BMP Maintenance. Appendix A indicates the person(s) responsible for the implementation and maintenance of the non-structural and structural BMPs.

Title 22 CCR Compliance. Not applicable, per Title 22., Division 4.5., Chapter 11. of the California Code of Regulations definition of hazardous wastes. No Hazardous Materials are anticipated to be onsite.

Local Industrial Permit Compliance. Not applicable, there are no fuel dispensing areas and/or other areas of concern to the public proposed.

Spill Contingency Plan. A spill contingency plan will be prepared by the owner/building operator. As a minimum the Spill Contingency Plan will "mandate the stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials and documentation."

Hazardous Materials Disclosure Compliance. No hazardous materials are anticipated to be stored on-site. If deemed otherwise, a designated representative of the owner shall provide information to the Fire Authority in accordance with requirements of the Health & Safety Code.

Uniform Fire Code Implementation. A designated representative of the owner shall provide information to the Fire Authority in compliance with Article 80 of the UNIFORM FIRE CODE (UFC).

Common Area Litter Control. Site litter shall be strictly controlled by onsite maintenance personnel (not yet determined).

Employee Training. A representative of the owner will provide information available from the City/County on education regarding good housekeeping practices that contribute to the protection of storm water quality. Practical information material will be provided to employees on general good housekeeping practices. These materials will describe, but are not limited to, spill prevention and control and the use of chemicals, petroleum products, pesticides and fertilizers that should be limited to the property, with no discharge of wastes directly or indirectly to gutters, catch basins or the storm drain system. Information will be distributed directly to the employees as well as being posted in public areas. In addition to the attachments, the following resource can be contacted to obtain updated educational materials at no cost: American Oceans – www.americanoceans.org/runoff/epa-bro.htm

Routine Non-Structural BMPs

Properly Design Trash Storage Areas. Site waste receptacles shall be emptied on a weekly basis or more often if containers are overflowing. Upon inspection any debris or rubbish will be picked up and the site cleaned. The trash area/room is NOT to be cleaned by hosing down. The type of materials used to clean the area and storage of said materials will be determined by the Contractor. Signage will be posted that lids shall be kept closed at all times. The trash room(s) will be located inside the parking structures.

Protect Slopes and Channels. The protection of slopes and irrigation shall be implemented as indicated on the County of Los Angeles' approved Landscape Plans and shall be consistent with the County Water Conservation Resolution or County equivalent. Slope protection will be achieved through landscaping of the slopes. Runoff from irrigation shall be kept to a minimum. A designated representative of the owner will be responsible for continual maintenance of landscaped areas.

Site Design BMPs

The following table shows the site design BMPs that are included in this project. A description of each BMPs follows:

Technique	Included		Brief Description of Method
	Yes	No	
Minimize Impervious Area/Maximize Permeability (C-Factor Reduction)		√	
Minimize Directly Connected Impervious Areas (DCIAs) (C-Factor Reduction)		√	
Create Reduced or "Zero Discharge" Areas (Runoff Volume Reduction)	√		Infiltration basins
Conserve Natural Areas (C-Factor Reduction)		√	

The site design BMPs that were used extensively in this design were to create "Runoff Volume Reduction" by utilizing the infiltration basin system design concept. The mitigation volume is captured behind the reinforced elevated road and is allowed to infiltrate in the ground.

Treatment BMPs

The following table shows the treatment BMPs that are included in this project. A description of each BMPs follows:

Name	Included		If not applicable, state brief description
	Yes	No	
Vegetated (Grass) Strips		√	Not proposed.
Vegetated (Grass) Swales		√	Not proposed.
Proprietary Control Measures		√	Not proposed.
Dry Detention Basin		√	Not proposed.
Wet Detention Basin		√	Not proposed.
Constructed Wetland		√	Not proposed.
Detention Basin/Sand Filter		√	Not proposed.
Porous Pavement Detention		√	Not proposed.
Porous Landscape Detention		√	Not proposed.
Infiltration Basin	√		
Infiltration Trench		√	Not proposed.
Media Filter		√	Not proposed.
Proprietary Control Measures		√	Not proposed.

This Project is considered a Priority Project. This section of the HYDROLOGY STUDY/DRAINAGE CONCEPT/LID addresses Treatment Control BMPs. The primary control strategy for design Treatment Control BMPs is to treat the frequent, low-flow storm events. The selected treatment controls for this project is the Infiltration Basins. Appendix B – Verification Calculations for Treatment BMPs has the Calculations and Detail Drawings for these Treatment BMPs.

Implementation, Maintenance and Inspection Responsibility for BMPs

A schedule will be established for all maintenance and a log for all cleanups shall be recorded (see Appendix A – Operations and Maintenance Plan). All documents relating to site maintenance and Best Management Practices (BMP) will be kept for a minimum of 5 years and be made available to Federal, State, County, or City Inspectors upon request.

The party responsible for all structural and non-structural BMPs and contact information for site maintenance records is as follows:

SILVERADO POWER

2 Embarcadero Center, STE. 410
SAN FRANCISCO, CA 94111
(415) 692 - 7740

Contact Person: Garret Bean

Appendices

APPENDIX A

Operations and Maintenance Plan

OPERATIONS AND MAINTENANCE PLAN

BMP Applicable? Yes/No	BMP Name and Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	Non-Structural Source Control BMPs		
Yes	Education for Property Owners, Tenants and Occupants Applicant will educate all onsite occupants. Education shall be given using the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.	New onsite employees to be educated within 2 weeks of hire. Each onsite employee shall receive an annual review	Applicant is responsible for educating all onsite occupants.
Yes	Activity Restrictions Ensure all users are adhering to activity restrictions as outlined in the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID and the County of Los Angeles' zoning ordinance and standards.	If a user is observed engaging in activity that may adverse impacts on stormwater, the authorized representative shall take corrective actions as necessary. Ongoing basis.	Applicant is responsible for educating all onsite employees.
Yes	Spill Containment Plan A spill contingency plan is not available. As a minimum the spill contingency plan will "mandate the stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials and documentation."	When spill occurs.	Through a maintenance firm that will be contracted with applicant.
Yes	Common Area Litter Control Perform parking lot/common area maintenance that will include the removal of litter from around the trash storage receptacles, drive aisles, parking lot and outdoor areas. All litter shall be placed in appropriate trash receptacles.	Weekly	Through a maintenance firm that will be contracted with applicant.
Yes	Employee Training Applicant will educate all onsite employees. Education shall be given using the project HYDROLOGY STUDY/DRAINAGE CONCEPT/LID.	New onsite employees to be educated within 2 weeks of hire. Each onsite employee shall receive an annual review	Applicant is responsible for educating all onsite employees.
Yes	Design and Construct Trash and Waste Storage Areas to Reduce Pollution Introduction Site waste receptacles shall be emptied on a weekly basis or more often if overflowing. Signage will be posted that lids shall be kept closed at all times. Inspect the waste receptacles area for any loose trash on the ground. Inspect for damage to the structural elements of the waste receptacles.	Daily and weekly basis. Replace/Repair structural elements as needed.	Applicant through a maintenance firm.

BMP Applicable? Yes/No	BMP Name and Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	Non-Structural Source Control BMPs		
Yes	Protect Slopes and Channels The protection of slopes shall be implemented as indicated on the County of Los Angeles' approved Landscape Plans and shall be consistent with the County Water Conservation Resolution or County equivalent.	After each major storm event	Applicant through a maintenance firm.
	Treatment BMPs		
Yes	Infiltration Basin Infiltration basins shall be constructed concurrently with the solar arrays and shall be inspected of and cleaned from heavy silt deposits.	After each major storm event	Applicant through a maintenance firm.

APPENDIX B
Verification Calculations for Treatment BMPs

1.0 HYDROLOGIC ANALYSIS

The project size is 38.9 acres. Utilizing Appendix A of the Los Angeles County Department of Public Works- Hydrology Manual and a Geotechnical Report for the site (see Appendix H), a predominating soil type of 120 and an infiltration rate of 3min/in were found, which is equivalent to 20.0 in/hr. After applying a reduction factor and factor of safety, this results in a final Los Angeles County approved infiltration rate of 4.39 in/hr. A small portion of the site, amounting to the Los Angeles County approved value of 10%, is impervious with the remaining balance being pervious..

An On-Site Hydrology Map showing the drainage area, BMP and Drainage Structures are found in Appendix G. The peak mitigation flow rate (Q_{PM}) and the mitigation volume (V_M) found in Appendix D of this report are based on 0.75-inches of rainfall.

2.0 BMP SIZING

Infiltration Basins

Using the LA County Modified Rational Method TC Calculator, the Peak Mitigation Flow Rate (Q_{PM}) based on 0.75-inches of rainfall is 1.33 cfs and the total Mitigation Volume (V_M) 0.43 ac-ft (see Post-Development On-Site Hydrologic Calculation, Appendix D). Since ΔV_{25} exceeds the mitigation volume (see Appendix D), it will instead be captured in 1 infiltration basin designed per the 2009 Los Angeles County LID Manual and Los Angeles County Stormwater BMP Design and Maintenance Manual; therefore the required individual basin capacity is 0.51 ac-ft or 22,216 cf. By infiltrating the ΔV_{25}, the V_M will also infiltrate and be treated by the existing soils.

The proposed LID infiltration basin spans north to south in the center of the site. The basin is created by constructing a 2.2 inch high reinforced road section which spans approximately 440 feet north to south. The flood width is approximately 62 feet. The infiltration area created is 26,973 square feet which will allow the mitigation volume to infiltrate in about 2.3 hours at a Los Angeles County approved rate of 4.39 in/hr.

Treatment BMPs Calculations

TETRA TECH, INC.

CLIENT SILVERADO POWER JOB NO. 135-04546-12001 PAGE 1 OF 2

PROJECT PROJECT 6 DATE CHECKED DATE DECEMBER 2013

DETAIL INFILTRATION BASIN CHECKED BY JD COMPUTED BY JS

LINE ID	DESCRIPTION	VALUE	COMMENTS:
A	MITIGATION VOLUME (AC-FT)	0.43	PER POST DEVELOPMENT ON-SITE HYDROLOGIC CALCS, APPENDIX D
B	ΔV25 (AC*FT)	0.51	PER PRE/POST DEVELOPMENT ON-SITE HYDROLOGIC CALCS, APPENDIX D
C	NUMBER OF BASINS	1	PER ON-SITE DRAINAGE MAP, APPENDIX F

SINCE ΔV25>MITIGATION VOLUME, ΔV25 TO BE MITIGATED BY 1 INFILTRATION BASIN CREATED BY 1 N-S REINFORCED ELEVATED ROAD

D	INFILTRATION RATE (IN/HR)	4.39	PER GEOTECHNICAL REPORT, APPENDIX H (3 MIN/IN = 20.0 IN/HR) * FACTORS
E	BASIN LENGTH (FT)	440	PER ON-SITE DRAINAGE MAP, APPENDIX F
F	VOLUME PER BASIN (CF)	22215.6	(F) = (B) * 43,560 / (C)

BASIN SIZED ACCORDING TO THE LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL

G	REQUIRED DRAIN TIME (HR)	72	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
H	MAX. PONDING DEPTH (FT)	26.34	PER EQUATION 6-3, (H) = (D) / 12 * (G)
I	BASIN PONDING DEPTH (IN)	1.10	INITIAL ASSUMED AVERAGE PONDING DEPTH CREATED BY RAISED ROAD SECTION

SINCE THE BASIN HAS A TRIANGULAR CROSS-SECTION, THE AVERAGE PONDING DEPTH OF THE BASIN WILL BE USED TO FIND THE INFILTRATING SURFACE AREA. IN ORDER TO USE THE AVERAGE PONDING DEPTH OF 1.1 IN., THE REINFORCED ROAD SECTION WILL NEED TO BE RAISED BY 2.2 IN.

J	MAX. BASIN FILL TIME (HR)	2	PER LOS ANGELES COUNTY STORMWATER BMP DESIGN AND MAINTENANCE MANUAL
K	BASIN SURFACE AREA (SF)	26973.1	PER EQUATION 6-6, (K) = (F) / ((J) * (D) / 12 + (I) / 12)
L	FLOOD WIDTH (FT)	61.3	(L) = (K) / (E)

CHECK TO SEE IF INFILTRATION BASIN SLOPE MATCHES EXISTING AVERAGE SLOPE OF SITE.

M	AVERAGE SITE SLOPE (%)	0.30	PER ON-SITE DRAINAGE MAP, APPENDIX F
N	INFIL. BASIN SLOPE (%)	0.30	(N) = ((I) * 2 / (L) * 12) * 100

COMPARE RESULTS WITH MIN. ROAD HEIGHT FROM IMPACT ANALYSIS, APPENDIX E.

O	MIN. ROAD HEIGHT (IN)	2.2	PER IMPACT ANALYSIS, APPENDIX E

Conclusion:

ΔV25 INFILTRATED BY 1 INFILTRATION BASIN WITH A LENTH OF 440 FT AND A FLOOD WIDTH OF 62 FT CREATED BY 1 REINFORCED ELEVATED ROAD SECTION RAISED 2.2 IN.

TOTAL DRAINAGE TIME (HR) = (F) / ((K) * (D) / 12) = 2.3 < 72 HRS

TETRATECH

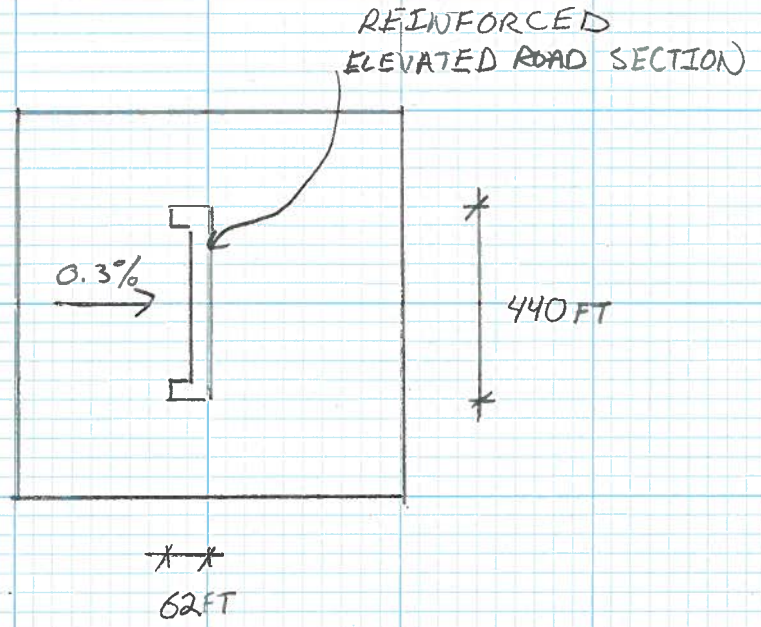
Sheet No. 2 of 2 Date:

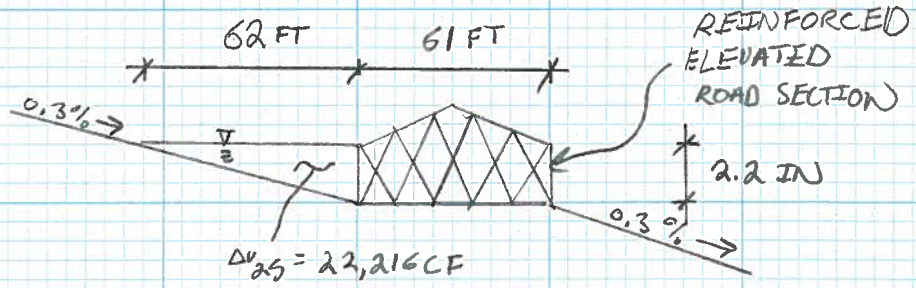
Checked By: Office:

Telephone:

Engineer: Job No.:

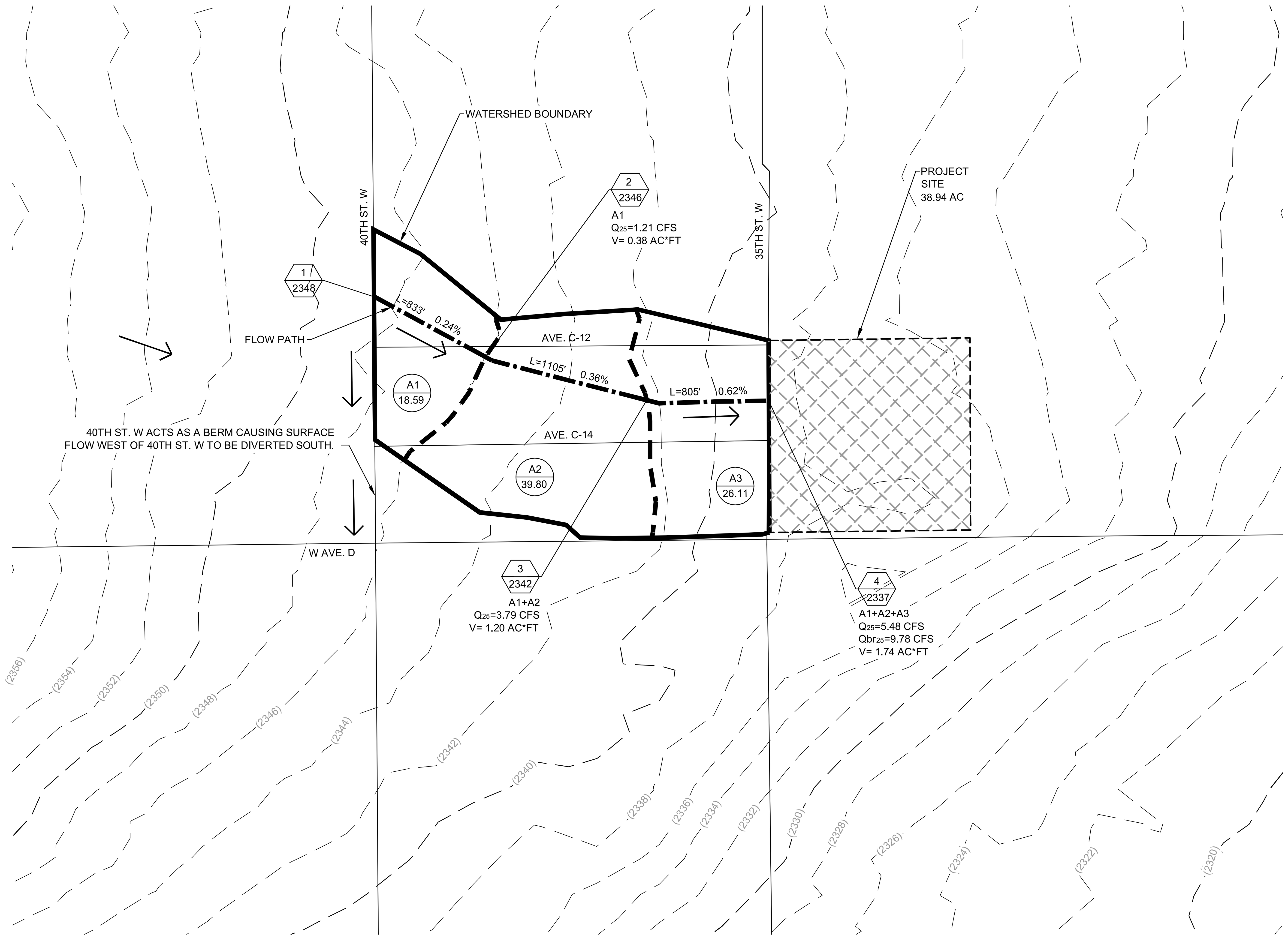
Subject: LANCASTER WAD ELEVATED ROAD SECTION AND INFILTRATION BASIN

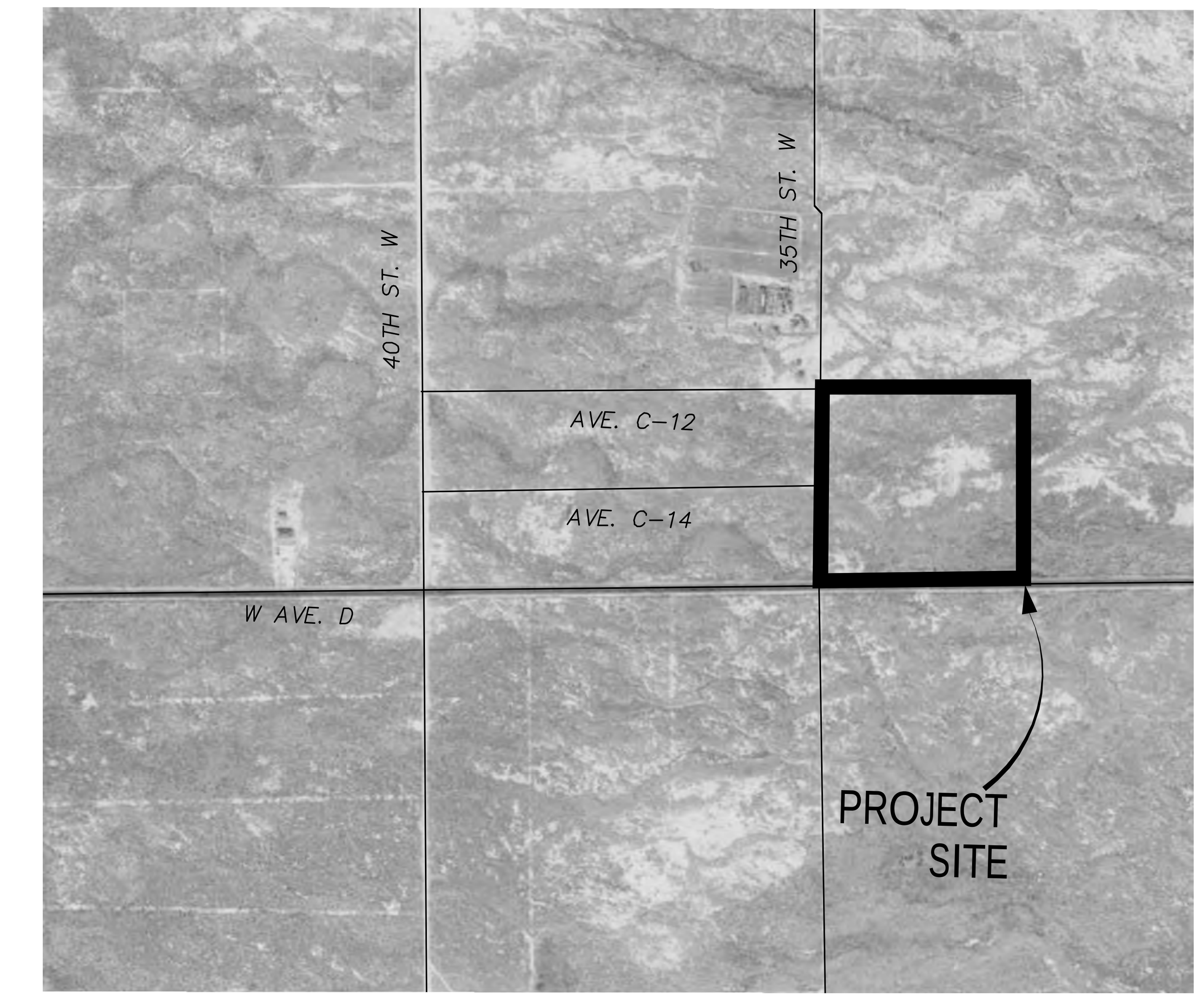




APPENDIX G:
DRAINAGE MAPS (ON-/OFF-SITE)

OFF-SITE DRAINAGE MAP





LOCATION MAP
NOT TO SCALE
(THOMAS GUIDE PAGE 3925, GRID A-1, A-2, B-1, & B-2)

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- WATERSHED BOUNDARY
- SUB-AREA BOUNDARY
- PROJECT BOUNDARY
- FLOW LINE

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.193 SQ. MI.) = 251 CY

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) WITHIN A FEMA ZONE A.
9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

OFF-SITE HYDROLOGY

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 6	A1	18.59	0.01	2	120	833	0.0024	1.0	30	0.26	0.10	0.11	0.53	0.34	0.86	0.17
Project 6	A2	39.80	0.01	2	120	1105	0.0036	1.0	30	0.26	0.10	0.11	1.14	0.34	1.84	0.36
Project 6	A3	26.11	0.01	2	120	805	0.0062	1.0	30	0.26	0.10	0.11	0.75	0.34	1.20	0.24
Project 6	A1	18.59	0.01	5	120	833	0.0024	1.5	30	0.39	0.10	0.11	0.80	0.34	1.36	0.26
Project 6	A2	39.80	0.01	5	120	1105	0.0036	1.5	30	0.39	0.10	0.11	1.71	0.34	2.90	0.55
Project 6	A3	26.11	0.01	5	120	805	0.0062	1.5	30	0.39	0.10	0.11	1.12	0.34	1.90	0.36
Project 6	A1	18.59	0.01	10	120	833	0.0024	1.9	30	0.48	0.10	0.11	0.98	0.34	1.71	0.31
Project 6	A2	39.80	0.01	10	120	1105	0.0036	1.9	30	0.48	0.10	0.11	2.10	0.34	3.66	0.67
Project 6	A3	26.11	0.01	10	120	805	0.0062	1.9	30	0.48	0.10	0.11	1.38	0.34	2.40	0.44
Project 6	A1	18.59	0.01	25	120	833	0.0024	2.3	30	0.59	0.10	0.11	1.21	0.34	2.15	0.38
Project 6	A2	39.80	0.01	25	120	1105	0.0036	2.3	30	0.59	0.10	0.11	2.58	0.34	4.61	0.82
Project 6	A3	26.11	0.01	25	120	805	0.0062	2.3	30	0.59	0.10	0.11	1.69	0.34	3.02	0.54
Project 6	A1	18.59	0.01	50	120	833	0.0024	2.6	30	0.67	0.11	0.12	1.49	0.34	2.59	0.44
Project 6	A2	39.80	0.01	50	120	1105	0.0036	2.6	30	0.67	0.11	0.12	3.20	0.34	5.55	0.94
Project 6	A3	26.11	0.01	50	120	805	0.0062	2.6	30	0.67	0.11	0.12	2.10	0.34	3.64	0.62

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:________________RCE NO:____________DATE______________
CHECKED BY:________________DATE____________
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N
0 250' 500' 1000'
SCALE: 1" = 500'

R2011-00805 (RCUP2011-00074)

H-1

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER
JOSEPH E. DIETZ
No. 67032
EXP: 9-30-14
CIVIL
STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APP'V'D BY

Solar PV System Summary

5MW AC Solar Photovoltaic Generation System

APN:
3115-010-004
SCH # 2012061068

Project Name:
Project 6 Lancaster WAD
Project Address:
W Ave. D & 35th St. W
Lancaster,
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100074
OFF-SITE DRAINAGE MAP

APPLICANT:

Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

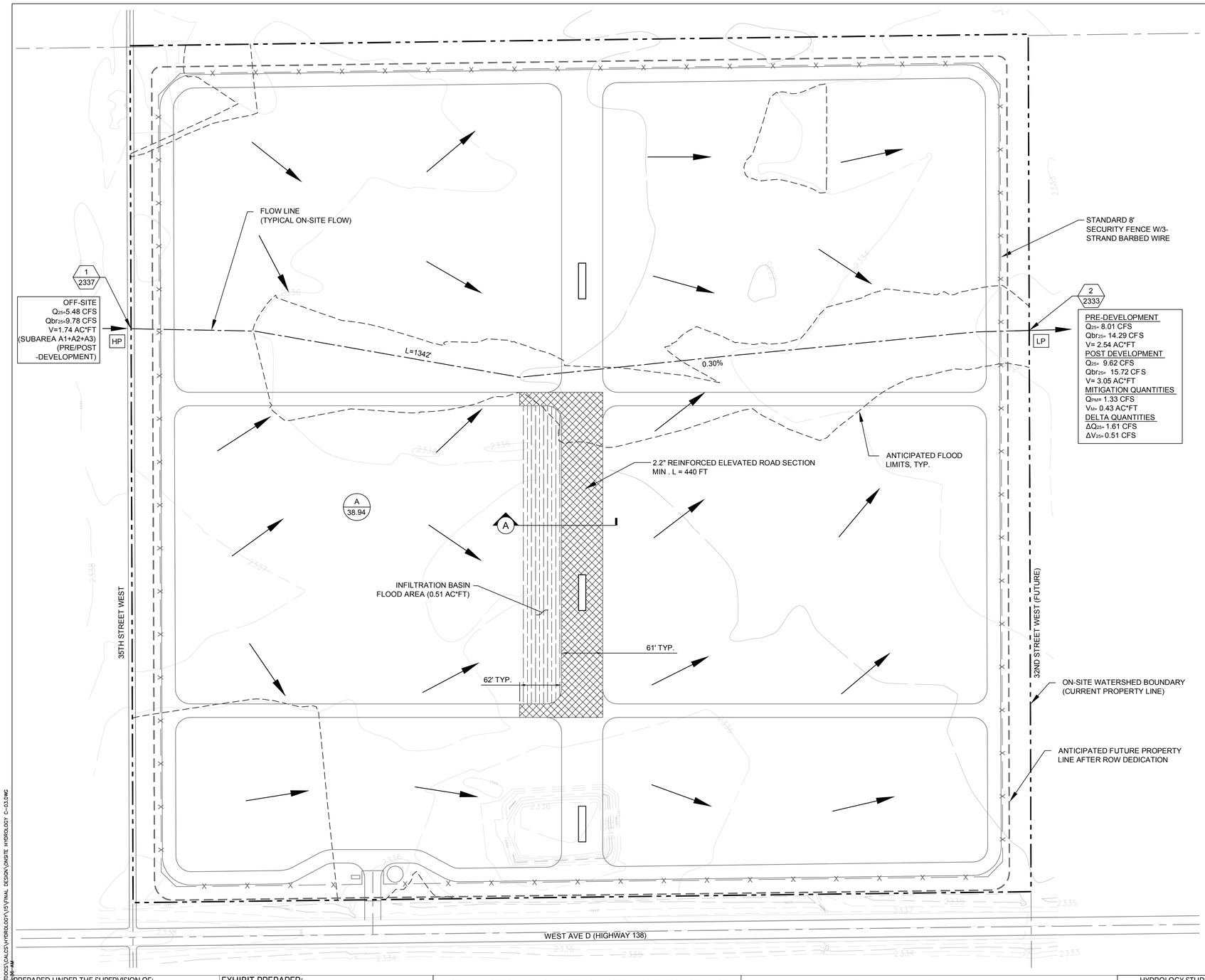
SILVERADO power

PROJECT 6
LANCASTER WAD
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\04546\135-04546-12001\SUPPORTDOCS\CALCS\HYDROLOGY\15\FINAL DESIGN\OFFSITE HYDROLOGY.DWG
PLOTDATE: Sep 9, 2013 - 2:28 PM

ON-SITE DRAINAGE MAP



LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- ANTICIPATED 25-YR STORM EVENT FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.193 SQ. MI.) = 251 CY

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3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) WITHIN A FEMA ZONE A.
9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATE (Q_{50}) INCREASED BY 8.5%, THE VOLUME (V_{50}) INCREASED BY 2.4%, THE DEPTH INCREASED BY 0.0%, AND THE VELOCITY INCREASED BY 2.7%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N
0 40' 80' 160'
SCALE: 1"=80'

R2011-00805 (RCUP2011-00074) C-03

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

5MW AC Solar Photovoltaic Generation System
APN:
3115-010-004
SCH # 2012061068

Project Name:
Project 6 Lancaster WAD
Project Address:
W Ave. D & 35th St. W
Lancaster,
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100074 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 6
LANCASTER WAD
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\04646\125--04646--12001\SUPPORTDOCS\CALCS\HYDROLOGY\05\FINAL DESIGN\ONSITE HYDROLOGY C-03.DWG

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 6	A	38.94	0.01	2	120	1342	0.003	1.0	30	0.26	0.10	0.11	1.11	0.34	1.80	0.36
Project 6	A	38.94	0.01	5	120	1342	0.003	1.5	30	0.39	0.10	0.11	1.67	0.34	2.84	0.54
Project 6	A	38.94	0.01	10	120	1342	0.003	1.9	30	0.48	0.10	0.11	2.06	0.34	3.58	0.66
Project 6	A	38.94	0.01	25	120	1342	0.003	2.3	30	0.59	0.10	0.11	2.53	0.34	4.51	0.80
Project 6	A	38.94	0.01	50	120	1342	0.003	2.6	30	0.67	0.11	0.12	3.13	0.34	5.43	0.92
Project 6	A	38.94	0.01	MIT.	120	1342	0.003	0.75	30	0.19	0.10	0.11	0.81	0.34	1.26	0.26

ON-SITE HYDROLOGY (POST-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 6	A	38.94	0.1	2	120	1342	0.003	1.0	30	0.26	0.10	0.18	1.82	0.34	2.44	0.58
Project 6	A	38.94	0.1	5	120	1342	0.003	1.5	30	0.39	0.10	0.18	2.73	0.34	3.80	0.88
Project 6	A	38.94	0.1	10	120	1342	0.003	1.9	30	0.48	0.10	0.18	3.36	0.34	4.76	1.07
Project 6	A	38.94	0.1	25	120	1342	0.003	2.3	30	0.59	0.10	0.18	4.14	0.34	5.94	1.31
Project 6	A	38.94	0.1	50	120	1342	0.003	2.6	30	0.67	0.11	0.19	4.96	0.34	7.05	1.50
Project 6	A	38.94	0.1	MIT.	120	1342	0.003	0.75	30	0.19	0.10	0.18	1.33	0.34	1.74	0.43

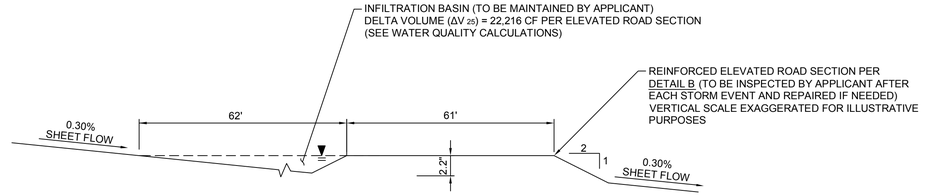
Incremental Flow and Volume Increase for Various Storm Events

Storm Event	Pre-Q (cfs)	Post-Q (cfs)	Delta-Q (cfs)	Pre-V (acre-ft)	Post-V (acre-ft	Delta-V (acre-ft)
2.00	1.11	1.82	0.71	0.36	0.58	0.22
5.00	1.67	2.73	1.06	0.54	0.88	0.34
10.00	2.06	3.36	1.30	0.66	1.07	0.41
25.00	2.53	4.14	1.61	0.80	1.31	0.51
50.00	3.13	4.96	1.83	0.92	1.50	0.58

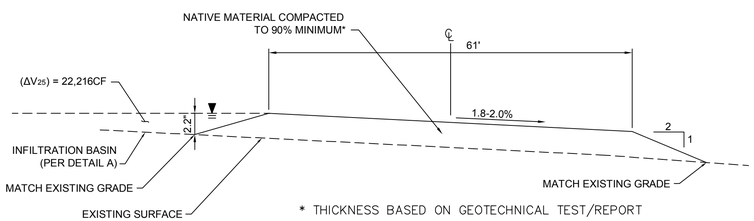
NOTE: FOR INFILTRATION BASIN MITIGATION VOLUME, SEE MIT. FREQUENCY FLOW VOLUME UNDER POST-DEVELOPMENT TABLE.

TOTAL DELTA QUANTITIES
ΔQ25 = 4.14 CFS - 2.53 CFS = 1.61 CFS
ΔV25 = 1.31 AC*FT - 0.80 AC*FT = 0.51 AC*FT

NOTE: DUE TO THE LID Δ QUANTITIES ABOVE BEING GREATER THAN THE MITIGATION QUANTITIES (Q_{FM} AND V_{FM}) THEY REPRESENT THE WORST CASE SCENARIO BETWEEN THE PRE-/POST DEVELOPMENT CONDITIONS AND THEREFORE SHALL BE USED FOR SIZING THE INFILTRATION BASINS.



A INFILTRATION BASIN DETAIL
SCALE: NTS



B REINFORCED ACCESS ROAD DETAIL (TYP.)
SCALE: NTS

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00805 (RCUP2011-00074) C-04

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

5MW AC Solar Photovoltaic Generation System
APN:
3115-010-004
SCH # 2012061068

Project Name:
Project 6 Lancaster WAD
Project Address:
W Ave. D & 35th St. W
Lancaster,
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100074
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 6
LANCASTER WAD
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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PLOT/UPDATE: Dec 2, 2013 9:0:43 AM

APPENDIX H:
GEOTECHNICAL REPORT

TETRA TECH

August 7, 2013

Brian Smith
County of Los Angeles
Department of Public Works
900 South Fremont Ave
Alhambra, CA 91803

Reference: **Infiltration Rates for Silverado Solar Project Sites, Antelope Valley, CA**

Dear Brian:

The purpose of this letter is to establish a basis for the infiltration rates to be used for various Low Impact Development facilities to treat and infiltrate storm water to meet the Standard Urban Stormwater Mitigation Plan requirements. Currently, LA County Public Works has provided guidance to use an infiltration rate equal to .25 in/hr. We feel this value is extremely conservative based on our experience in the area, and in other high desert areas in the region. Bruin GSI performed preliminary percolation testing at each of the six solar project sites based on the Excavation Percolation Testing Procedure or Ryon Method as outlined in LA County Administrative Manual GS200.1. The results of these preliminary tests show percolation rates much higher than the LA County provided rate of .25 in/hr. The table below shows the preliminary percolation rates recorded by Bruin GSI, the corresponding Reduction Factor, Factor of Safety and requested site specific Infiltration Rate:

Project Site	Absorption Rate (minutes/inch)[1]	Preadjusted Percolation Rate (in/hr)	Reduction Factor[2]	Factor of Safety[3]	Infiltration Rate[4] (in/hr)
North Lancaster Ranch (RCUP201100079)	7	8.57	1.52	3	**1.88**
Western Antelope Blue Sky Ranch (RCUP201100070)	3	20.0	1.52	3	**4.39**
American Solar Greenworks (RCUP201100071)	3	20.0	1.52	3	**4.39**
Antelope Solar Greenworks (RCUP201100076)	4	15.0	1.52	3	**3.29**
Silver Sun Greenworks (RCUP201100072)	5	12.0	1.52	3	**2.63**
Lancaster WAD (RCUP201100074)	3	20.0	1.52	3	**4.39**

[1] Absorption rate was measured between the drop from 6" to 5" above bottom of the percolation pit

[2] Reduction factor is based on Rf=(2di-�d)/13.5 + 1 per GS200.1

[3] Factor of Safety accounts for variations across the site and for silt accumulation over time.

[4] Infiltration rate = Preadjusted Percolation Rate/(Reduction Factor x Factor of Safety)

Tetra Tech, Inc.
17885 Von Karman Avenue, Suite 500, Irvine, CA 92614
Tel 949.809.5000 Fax 949.809.5004 www.tetratech.com

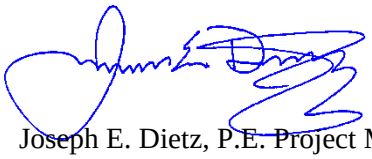
The Low Impact Development, LID, features on each project site will consist of a road that will create a berm to allow for the retention area. The road, which provides a berm of approximately 4 to 8 inches, enables run-off water to be captured and treated on-site at original grade level. Any flow in excess of retention capability of these berms will continue and normalize before it leaves the project boundaries thereby maintaining existing project conditions.

The excavations that Bruin GSI performed support our request to utilize these infiltration rates with the findings that the soil to a depth of 10 feet had no impermeable layers and the materials that were found were uniform. The density of the alluvial material, silty sand (SM) and sandy silt (ML) was generally loose to medium density with dry to moist conditions. The conditions of these materials further leads us to our conclusion that the above reference infiltration rates would be suitable to design the retention features on the respective project sites.

Groundwater conditions in the area, based on Bruin GSI review and Tetra Tech research, are at least 100 feet below ground surface elevation in the subject project areas.

As shown in the table above, the site specific infiltration rates based on preliminary testing are much higher than the .25 in/hr currently allowed. We request the use of the infiltration rates above for the design of the, LID, features at each site.

Sincerely,



Joseph E. Dietz, P.E. Project Manager

jd
P:\04546\135-04546-12001\Docs\Letters\LTR_InfiltrationRates_20130626.docx

Attachments:
Bruin GSI Preliminary Percolation Feasibility Study dated August 1, 2013

BRUIN GSI PRELIMINARY PERCOLATION FEASIBILITY STUDY DATED AUGUST 1, 2013

REVISED PRELIMINARY PERCOLATION FEASIBILITY STUDY FOR SURFACE INFILTRATION DATA FOR SILVERADO POWER ON PROPOSED SOLAR SITES

NORTH LANCASTER RANCH
WESTERN ANTELOPE BLUE SKY RANCH
AMERICAN SOLAR GREENWORKS
ANTELOPE SOLAR GREENWORKS
SILVER SUN GREENWORKS
LANCASTER WAD

LANCASTER, LOS ANGELES COUNTY
CALIFORNIA

Prepared by:
Bruin Geotechnical Services, Inc.
1817 East Avenue Q, Unit A1
Palmdale, California 93550

August 1, 2013
J.N. 12-59

BRUIN GSI

SOIL AND MATERIAL
TESTING AND INSPECTIONS

August 1, 2013 J.N. 12-59

Mr. Ryan Galeria
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

Project: Proposed Solar Sites, Lancaster, California

Sites:

1- North Lancaster Ranch

2- Western Antelope Blue Sky Ranch

3- American Solar Greenworks

4- Antelope Solar Greenworks

5- Silver Sun Greenworks

6- Lancaster WAD

Subject: Revised Preliminary Percolation Feasibility Study for Surface Infiltration Data via Los Angeles County Ryon Method

Presented herewith, per your request, are the results of the percolation testing program for the referenced project. The purpose of this report is to provide preliminary surficial percolation rates for the referenced sites for use by the client to determine the infiltration rates of the existing native soils at existing grade for the proposed water run-off of impermeable areas, such as drive access roadways and small equipment pad areas. This report concludes the scope of our services per our contract.

Site Description

The subject sites are located in the southwest portion of the Antelope Valley, in the Lancaster area of Los Angeles County. The subject sites vary in size and topography. However the sites are relatively flat and level with general slopes of approximately 1-3 percent, with drainage occurring by sheetflow, except site 2, Western Antelope Blue Sky Ranch, which sloped up to the southwest with minor rolling hills.

At the time of our investigation, the sites were vacant of structures. Vegetation consisted of native desert flora, with varying amounts of shrubs, annual grass and weeds. Oak trees were not observed at the sites. The site locations and site plan are presented in Appendix A. The approximate percolation test locations for each site are also indicated on the site plan.

Proposed Development and Drainage

Based on our review of the preliminary site plan, it is our understanding that a solar farm is proposed. The impermeable areas that create water run-off consist of raised access roadways on the perimeter of the site with access roadways, which locations vary by site, dissecting the sites. In addition, concrete equipment pads at various locations on each site will create small impermeable areas. The impermeable surface areas on each site range from 7.5% to 15% of the entire site areas. It is intended that the raised access roads serve as a berm and capture the run-off water and allow it to infiltrate at existing ground elevation. The height of the roadway will range from four to eight inches in height and will create the retention basins on each site and to allow infiltration into native soil at exiting grade elevation. Any additional flow will continue over the roads, therefore maintaining existing sheet flow patterns.

Percolation Testing Protocol

Testing for percolation rates was performed in accordance with the Los Angeles County Ryon Method. This method was performed by excavating a cubic foot test hole at existing ground surface which is the anticipated elevation of the infiltration basins. The test hole is pre-soaked by filling with clean water to existing grade (12 inches). Once all the water has been absorbed, the test hole is cleaned of loose material and filled again with clean water. The percolation rate is determined by monitoring the time of drop for each inch from 0 to 6 inches. The time of absorption between the 5th to 6th inch is the percolation rate in minutes per inch.

On December 1, 2012, the field-testing program was instigated. A minimum of one (1) cubic foot percolation test hole was excavated at each site. The test holes were excavated at the existing ground elevation to a depth of one (1) foot below existing ground elevation with hand equipment. The soil types were logged by our representative. Soil profile information and classifications are presented in Appendix B.

The same day, the cubic foot hole prepared was filled to the initial fill level of existing ground elevation with clean water for pre-soaking. Pre-soaking time varied with each test hole, however all the water percolated within ten to fifteen minutes of the addition of the water. The test hole was then cleaned and re-filled with water to the initial fill level (existing ground). The drop was monitored and documented to determine the absorption rate (drop from the 5th to 5th inch). The percolation rates are provided in Appendix B. Our representative David Michel performed the tests.

Subsurface Investigation

On July 31, 2013, seven (7) additional excavations were performed utilizing a tractor-mounted backhoe to a depth of ten (10) feet below existing ground surface at the locations of each test hole. The purpose of the excavations was to log the soil types, determine the soil classifications and if any impermeable material was present below the test holes. Our representative observed the excavations and prepared field logs of the material encountered. The final logs of the excavations are presented in Appendix C.

Groundwater Conditions

A review of various website databases regarding water well data and groundwater for the Antelope Valley area was performed. The sites included the United States Geological Survey, Los Angeles County Department of Public Works, State of California Department of Conservation, and published State of California Seismic Zone Hazard Maps (Del Sur Quadrangle and West Lancaster Quadrangle), with associated reports regarding liquefaction which is relative to groundwater levels. Based on our review, groundwater in the areas of the subject sites is a minimum of 100 feet below ground surface elevation.

Conclusions

Based on the excavations performed at the subject sites, the material encountered was uniform and no impermeable layers were observed within the total depth of the excavations (10 feet bgs). The areas observed consist of alluvial material, silty sand (SM) and sandy silt (ML). This material was observed to be generally loose to medium dense and dry to moist. Some cementation was observed. The soils appeared porous and permeable.

Groundwater is over 100 feet below ground surface elevation in the subject site areas.

The percolation rates, indicated as minutes per inch, may be utilized to determine the infiltration rate of the soil at existing grade to design the specific area required for the amount of water run-off based on the size of the impermeable areas. The design should include a minimum safety factor of 2.0.

The proposed use of the project site as a solar farm is not expected to significantly change the imperviousness of the sites, with the exception of road construction, which is anticipated to cover 7-15%, depending on the site. It is our professional opinion, provided the drainage and infiltration basins are properly designed, the use of these raised roadway areas as berms to capture run-off water to allow infiltration at existing ground elevation is feasible.

Limitations

The percolation test data provided is based on Los Angeles County Health Department Guidelines (Ryon Method) typically required for septic system design to determine

in minutes per inch at the location on the site as indicated in this report only. Other areas of the each site may vary. The purpose of the testing is to provide the client with preliminary soil absorption rates for their use in preparing information in regards to water run-off and minor surficial detention of water for infiltration in order to comply with the Limited Impact Development standards. Los Angeles County may require additional testing or methodology for final approval.

If there are any changes in the proposed construction or additional testing is necessary, this office should be notified immediately. If soils encountered are different than indicated in this report, contact this office. No warranty is expressed or implied. Test results indicate the rates at the locations indicated. This report does not guarantee issuance of a permit. This report is subject to approval from the governing agency.

Closure

Information and procedures described in the report were performed in accordance with general standards of practice. We trust this reports meets your needs. If you have any questions or require additional information, Please contact our office.

Sincerely,

Bruin Geotechnical Services Inc.

Dennis J. Sloan, P.E.

REGISTERED PROFESSIONAL ENGINEER
DENNIS J. SLOAN
No. 29704
Expires 03/31/15
CIVIL
STATE OF CALIFORNIA

DJS/mes

APPENDIX A

Site Location Map
Site Plans with Approximate Test Locations

Plotting Date: 6/27/2012 4:18:17 PM
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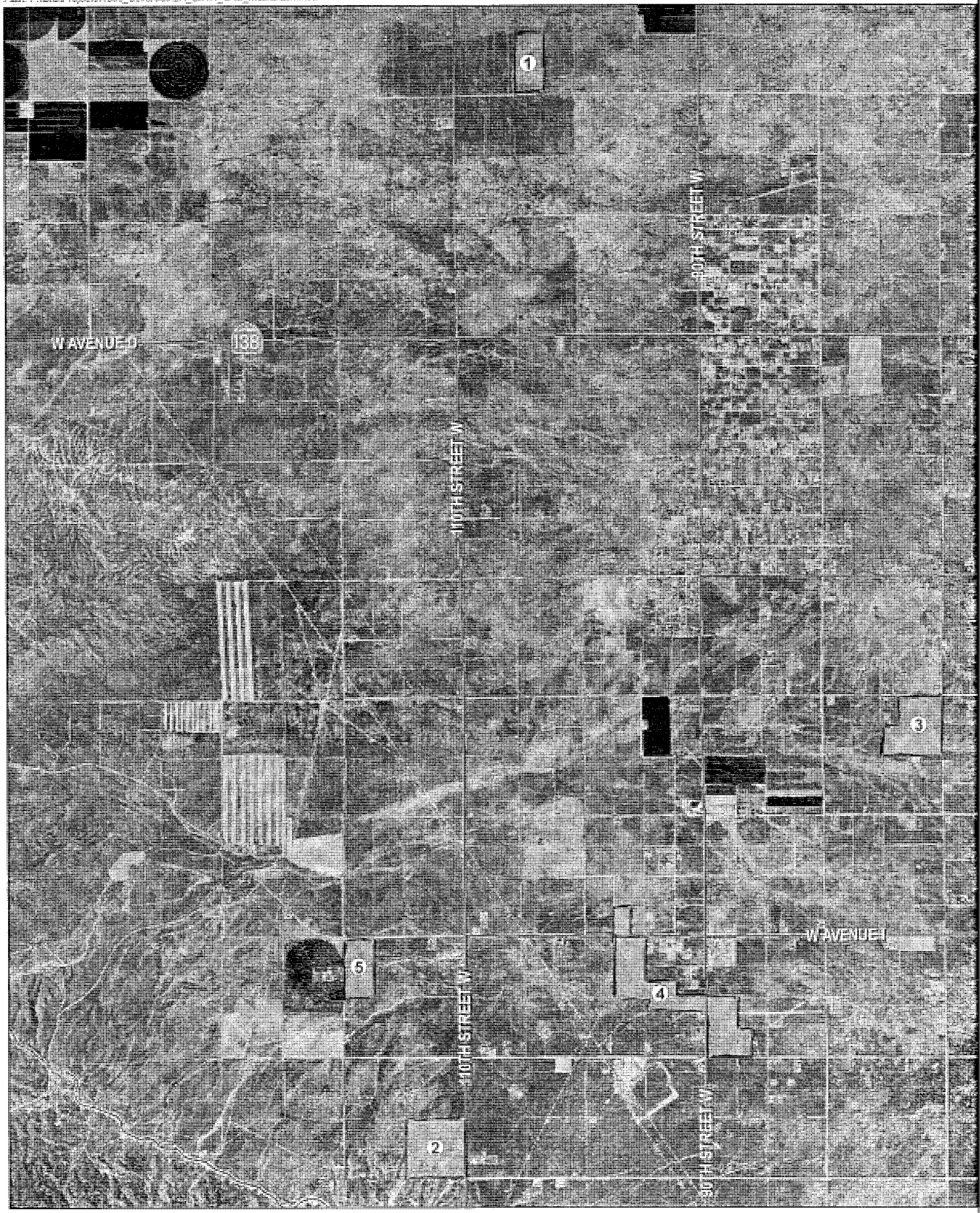
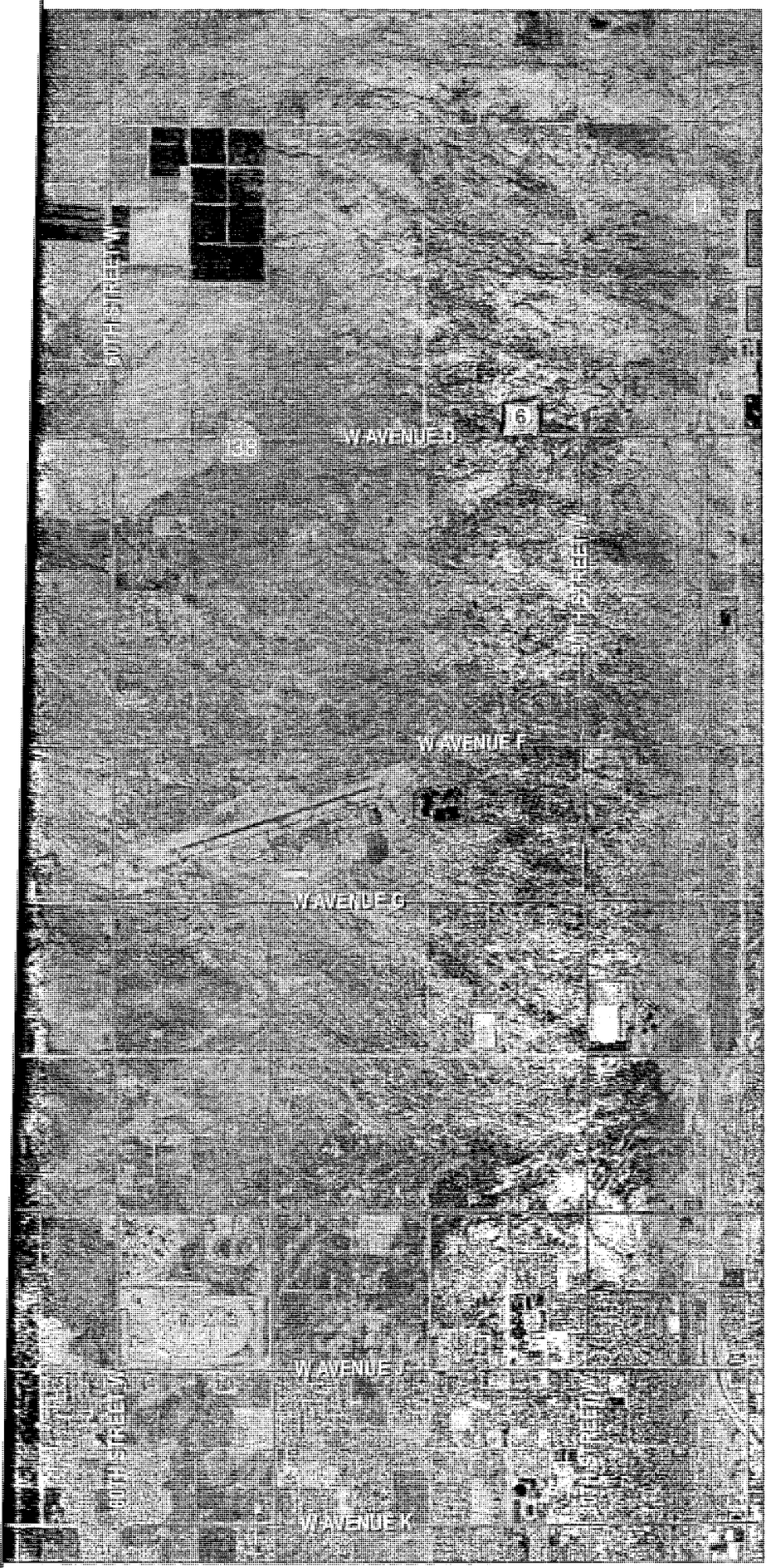
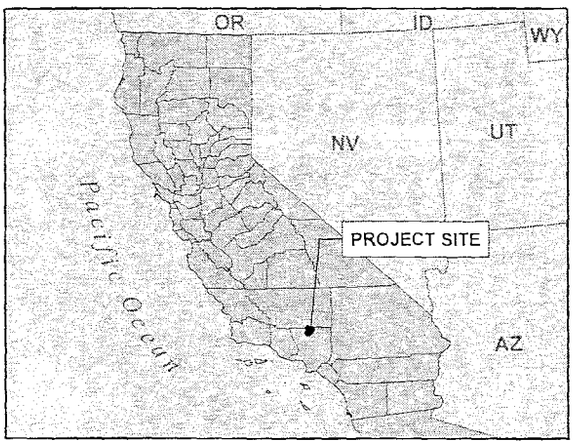




SILVERADO power

SILVERADO POWER WEST
LOS ANGELES COUNTY



LEGEND

PROJECT 1 - NORTH LANCASTER RANCH

PROJECT 2 - WESTERN ANTELOPE BLUE SKY RANCH

PROJECT 3 - AMERICAN SOLAR GREENWORKS

PROJECT 4 - ANTELOPE SOLAR GREENWORKS

PROJECT 5 - SILVER SUN GREENWORKS

PROJECT 6 - LANCASTER WAD

NOTE:
(a) State Plane, Zone V (NAD83), US Survey Feet.
(b) Source Data: ESRI, TTEC.

FIGURE 1
SILVERADO POWER WEST
LOS ANGELES COUNTY
PROJECTS

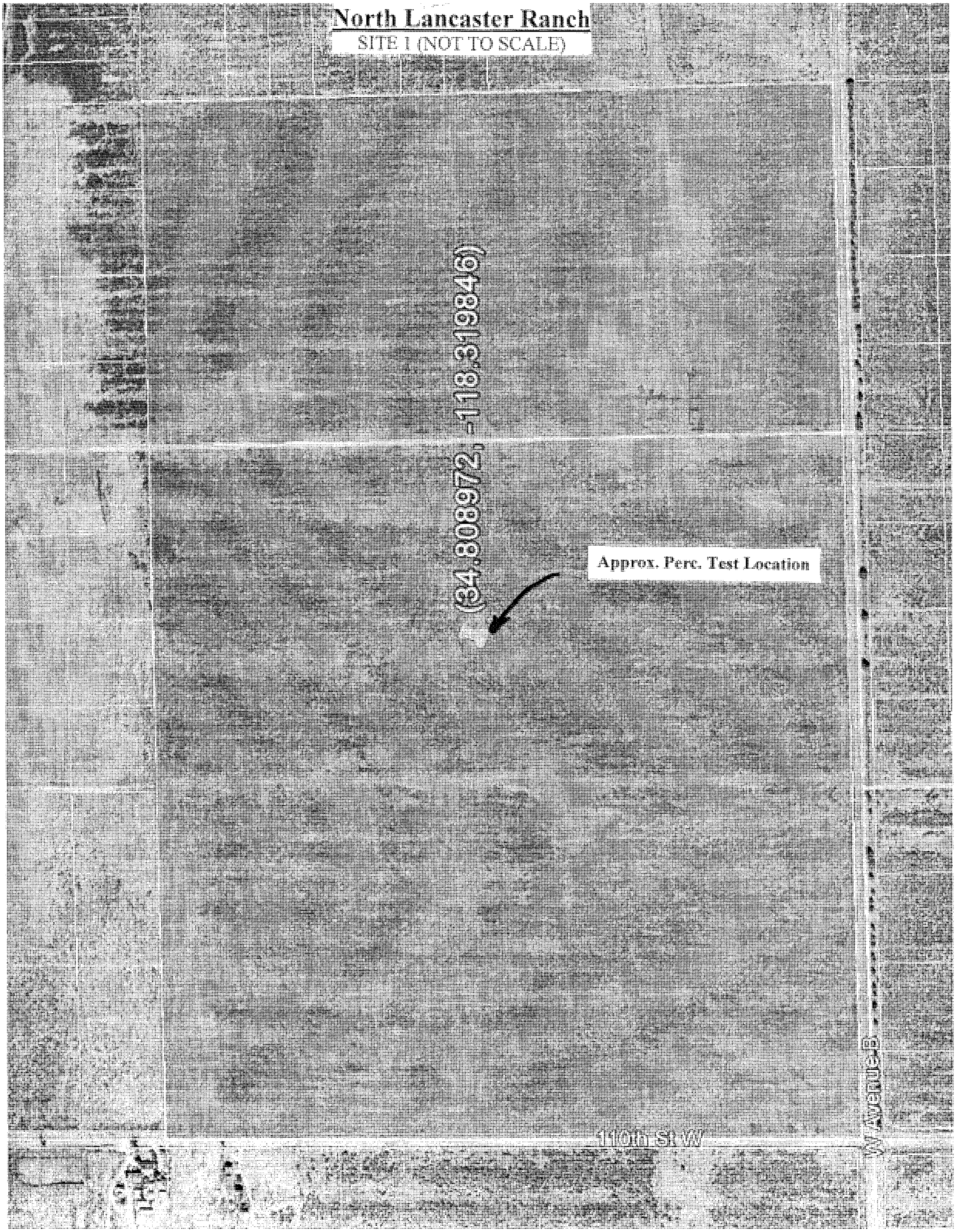
0 0.5 1 2

Miles

TETRA TECH EC, INC.

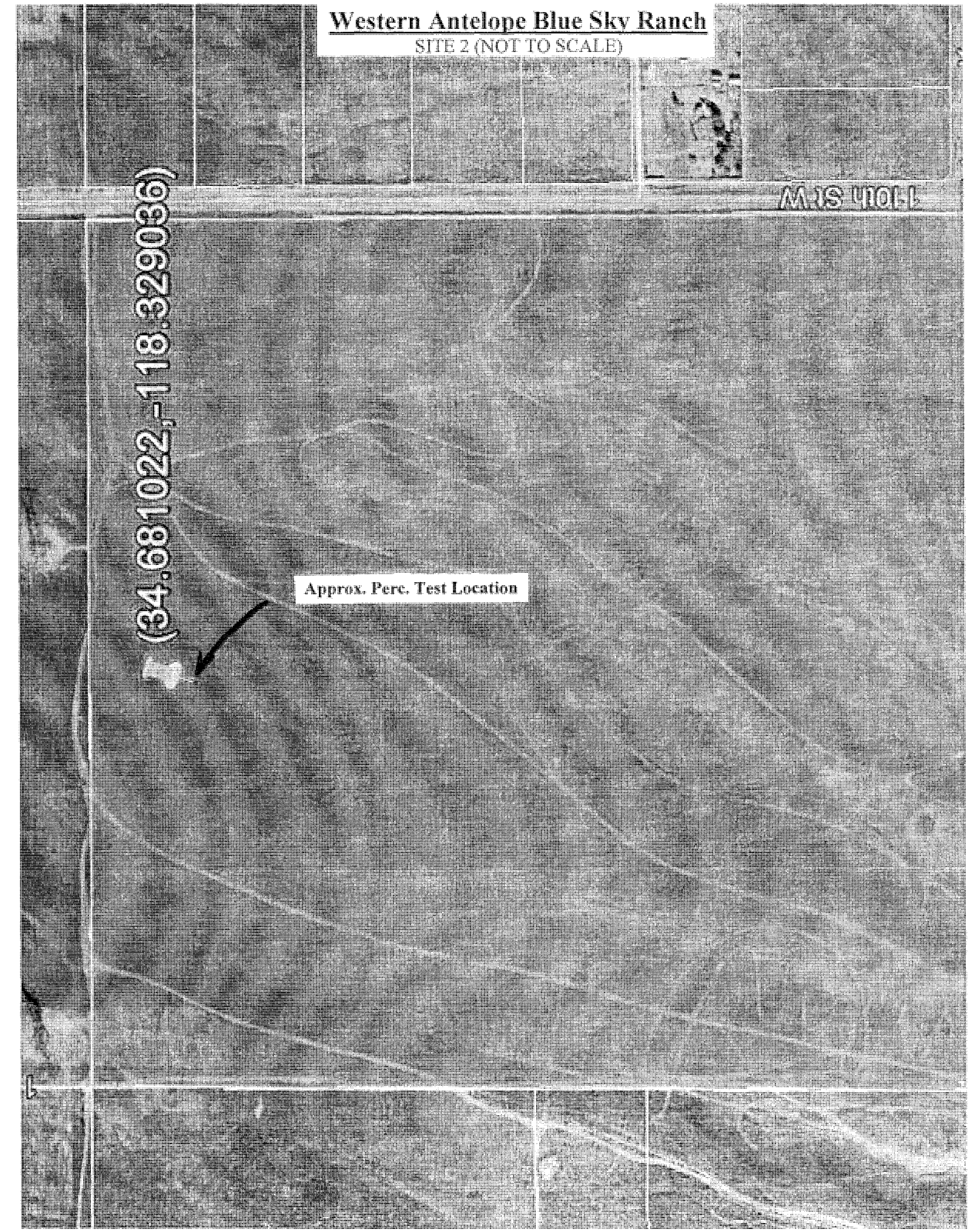
North Lancaster Ranch

SITE 1 (NOT TO SCALE)



Western Antelope Blue Sky Ranch

SITE 2 (NOT TO SCALE)

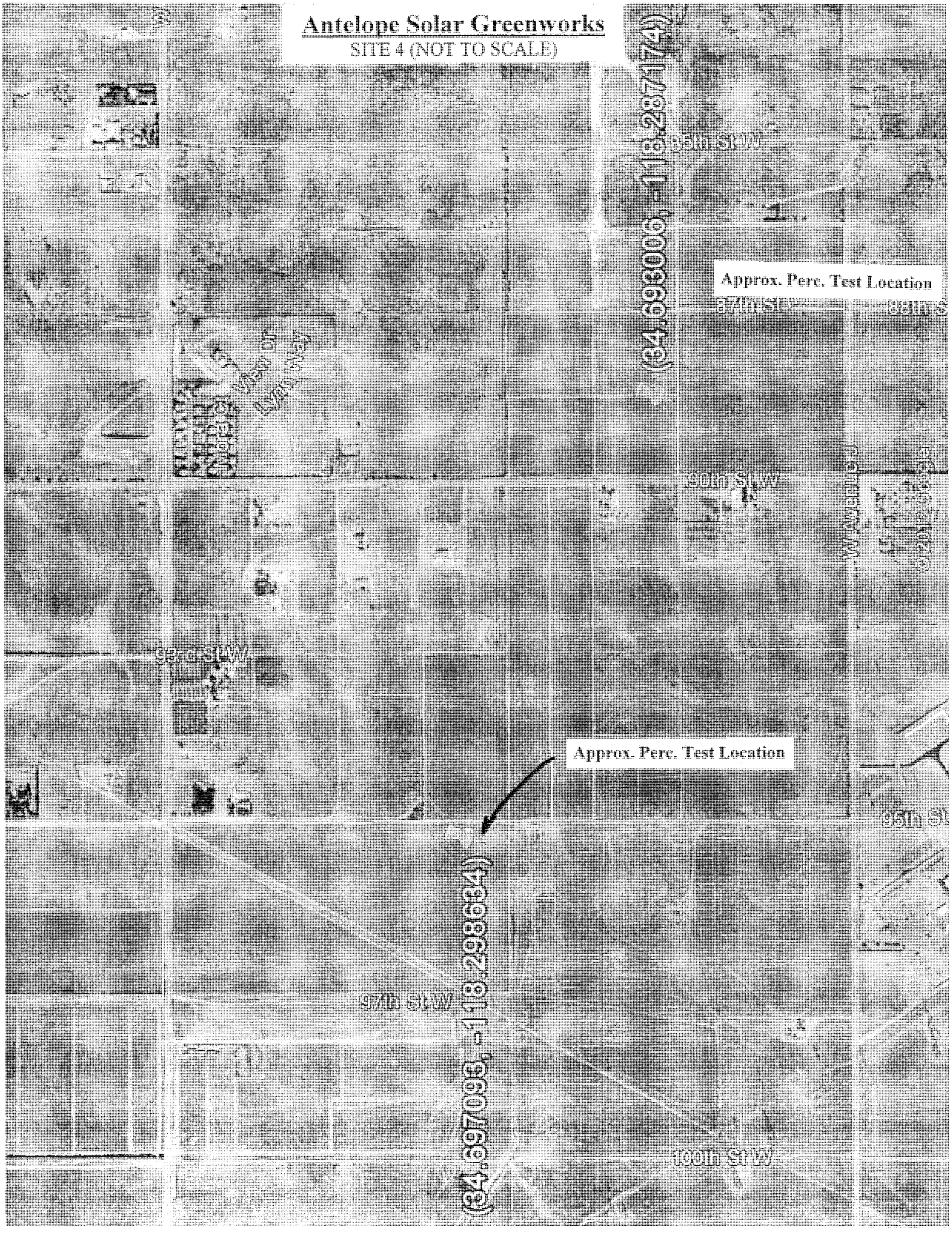


American Solar Greenworks

SITE 3 (NOT TO SCALE)

Antelope Solar Greenworks

SITE 4 (NOT TO SCALE)



Silver Sun Greenworks

SITE 5 (NOT TO SCALE)

Lancaster WAD

SITE 6 (NOT TO SCALE)

APPENDIX B

Soil Profile, Classifications and Absorption Rate

Site	Soil Description	USCS Classification	Absorption Rate (MPI)
Site 1 North Lancaster Ranch Ave. B & 110th St. West	Light brown fine sandy silt w/ medium to coarse sand (cemented)	ML	7
Site 2 Western Antelope Blue Sky Ranch Ave. K & 110th St. West	Dark Yellow brown silty fine to coarse sand	SM	3
Site 3 American Solar Greenworks Ave. G-8 & 70th St. West	Light brown silty fine to medium sand with coarse sand (slightly cemented)	SM	3
Site 4 Antelope Solar Greenworks Ave. J & 90th St. West (2 tests- A=NW portion, B=SE portion)	A-Moderate brown very silty fine to medium sand	SM	4
	B-Light brown silty fine to medium sand with coarse sand	SM	3
Site 5 Silver Sun Greenworks Ave. I & 120th St. West	Strong brown silty fine to coarse sand (slightly cemented)	SM	5
Site 6 Lancaster WAD Ave. D & 30th St. West	Light brown very silty fine to medium sand (cemented)	SM	3

APPENDIX C

Excavation Logs

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 1 North Lancaster Ranch	**Drill Type:** Case backhoe
Location: Ave. B &110th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
5'		ML	Light brown fine sandy silt w/ medium to coarse sand medium dense, dry (cemented)					
			(slightly cemented)					
10'		SM	Grey brown very silty fine sand w/ medium sand medium dense, moist (slightly cemented)					
		SM	Medium brown silty fine to medium medium dense, moist (slightly cemented)					
15'			Excavation terminated @ 10' bgs No free groundwater encountered No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 2 Western Antelope Blue Sky Ranch	**Drill Type:** Case backhoe
Location: K-8 & 110th St West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Dark yellow silty fine to medium sand w/ occasional coarse sand, medium dense, dry (slightly cemented)					
5'		SM	Reddish brown silty fine to coarse sand & clay binder medium dense, slightly moist					
		SM	Yellow brown silty fine to coarse sand w/ occasional #4 gravel medium dense moist (cemented)					
10'		SM	Yellow brown silty fine to coarse w/ occasional #4 gravel medium dense moist					
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 3 American Solar Greenworks	**Drill Type:** Case backhoe
Location: 70th st west & Ave G-8	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Light brown silty fine to medium sand medium dense, dry (slightly cemented)					
		SM	Moderate brown silty fine to coarse sand loose, moist					
5'								
		SM	Moderate brown silty fine to medium sand w/ coarse sand moist medium dense, moist (slightly cemented)					
		ML	Yellow brown silty fine to medium sand medium dense, moist					
10'								
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1 (A)

Client: Silverado Power	**Project No:** 12-59
Project: Site 4 Antelope Solar Greenworks	**Drill Type:** Case backhoe
Location: 90th West & Ave J	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
5'		SM	Moderate brown very silty fine to medium sand w/ coarse sand medium dense, dry (cemented dry)					
10'		SM	Yellow brown silty fine to medium sand w/ coarse sand loose, dry (slightly cemented)					
		SM/ML	Light brown very silty fine to medium sand w/ occasional coarse sand medium dense, moist (cemented)					
15'		SM/ML	Light brown very silty fine to medium sand w/ occasional coarse sand medium dense, moist (cemented) Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E2 (B)

Client: Silverado Power	**Project No:** 12-59
Project: Site 4 Antelope Solar Greenworks	**Drill Type:** Case backhoe
Location: 90th West & Ave J	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		ML	Light brown silty fine to medium sand medium dense, dry (slightly cemneted)					
5'		SM	Moderate brown silty fine to medium sand medium dense, moist (slightly cemented)					
		SM	Orange brown silty fine to medium sand w/ occasional #4-1/2 gravel loose, moist					
10'		SP	Yellowish brown slightly silty fine to medium sand w/ coarse sand medium dense, slightly moist					
			Excavation Terminated @ 10' bgs No free groundwater encountered No caving					
15'								
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 5 Silver Sun Greenworks	**Drill Type:** Case backhoe
Location: Ave I & 120th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Medium brown silty fine to w/coarse sand					
			medium dense, dry (slightly cemneted)					
		SM	Dark brown silty fine to coarse sand w/ clay binder					
5'			medium dense (slightly cemented)					
		SM	Dark yellowish brown slightly silty fine to coarse sand w/ #4 gravel					
			loose, moist					
10'		SM	Dark brown slightly silty fine to coarse sand w/ #4 gravel & occasional 1"- 3" gravel					
			loose, moist					
15'			Excavation Terminated @ 10' bgs					
			No free groundwater encountered					
20'			No caving					
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

Excavation Log: E1

Client: Silverado Power	**Project No:** 12-59
Project: Site 6 Lancaster WAD	**Drill Type:** Case backhoe
Location: Ave D & 30th St. West	**Total Depth:** 10' bgs
Drive Weight:	**Logged By:** DBM
Hole Diameter: **Drop:**	**Date:** July 31, 2013

Depth	Sample	USCS	SOIL DESCRIPTIONS	Graphic Symbol	Blow Counts	Dry Density	Moisture %	Test Type
		SM	Light grey very silty brown fine to medium sand					
			medium dense (cemented)					
		ML	Light grey brown fine sandy silt					
			firm, slightly moist (cemented)					
5'		ML	Pale brown fine sandy silt					
			dense, dry					
		SM	Light brown silty fine sand w/ occasional medium sand					
			loose, dry					
10'		SM	Light brown silty sand w/ occasional medium sand					
			loose, dry					
			Excavation Terminated @ 10' bgs					
			No free groundwater encountered					
15'			No caving					
20'								
25'								
30'								

Notes:

BRUIN GEOTECHNICAL SERVICES INC.

APPENDIX B-8

NOISE IMPACT ASSESSMENTS

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APPENDIX B-8.1

PROJECT 1 NORTH LANCASTER RANCH
NOISE IMPACT ASSESSMENTS

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

NORTH LANCASTER RANCH
(CUP GROUP 6)
NOISE AND VIBRATION TECHNICAL REPORT

Prepared for:

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Prepared by:

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17885 Von Karman Avenue, Suite 500
Irvine, CA 92614-5227

September 2013

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1.0 EXECUTIVE SUMMARY

Silverado Power, LLC proposes to develop, own, and operate a photovoltaic (PV) solar energy project in Los Angeles County, California. A noise and vibration technical analysis was conducted to assess the potential impacts from construction and operation of the North Lancaster Ranch (Project) Solar Generating Facility (SGF).

Temporary construction noise may impact residences close to the Project. Pile driving with an impact pile driver is required to install the PV module mounting system and will produce the most noise during construction. Noise levels originating at the Project centroid during pile driving activities are predicted to be 62 A-weighted decibels (dBA) at the closest residence. Temporary noise levels originating from the Project site centroid of other construction equipment are predicted to range from 50 dBA L_{eq} to 54 dBA L_{eq} at the closest residence. Elevated noise levels from construction activities will be mitigated in several ways, such as restricting construction activities to weekday daytime hours (7:00 a.m. to 7:00 p.m.) and using electric construction equipment instead of equipment outfitted with a combustion engine when possible.

Construction vibration from the Project should not be a concern for the structures near the Project and people living nearby. Project-related pile driving has the potential to produce the highest vibration levels. The predicted maximum vibration level of 0.04 peak particle velocity (PPV) at the nearest residence, located 490 feet from the nearest pile driving construction activity, represents the worst case scenario. The average pile driving PPV, calculated using the distance from the Project centroid to the nearest residence, is 0.01 PPV. Vibration levels of 0.01 PPV would be barely perceptible to humans, would not cause any damage to nearby structures, and would be of minimal concern.

Operational sound levels associated with the Project would be mostly related to the on-site substation transformers. The Project site layout has been designed to reduce the potential for even the minimal impacts to nearby residences. With an assumed background sound level of 35 dBA, the Project's operational noise levels cannot exceed 40 dBA, or 5 dBA above the assumed background ambient to meet local laws, ordinances, regulations, and standards (LORS). As a result, the Project substation transformer will be designed to meet a The National Electrical Manufacturers Association (NEMA) round rating of 74 dBA. This will ensure that received sound levels at the nearest residence do not exceed 40 dBA during Project operation.

2.0 INTRODUCTION

Silverado Power, LLC is proposing the construction and operation of the Project SGF. This technical report presents information on the noise and vibration levels generated by construction and operation of the Project. The following approach was used to complete this Noise Impact Assessment:

- Determine the applicable LORs;
- Describe the existing acoustic environment in the Project vicinity;
- Identify existing land uses that are sensitive to noise, including residential areas, hospitals or healthcare facilities, libraries, parks, and schools;

- Evaluate the anticipated Project noise impacts during construction and operation;
- Recommend measures to mitigate the potential Project noise impacts, as needed; and
- Provide conclusions of the noise impact analysis.

3.0 PROJECT DESCRIPTION

The proposed Project is located on 240 acres of primarily unproductive agricultural land in the unincorporated northern section of Los Angeles County. The site is located approximately 12 miles northwest of the City of Lancaster. It is bordered to the south by West Avenue B and between 110th Street West and 100th Street West. The Project would have a generating capacity of up to 20 megawatts (MW) (Figures 1 and 2). The Project will utilize PV modules to convert the sun's radiance directly into electrical energy without the use of heat transfer fluid or cooling water. In addition to the PV modules, the Project will include the following associated facilities:

- Module mounting system;
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects);
- Electrical inverters and transformers;
- Electrical collection system, including switchgear;
- Data Monitoring Equipment; and
- Access roads and chain link perimeter security fencing.

The Project will not require the construction of an on-site operations and maintenance (O&M) facility. The Project transmission lines will connect to the existing Southern California Edison 66 kilovolt (kV) transmission line via two underground generation tie (gen-tie) originating at the collection systems within the Project site.

The facility will operate year-round, producing renewable electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and begin commercial operation by the third quarter of 2014. The Project construction activities are anticipated to take approximately 5 months to complete. Project design information is currently only at a schematic level. The following preliminary design information has been provided by the Project engineers:

- Two underground gen-tie line to existing 66 kV line.
- 2 main GSU (generator stepup) transformer, approximately 25 megavolt ampere (MVA), NEMA TR-1 sound levels. 29 inverter-level transformers, 1 MVA each, NEMA TR-1 sound levels.
- Inverter rating 500 kilovolt-ampere, 57 total with NEMA 3R enclosures.

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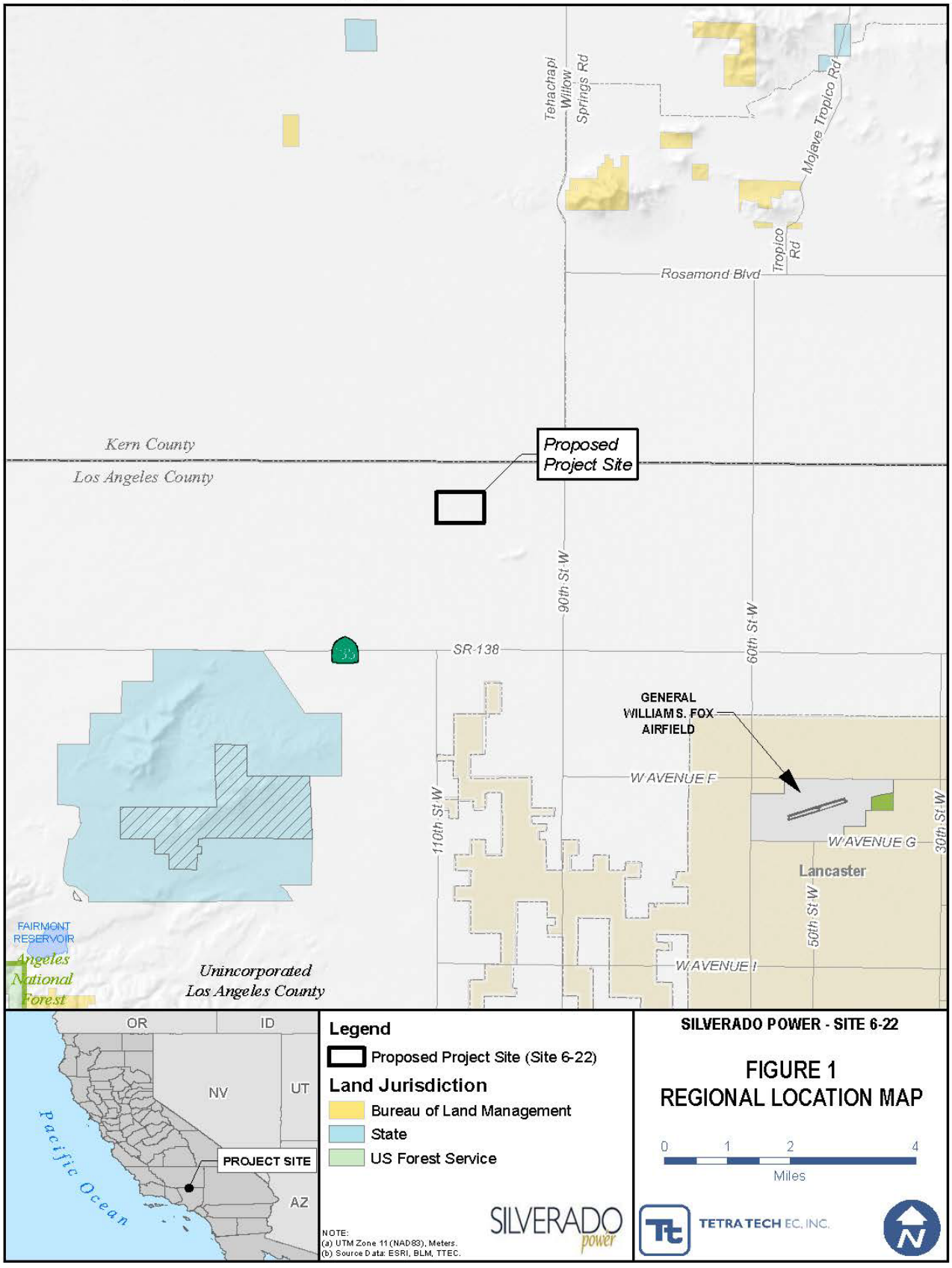

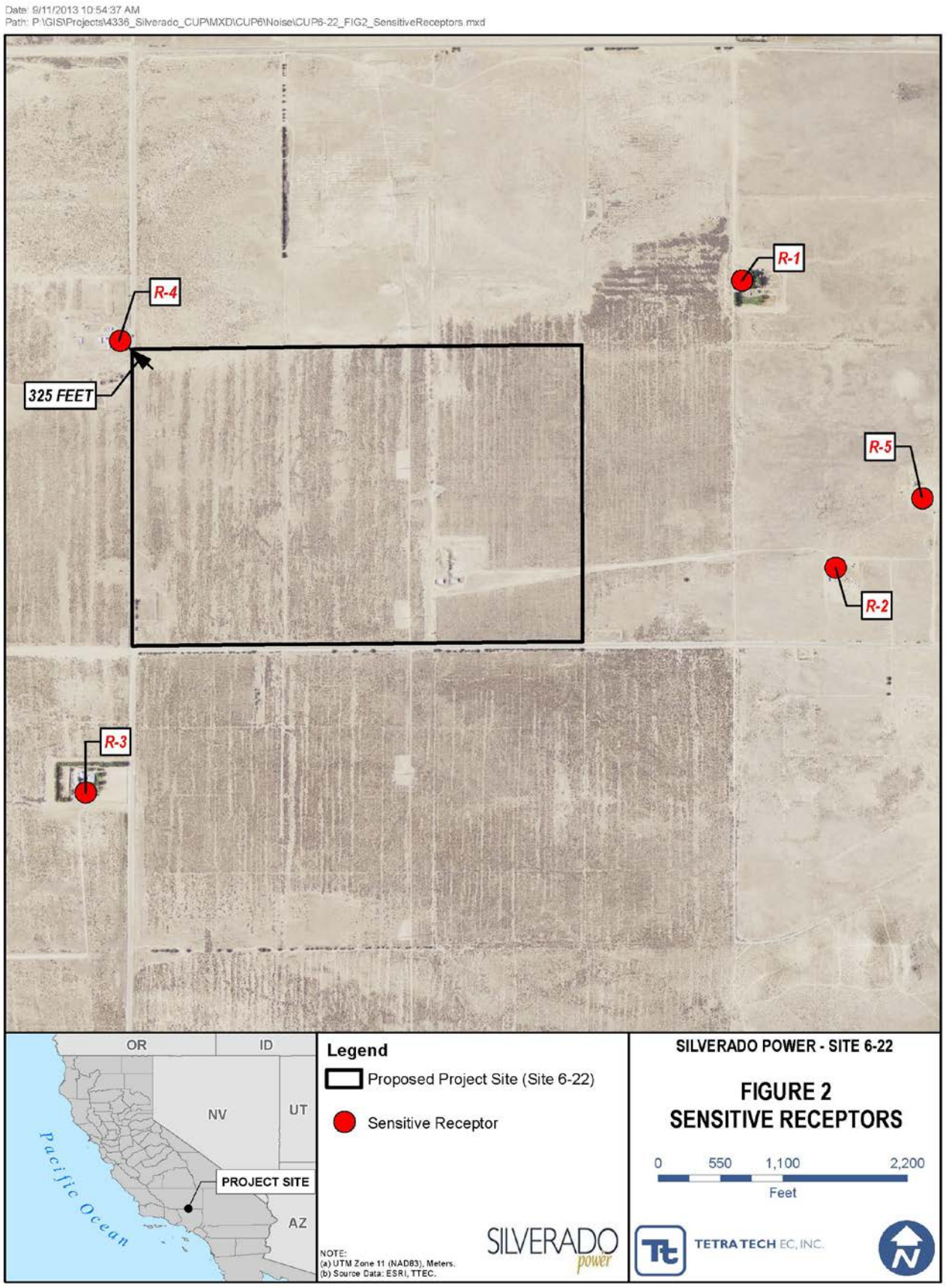
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R-1
R-4
325 FEET
R-5
R-2
R-3
OR
ID
NV
UT
AZ
Pacific Ocean
PROJECT SITE
Legend
Proposed Project Site (Site 6-22)
Sensitive Receptor
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
SILVERADO power
SILVERADO POWER - SITE 6-22
FIGURE 2
SENSITIVE RECEPTORS
0 550 1,100 2,200
Feet
TETRA TECH EC, INC.

4.0 ACOUSTIC AND VIBRATION TERMINOLOGY

4.1.1 Acoustic Terminology

Sound levels are presented on a logarithmic scale to account for the large pressure response range of the human ear, and are expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing defined as 20 micropascals. Typically, a noise analysis examines 11 octave (or 33 1/3 octave) bands ranging from 16 Hertz (Hz; low) to 16,000 Hz (high), which encompasses the human audible frequency range. Since the human ear does not perceive every frequency with equal loudness, spectrally varying sounds are often adjusted with a weighting filter. The A-weighted filter is applied to compensate for the frequency response of the human auditory system, known as dBA. Unweighted sound levels are referred to as linear. Linear decibels are used to determine a sound's tonality and to engineer solutions to reduce or control noise as techniques are different for low and high frequency noise. Sound levels that are linear are presented as dBL.

An inherent property of the logarithmic decibel scale is that the sound pressure levels of two separate sources are not directly additive. For example, if a sound of 50 dBA is added to another sound of 50 dBA, the result is a 3-decibel increase (or 53 dBA), not an arithmetic doubling to 100 dBA. With respect to how the human ear perceives changes in sound pressure level relative to changes in "loudness", scientific research demonstrates the following general relationships between sound level and human perception for two sound levels with the same or very similar frequency characteristics:

- **1 dBA** is the practical limit of accuracy for sound measurement systems and corresponds to an approximate 10 percent variation in the sound pressure level. A 1 dBA increase or decrease is a non-perceptible change in sound.
- **3 dBA** increase or decrease is a doubling (or halving) of acoustic pressure level and it corresponds to the threshold of change in loudness perceptible in a laboratory environment. In practice, the average person is not able to distinguish a 3 dBA difference in environmental sound outdoors.
- **5 dBA** increase or decrease is described as a perceptible change in sound level and is a discernible change in an outdoor environment.
- **10 dBA** increase or decrease is a tenfold increase or decrease in acoustic pressure level but is perceived as a doubling or halving in loudness (i.e., the average person will judge a 10 dBA change in sound level to be twice or half as loud).

Estimations of common noise sources and outdoor acoustic environments, and the comparison of relative loudness are presented in Table 1.

Table 1 Sound Pressure Levels (L_P) and Relative Loudness of Common Noise Sources and Soundscapes

Noise Source or Activity	Sound Level (dBA)	Subjective Impression	Relative Loudness (perception of different sound levels)
Jet aircraft takeoff from carrier (50 ft)	140	Threshold of pain	64 times as loud
50-hp siren (100 ft)	130		32 times as loud
Loud rock concert near stage Jet takeoff (200 ft)	120	Uncomfortably loud	16 times as loud
Float plane takeoff (100 ft)	110		8 times as loud
Jet takeoff (2,000 ft)	100	Very loud	4 times as loud
Heavy truck or motorcycle (25 ft)	90		2 times as loud
Garbage disposal Food blender (2 ft) Pneumatic drill (50 ft)	80	Loud	Reference loudness
Vacuum cleaner (10 ft)	70		1/2 as loud
Passenger car at 65 mph (25 ft)	65	Moderate	
Large store air-conditioning unit (20 ft)	60		1/4 as loud
Light auto traffic (100 ft)	50	Quiet	1/8 as loud
Quiet rural residential area with no activity	45		
Bedroom or quiet living room Bird calls	40	Faint	1/16 as loud
Typical wilderness area	35		
Quiet library, soft whisper (15 ft)	30	Very quiet	1/32 as loud
Wilderness with no wind or animal activity	25	Extremely quiet	
High-quality recording studio	20		1/64 as loud
Acoustic test chamber	10	Just audible	
	0	Threshold of hearing	

Sound levels can be measured, modeled and presented in various formats. The sound metrics that were employed in this analysis have the following definitions:

L_{eq}: Conventionally expressed in dBA, the L_{eq} is the energy-averaged, A-weighted sound level over a specified time period. It is defined as the steady, continuous sound level, which has the same acoustic energy as the actual varying sound levels over the specified period.

L_{max}: The maximum A-weighted sound level as determined during a specified measurement period. It can also be described as the maximum instantaneous sound pressure level generated by a piece of equipment or during a construction activity.

L_{dn}: The L_{dn} measures the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. The L_{dn} is calculated by averaging the 24-hour hourly L_{eq} levels at a given location after adding 10 dB to the nighttime period (10:00 p.m. to 7:00 a.m.) to account for the increased sensitivity of people to noises that occur at night.

CNEL: Community Noise Equivalent Level (CNEL) is another average A-weighted L_{eq} sound level measured over a 24-hour period; however, this noise scale is adjusted to account for some individuals' increased sensitivity to noise levels during the evening and nighttime hours. A CNEL

noise measurement is obtained after adding 5 dB to sound levels occurring during evening hours (7:00 p.m. to 10:00 p.m.) and 10 dB to sound levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.).

4.1.2 Vibration Terminology

According to the Federal Transit Authority Noise and Vibration Impact Assessment (FTA 2006), construction activities can be a source of ground-borne vibration. Activities such as pile driving and operation of heavy equipment may cause ground born vibration while constructing the Project. Vibration is an oscillatory motion which can be described in terms of the displacement, velocity or acceleration (FTA 2006). Two descriptors are frequently used when discussing quantification of vibration, the PPV and the root mean square (rms).

Peak particle velocity (PPV) – The maximum instantaneous positive or negative peak of the vibration signal (FTA 2006).

Root mean square (rms) – The square root of the average of the squared amplitude of the vibration signal, typically calculated over a one-second period (FTA 2006).

The PPV is often used to assess stress on structures and the rms is used to describe the human response to vibration. The California Department of Transportation (Caltrans) construction vibration guidance is used in this assessment. This guidance includes a human response equivalent based on the PPV instead of using rms.

5.0 REGULATORY SETTING

This section provides an overview of federal, state, and local regulations related to noise issues applicable to the Project.

5.1 Federal

Federal laws, regulation and guidance establish the national framework for noise regulations and include those from the Occupational Safety and Health Administration and the EPA.

5.1.1 Occupational Safety and Health Administration, Occupational Noise Exposure; Hearing Conservation Amendment (29 CFR 1910.95)

This standard establishes mandates to protect employees from excessive noise exposure and requires a Hearing Conservation Program when routine exposure to high noise levels are expected occur.

5.1.2 U.S. Environmental Protection Agency in “Information of Levels on Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.” (EPA 550/9-74-004)

Published in 1974, this document identifies safe levels of environmental noise exposure and is intended to “provide State and Local governments as well as the Federal Government and the private sector with an informational point of departure for the purpose of decision making.” While the EPA has no regulation governing environmental noise, the agency has conducted several

extensive studies to identify the effects of sound level on public health and welfare. For outdoor residential areas, the recommended EPA guideline is an L_{dn} of 55 dBA and an indoor L_{dn} limit of 45 dBA. These levels are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and healthcare areas. Noise-level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour L_{eq} values of 70 dBA (both outdoors and indoors). This publication remains the authoritative study based on a large sampling of community reaction to noise. The EPA sound level guidelines do not provide an absolute measure of noise impact, but rather a consensus on potential activity interference, human health and welfare effects, and annoyance. Since these protective levels were derived without concern for technical or economic feasibility, and contain a margin of safety to ensure their protective value, they should not be viewed as standards, criteria, regulations, or goals. Rather, they should be viewed as levels below which there is no reason to suspect that the general population will be at risk from any of the identified effects of noise. The EPA guideline limits are summarized in Table 2.

Table 2 Summary of EPA Cause and Effect Noise Levels

Location	Level	Effect
All public accessible areas with prolonged exposure	70 dBA $L_{eq(24)}$	Safety
Outdoor at residential structure and other noise sensitive receptors where a large amount of time is spent	55 dBA L_{dn}	Protection against annoyance and activity interference
Outdoor areas where limited amounts of time are spent, e.g., park areas, school yards, golf courses, etc.	55 dBA $L_{eq(24)}$	
Indoor residential	45 dBA L_{dn}	
Indoor non-residential	55 dBA $L_{eq(24)}$	

USEPA (U.S. Environmental Protection Agency). 1974

5.2 State

In 1987, the California Department of Health Services published guidelines for the noise element of local general plans. These guidelines include a noise level/land use compatibility chart that categorizes various outdoor L_{dn} ranges into up to four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), depending on land use. For many land uses, the chart shows L_{dn} ranges for two or more compatibility categories. The noise element guidelines chart identifies the normally acceptable range for low-density residential uses as less than 60 dBA, while the conditionally acceptable range is 60-70 dBA. The normally acceptable range for high-density residential uses is identified as L_{dn} values below 65 dBA, while the conditionally acceptable range is identified as 65-70 dBA. For educational and medical facilities, L_{dn} values below 60 dB are considered normally acceptable, while L_{dn} values of 60-70 dBA are considered conditionally acceptable. For office and commercial land uses, L_{dn} values below 67.5 dBA are considered normally acceptable, while L_{dn} values of 67.5-77.5 dBA are categorized as conditionally acceptable. These normally and conditionally acceptable L_{dn} ranges are intended to indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations. These guidelines are used by many agencies, environmental planners, and acoustical specialists as a starting point to evaluate the potential for noise impact on and by a project. The guidelines are also

employed to evaluate methods for achieving noise compatibility with respect to nearby existing uses. Table 3 summarizes these guidelines for the normally and conditionally acceptable L_{dn} exposures.

Table 3 California Department of Health Services Noise Guidelines

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)	
	Normally Acceptable	Conditionally Acceptable
Residential – Low Density	50 - 60	60 - 70
Residential – High Density	50 - 65	65 - 70
Transient Lodging – Motels, Hotels	50 - 65	65 – 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 60	60 - 65
Auditoriums, Concert Halls, Amphitheaters	NA	50 - 70
Sports Arenas, Outdoor Spectator Sports	NA	50 - 75
Playgrounds, Neighborhood Parks	50 – 67.5	NA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 70	NA
Office Buildings, Business Commercial and Professional	50 – 67.5	67.5 – 77.5
Industrial, Manufacturing, Utilities, Agriculture	50 - 70	70 - 80

The California Department of Housing and Community Development has adopted noise insulation performance standards for new hotels, motels, and dwellings other than detached single-family structures (24 California Code of Regulations [CCR] T25-28). These standards require that "interior CNEL with windows closed, attributable to exterior sources, shall not exceed an annual CNEL of 45 dB in any habitable room."

Occupational exposure to noise is regulated by the California Occupational Safety and Health Act in Title 8, Group 15, Article 105, Sections 5095–5100. The standard stipulates that protection against the effects of noise exposure will be provided when sound levels exceed 90 dBA over an 8-hour exposure period.

5.2.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and that such impacts be eliminated or mitigated to the extent feasible. The CEQA guidelines (AEP 2012) set forth characteristics that signal a potentially significant impact. Under CEQA the proposed Project would be considered to have significant noise and vibration impacts if it results in the following:

- **NZ-1** Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- **NZ-2** Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- **NZ-3** A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- **NZ-4** A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

- **NZ-5** For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.
- **NZ-6** For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

For the proposed Project, the following criteria were determined to be inapplicable or to result in no impact:

- Exposure of on-site workers to noise levels that exceed occupational safety standards (90 dBA as a time-weighted 8-hour average or peak noise levels above 115 dBA).
- Exposure of residents to airport or private airstrip-related noise levels above a CNEL of 65 dBA.

Occupational noise exposure is governed by federal and state regulations. The California Divisions of Occupational Safety and Health (Cal/OSHA) administers industrial safety regulations in California. Cal/OSHA regulations establish a time-weighted noise exposure limit of 90 dBA averaged over 8 hours (CCR, Title 8, Article 105). Noise source controls, administrative procedures, or worker hearing protection must be provided if worker noise exposure would exceed the 90 dBA limit. The construction contractor selected for this Project will be required to follow Cal/OSHA requirements for construction worker noise exposure. Consequently, worker noise exposure issues are not discussed further under any of the alternatives.

There are three aviation uses in the general Project vicinity. Little Buttes Airfield is located approximately 2 miles southeast of the proposed Project site, Skyotee Ranch Airport and General Fox Airfield is located 6.5 miles southeast of the Project site. Little Buttes Airfield and Skyotee Ranch Airport have very low use levels; General Fox Airfield has moderate use levels and is predominately used for general aviation with some cargo operations. Sound contours developed for General Fox Airfield indicate that the Project is over 6 miles from the 55 dBA CNEL contour. No airfield noise contours have been developed for Little Buttes Airfield or Skyotee Ranch Airport, but due to low operation levels and distance from the airports, sound levels are assumed to be below 55 dBA CNEL. The Project would not create residential land uses, and all Project features are outside the airfield properties. Consequently, airport-related noise issues are not discussed further.

5.3 Local

5.3.1 Los Angeles County 2011 Draft General Plan 2035

The Draft General Plan 2035 lists policies related to noise that include using land uses such as parks to buffer noise-sensitive uses from excessive noise impacts, promoting land use compatibility, and ensuring adequate mitigation.

5.3.2 Los Angeles County Code

The County Noise Control Ordinance, Title 12 of the County Code, was established to reduce and restrict certain noise-producing activities. Activities may not generate noise levels above the specified limits either at the exterior or interior areas of neighboring land uses. The limits are derived from tabulated values that depend on the land use, with adjustments to create a series of noise standards. The exterior limits are presented in Table 4. Additional standards are provided in the event that the exterior limits are exceeded.

Table 4 Exterior Noise Standards, Los Angeles County Code

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level (dB)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 p.m. to 7:00 a.m. (night-time)	45
		7:00 a.m. to 10:00 p.m. (daytime)	50
III	Commercial properties	10:00 p.m. to 7:00 a.m. (night-time)	55
		7:00 a.m. to 10:00 p.m. (daytime)	60
IV	Industrial properties	Anytime	70

Source: Section 12.08.390 of the Los Angeles County Code (a portion of the Noise Control Ordinance).

In addition, the County Noise Control Ordinance prohibits construction activities and noise during certain times in areas that would affect a residential or commercial property. The prohibited times are between the weekday hours of 7:00 p.m. and 7:00 a.m. and any time on Sundays or holidays. The Ordinance identifies maximum noise levels for mobile and stationary equipment as shown in Table 5. All internal combustion-engine-powered equipment "shall be equipped with suitable exhaust and air intake silencers in proper working order." A 5 dBA penalty is applied to noises that are considered impulsive.

Table 5 Maximum Noise Levels for Construction Noise from Stationary Equipment (10 days or more)

	Single-family Residential	Multi-family Residential	Semi-residential/ Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

Source: Section 12.08.440 of the Los Angeles County Code (a portion of the Noise Control Ordinance).

5.3.3 Antelope Valley Areawide General Plan

The 1986 Antelope Valley Areawide Plan designates areas within the 60-dBA noise contour from transportation sources such as airports, railroads, and major highways as Noise Management Areas (NMAs). Plan policy for these areas calls for the reduction of noise impacts on adjacent land uses through both hazard avoidance actions, where practical, and hazard mitigation practices, in other cases. The Antelope Valley Areawide General Plan is currently in the process of being updated; however, no updated guidelines or standards related to noise are currently available. The Project is not located close enough to an airport to be within an aviation related 60 dBA L_{dn} noise contour. No railroads are located within 0.5 mile of the Project, and

therefore sound from railroad activities is anticipated to be less than 60 dBA. The nearest roadways are West Avenue B and 107th street West, neither of which is designated as a major highway (i.e. U.S. Highway, State Route or Interstate). The nearest major highway is State Route 14, located approximately 8 miles east of the Project site. Peak hour traffic volumes on rural roads, such as those listed above, are unlikely to be heavy enough to generate traffic noise within the Project area of 60 dBA L_{eq} or greater. Therefore the Project site is not located within a NMA.

6.0 EXISTING CONDITIONS

The degree of audibility of a new or modified sound source is dependent in a large part upon the existing ambient sound level. A wide range of noise settings may occur within the Project study area, which consists of all areas that could be potentially affected by construction or operational noise resulting from the Project. The Project site encompasses previously disturbed, fallow agricultural land in northern Los Angeles County. The Project vicinity includes agricultural fields and scattered residences intermixed with non-native grasslands. The closest residences (receptors) are shown in Figure 2.

Existing ambient sound levels within the Project study area are expected to be relatively low, although sound levels may be sporadically elevated in localized areas due to roadway noise or periods of human activity. Background sound levels will vary both spatially and temporally depending on proximity to area sound sources, roadways and natural and/or weather related sounds. Principal contributors to the existing acoustic environment likely include motor vehicle traffic, mobile farming equipment, farming activities such as plowing and irrigation, all-terrain vehicles, local roadways, periodic aircraft flyovers, and natural sounds such as birds, insects, and leaf or vegetation rustle during elevated wind conditions. Open lands, predominantly or rural in nature, will have comparatively lower ambient sound levels than more developed areas. Diurnal effects result in sound levels that are typically quieter during the night than during the daytime, except during periods when evening and nighttime insect noise may dominate in warmer seasons.

7.0 NOISE AND VIBRATION IMPACT ANALYSIS

Sound generated by the Project will consist of: (1) short duration sounds resulting from construction activities and (2) sound during normal facility operations. Vibration from the Project would only result during construction. Construction activities would take place only during daytime hours. An evaluation was performed of expected noise and vibration levels the ability of the Project to comply with applicable noise requirements was assessed.

The region of interest for noise and vibration issues is typically localized. Ground-borne vibrations generally attenuate rapidly with increasing distance from the vibration source. The distances involved depend primarily on the intensity of the vibrations generated by the source, and partly on soil and geologic conditions. Detectable vibrations will travel the greatest distance through solid rock and the least distance through loose, unconsolidated soils or saturated soils. For vibration sources such as construction activity and vehicle traffic, the region of influence is typically less than 1,000 feet from the vibration source. Table 6 compares the distances of the closest existing residences to the SGF components.

Table 6 Comparison of Distances (feet) of the Closest Residence to SGF Component

Project Component	Distance to Closest Residence	Direction
Solar Farm	466 (R-4)	NW
Gen-Tie Transmission Line (underground)	200 (R-4)	NW
Substation	325 (R-4)	NW

7.1 Construction

7.1.1 Construction Noise

Construction noise, although temporary, can be a source of concern for sensitive receptors, such as nearby residences. Construction is anticipated to take place over the course of five months, starting in the fourth quarter of 2013 and finishing in the fourth quarter of 2014. Construction of the Project will require the use of heavy equipment that may be periodically audible at offsite locations. Received sound levels will fluctuate, depending on the construction activity, equipment type, and distance between noise source and receiver. Sound from construction equipment will vary dependent on the construction phase and the number and class of equipment at a location at any given time. For this project, the following construction phases are assumed:

Phase 1: Demolition

Phase 2: Mass Site Grading;

Phase 3: Fine Site Grading;

Phase 4: Fencing/Infrastructure Construction; and

Phase 5: PV Installation

The variation in power and usage imposes additional complexity in characterizing construction noise levels. Expected equipment types for each phase of construction are presented in Table 7. Each construction phase identified will require different types of construction equipment. The estimated composite site noise level is based on the assumption that all equipment would operate at a given usage load factor, over a standard eight-hour workday, to calculate the composite average daytime L_{eq}. The load factor accounts for the fraction of time that the equipment is in use over the specified time period. The composite noise level from several pieces of equipment operating during the same phase is obtained from decibel addition of the L_{eq} of each individual unit.

Pile driving is the method planned for installation of the foundations for the solar PV modules. Pile driving can generate high noise levels. Noise is generated from both the ram striking the pile as well as the operating air or diesel exhaust as it is exhausted from the cylinder (this is not present with hydraulic impact hammers). For the purposes of the construction acoustic analysis, it was assumed the Project would use a GAYK 2L41C ram pile driver, which produces a sound pressure level of 111 dBA at 20 feet assuming an impact rate of 1400 blows per minute. Depending on need, the Project may choose to use a different pile driver that produces equal or

lesser sound pressure. Actual pile driving averages 30-45 seconds per pile at a 6-foot embedment depth and the engine would typically run close to 3,000 rpm for use with this ram. Pile drivers are classified as impact devices in the Los Angeles County Noise Ordinance; therefore, the applicable standard is 55 dBA. Assuming a load or usage factor of 20% (FHWA 2006), it is expected that sound from pile driving would attenuate to 76 dBA at the nearest residence (R-4 is 490 feet from PV installation) and would attenuate to below 60 dBA within 1 linear mile of this construction activity, depending on meteorological and topographical effects. The average noise level from pile driving is predicted to be 62 dBA similar to the level resulting at the Project centroid located 2507 feet from the nearest residence (R-4). If pile driving is expected to last more than 10 days, a variance to the noise ordinance in the county of Los Angeles would be required.

Construction sound will attenuate with increased distance from the sound sources. Other factors, such as vegetation, terrain and obstacles, such as buildings, will act to limit the impact of construction noise levels, but were not considered in the evaluation. Trees free of foliage, such as deciduous trees in the late fall to early spring, provide little screening. According to the Federal Highway Administration “Vegetation must be a minimum of 100 feet thick, a minimum of 20 feet high, and sufficiently dense so that it cannot be seen through in order to provide a 5-dBA noise reduction. Anything less than that thickness will not result in any significant noise reduction” (FHWA 2012). Actual received sound levels will fluctuate, depending on the construction activity, equipment type, and separation distances between source and receiver.

Construction noise is temporary and would only occur during daytime hours. Sound levels from construction are expected to be comparable to sound produced by farm machinery, such as equipment used in nearby agricultural fields. Worst case construction noise levels listed in Table 7 for the nearest residence would last no more than a few weeks, as construction activities progress across the Project site. Therefore, no one residence will be exposed to significant noise levels for any extended period of time. Traffic noise generated during construction on and offsite will also temporarily add to overall sound levels. As a general construction practice, functional mufflers will be maintained on all equipment to maintain noise levels as low as reasonably achievable. The Project will make reasonable efforts to minimize noise resulting from construction activities.

7.1.2 Construction Vibration

Vibration associated with construction of the Project has the potential to be an annoyance to nearby residences. Structural damage to nearby residences from construction activities is unlikely and not anticipated. Vibratory motion is typically described by identifying the PPV (Caltrans 2004) for damage to buildings. To assess the human response to vibration, the rms amplitude is typically used (Caltrans 2004).

The Caltrans Construction Induced Vibration Guidance Manual identifies two impact criteria for buildings and humans. Table 8 describes impact criteria for buildings and Table 9 describes impact criteria for humans. Although the rms is typically used to assess human response, Caltrans has provided threshold guidance for human response relative to PPV to maintain a consistent metric for both human response and structural impacts to buildings.

Table 7 Summary of Solar Farm Construction Noise by Phase at 50 feet and Nearest Residence (R-4)

Phase No.	Construction Phase	Construction Equipment	Load Factor %	Maximum L_{max} Equipment Noise Level at 50 ft (15 m) dBA	Composite L_{eq} Noise Level at 240 ft (73 m) Average Daytime dBA	Composite Noise Level at Project Site Centroid 2507 ft (764 m) Average Daytime dBA
1	Demolition	(1) Excavators (168 hp) (2) Rubber Tired Dozers (357 hp) (1) Water Truck (189 hp)	57 59 50	85 85 80	74	54
2	Site Preparation/ Mass Grading	(2) Graders (174 hp) (1) Rubber Tired Dozer (357 hp) (1) Water Truck (189 hp)	57 59 50	85 85 80	74	54
3	Fine Grading - Road Construction	(1) Other Equipment (190 hp) (1) Tractor/Loader/Backhoe (108 hp)	62 55	80 85	70	50
4	Trenching / Infrastructure Construction	(1) Tractor/Loader/Backhoe (108 hp) (1) Trencher (63 hp)	55 75	85 83	72	51
5	Building Construction / PV Installation	(1) Bore/Drill Rig (1) Crane (399 hp) (1) Forklift (145 hp) (1) Tractor/Loader/Backhoe (108 hp)	20 30 74 55	85 85 81 85	73	52

Sub Phase	Construction Phase	Construction Equipment	Load Factor %	Maximum L_{max} Spec. Sound Pressure Level at 20 feet	Composite L_{eq} Noise Level at 490 ft (149 m) Average Daytime dBA	Composite Noise Level at Acoustic Centroid 2507 ft (764 m) Average Daytime dBA
4a	PV Installation	GAYK 2L41C ram pile driver (impact device)	20*	111	82	62

Data compiled and methodologies developed in part from:

Federal Highway Administration, "Construction Noise Handbook", Report FHWA-HEP-06-015, 2006.

Communication with equipment manufacturers of comparable equipment.

*Usage factor is based on FHWA assumption of 20%.

Table 8 Caltrans Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans, June 2004

Table 9 Caltrans Guideline Vibration Annoyance Potential

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
Source: Caltrans, June 2004

Installation of the PV solar module foundations requires pile driving and has the potential for vibration impacts to structures and humans. The Project is planning to use a pneumatic pile driver which is a type of impact pile driver. Because pile drivers are an impact device, they are considered continuous/frequent sources of vibration. Other construction activities are assumed to be less intensive than pile driving and therefore would have lower PPV than pile driving. Therefore, vibration levels from pile driving are considered worst case for solar facility construction. Caltrans vibration guidance provides the following equation to calculate PPV at sensitive receptors, such as residences:

$$PPV_{Impact\ Pile\ Driver} = PPV_{Ref}\,(25/D)^{n} \times (E_{equip}/E_{Ref})\ (in/sec)$$

Where:

PPV_{Ref} = 0.65 in/sec for a reference pile driver at 25 ft.
D = distance from pile driver to the receiver in ft.
n = 1.1 is a value related to the vibration attenuation rate through ground
E_{Ref} = 36,000 feet-pound (ft-lb) (rated energy of reference pile driver)
E_{equip} = rated energy of impact pile driver in ft-lbs

Using the referenced formula and an assumed 80,000 ft-lb rated energy for the impact pile driver, the calculated PPV at R-1 (1,519 feet), the Project site centroid (2,797 feet), and at the R-1 when construction is occurring on the Project site furthest away from the residence are listed in Table 10.

Table 10 Pile Driving Vibration Analysis

Pile Driving Location compared to nearest residence	Estimated Pile Driving PPV
Project PV Installation minimum distance to R-4 (490 feet)	0.04
Project site centroid distance to residence (2,507 feet)	0.01
Project site boundary maximum distance to R-1 (4,870 feet)	0.003

The worst case pile driving has been calculated as 0.04 PPV when pile driving is at the minimum distance from the nearest residence. The vibration level at the Project site centroid could be considered the Project's "average" vibration level from pile driving. At the furthest distance from the Project site relative to the residence closest to the Project site, vibration from pile driving is predicted to be 0.003 PPV. According to Caltrans guidance a PPV of 0.01 would not damage the nearest residential structure, and would be barely perceptible to humans. Like noise from pile driving, vibration from pile driving will only last for a few weeks at most.

7.2 Operation

The Project would generate power using PV modules mounted in rows of parallel racks. The SGF is anticipated to be unmanned during normal operation. Systems monitoring will be completed remotely and onsite staff will be limited to repair or cleaning of the PV modules. Maintenance staff will visit periodically to clean the PV modules, clearing vegetation, and other general maintenance activities.

Sound sources considered in the Project operational acoustic analysis include the inverters and transformers associated with the PV modules, the proposed substation, and the transmission line. The principal sources of noise are the cooling-ventilation fans, the electrical components of the inverters and the step-up transformers at the on-site substations. Transmission lines for the Project would be underground and therefore sound from the transmission lines would not be perceptible. The interconnections associated with the Project will be lower and therefore are not expected to be a significant generator of corona noise.

Each PV module 1 MW block will have two inverters and a ventilation fan housed inside pre-fabricated enclosure and one transformer mounted on a concrete pad. Each inverter generates a noise level of about 75 dBA at a distance of 10 feet and it is expected that the enclosure would provide 15 to 20 dBA of noise reduction, reducing the inverter noise to approximately 58-63 dBA at a distance of 10 feet from the enclosure. The transformers generate a noise level of about 58 dBA at a distance of six feet. The transformers and inverters would be centrally located within each 1 MW Block of solar modules. No solar arrays will be located within 50 feet of the property line and would be expected to generate low noise levels beyond the Project extents. PV station transformers and power inverters located within the facility are generally considered a low level source of noise, limited to daytime hours when the solar arrays are generating electricity.

Substations have switching, protection and control equipment and a transformer, which generate the sound generally described as a low humming. There are three main sound sources associated with a transformer: core noise, load noise and noise generated by the

operation of the cooling equipment. The core is the principal noise source and does not vary significantly with electrical load. The load noise is primarily caused by the load current in the transformer's conducting coils (or windings) and consequently the main frequency of this sound is twice the supply frequency: 100 Hz for 50 Hz transformers and 120 Hz for 60 Hz transformers. The cooling equipment (fans) may also be an important noise component, depending on fan design. During air forced cooling method, cooling fan noise is produced in addition to the core noise. The resulting audible sound is a combination of hum and the broadband fan noise. After sunset, when the plant no longer receives solar radiation, the inverters will not produce noise and the transformers will be energized but likely operating under low noise condition using natural draft cooling but not in operation (no fans) due to lower nighttime heat loads. Breaker noise is a sound event of very short duration, expected to occur only a few times throughout the year. Just as horsepower ratings designate the power capacity of an electric motor, a transformer's MVA rating indicates its maximum power output capacity. The transformers included in the PV modules are rated at 1-MVA whereas the transformers at the Project substation are rated at 25-MVA.

Transformers are designed and catalogued by MVA rating. The American National Standards Institute and the International Electrotechnical Commission have established methodologies for measurement of noise from transformers and other electrical devices. Measurements involve taking reference sound level measurements using microphones positioned 0.3 meter (1 foot) from a tautly drawn string that encircles the device at a height above grade set at one-half the overall height of the device. The transformer noise output is the average of all measurements taken around the perimeter, incorporating contributions from both cooling fans and auxiliary equipment. NEMA published standards TR1-1993 (R2000) also establishes the maximum noise level allowed for transformers, voltage regulators, and shunt reactors based on the equipment's method of cooling its dielectric fluid (air-cooled vs. oil-cooled) and the electric power rating.

8.0 ANALYSIS RESULTS

Based on CEQA guidance, an incremental increase of 5 dBA over the existing L_{eq} is identified as the threshold when adverse noise impacts may begin to occur. Receptors that experience Project-related received sound levels below the 5 dBA cumulative increase threshold have a lower likelihood of disturbance. For example, if a background sound level of 35 dBA is assumed, the total cumulative sound level of 40 dBA, or 5 dBA above the estimated background sound level, would become the onset threshold of potential adverse noise impact per CEQA guidelines. For areas where potential exceedances of the 5 dBA threshold might be expected, a second level noise mitigation evaluation may be necessary towards evaluating potential exceedance condition(s). This second level noise mitigation evaluation involves the re-evaluation of transformer NEMA ratings used at the on-site substations and is described in further detail below.

Numerical modeling was used to estimate the maximum substation transformer sound source level, or NEMA sound rating, which would result in received sound levels remaining at or below 40 dBA at the nearest residence. Two substations with transformers are proposed as part of the Project with one located in the northwest portion of the Project area being closest to a residence (R-4) at 325 feet. The second substation would be located in the south east portion of the

project area and would be over 3,000 feet from the nearest residence. Therefore the substation and transformer located in the northwest portion of the Project area represent the worst case sound level from substation transformers. The estimated NEMA sound rating for this analysis is based on preliminary Project design information that best represents their expected acoustic performance, inclusive of a standardized engineering safety factor. The surface area [S] of the transformers was estimated using the following empirical relationship based on rated capacity [MVA]:

$$10\log [S] = 14 + 2.5\log [MVA]$$

Assuming transformer dimensions of 11-ft length, 10-ft width, and 15-ft height, the above equation yields an estimated surface area of 630 ft^2 (or 58.5 m^2).the above equation yields an estimated surface area of 604.6 ft^2 (or 56.2 m^2). Using the surface area and MVA rating the maximum substation transformer NEMA sound rating was determined to be 74 dBA. This will ensure that the Project transformer complies with CEQA by not increasing the sound levels in the area and at the closest residences by more than 5 dBA over the assumed background ambient of 35 dBA. Currently, substation design is only at a schematic level, but any transformer installed will conform to all relevant NEMA standards. Actual equipment installed for the Project will be designed to have a similar sound power profile, or less, and NEMA ratings to those assumed for this analysis.

9.0 MITIGATION MEASURES

The following noise mitigation measures will be considered and incorporated into the Project contract specifications as necessary to minimize noise levels associated with Project construction to the extent practicable:

- Construction operations will not occur between 7:00 p.m. and 7:00 a.m. on weekdays or Saturday, or at any time on Sunday within 500 feet of an occupied residence;
- Construction site and access road speed limits will be established and enforced during the construction period;
- Electrically-powered equipment will be used instead of pneumatic or internal combustion powered equipment, where feasible;
- Material stockpiles and mobile equipment staging, parking, and maintenance areas will be located as far as practicable from noise-sensitive receptors;
- The use of noise-producing signals, including horns, whistles, alarms, and bells, will be for safety warning purposes only;
- No Project-related public address or music system will be audible at any adjacent receptor;
- All noise-producing construction equipment and vehicles using internal combustion engines will be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed “package” equipment (e.g., arc-welders, air compressors) will be equipped with shrouds and noise control features that are readily available for that type of equipment;

With respect to mitigation during operation, potential impacts associated with on-site substations are considered. Depending on the Project's acoustic design goal, final substation design may incorporate appropriate mitigation measures;

- Siting substations as far from residential receptors as is feasible; and
- Specifying NEMA low noise rated equipment to ensure that Project noise impacts will be less than significant. Quieted design can readily achieve a 10 dBA or greater reduction as compared to standard NEMA-rated transformers of a similar size and rated capacity.

10.0 CONCLUSION AND RECOMMENDATION

Operational sound levels associated with the Project would predominately be a result of the transformer used in the substation that is required by the Project. The transformer for the Project would be designed with a NEMA rating of 77 dBA or less to ensure that received sound levels at the nearest residence do not exceed 40 dBA from operation of the Project.

Complaints are unlikely for collection substations with transformers less than 10 MVA capacities. Complaints are more likely at collection substations with transformers ranging in sizes of 10 to 150 MVA with separation distances of 500 to 600 feet or less. The Project substation transformers are rated at 25 MVA and the closest noise sensitive receptor (i.e., residence) is located approximately 325 feet away; however complaints are unlikely to result from the Project because ambient sound levels would not increase by more than 5 dBA above the assumed existing ambient of 35 dBA. Based on the available data and screening level calculations, employing transformers that adhere to the identified NEMA sound ratings representative of maximum fan cooling operation as detailed in Section 8.0, demonstrate the feasibility of the Project to operate in compliance with County of Los Angeles Codes and Exterior Noise Standards, Antelope Valley Areawide General Plan, and CEQA guidelines.

Acoustic analysis results may change as a result of adjustments to equipment components including the use of noise mitigation measures during final Project design, in modeling and other assumptions including receptor status, or based on assumptions or measurement data used to estimate background sound levels within the acoustic study area. The information available during the initial engineering phases is only at a conceptual level and does not allow design details to be finalized for specific mitigation measures.

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APPENDIX B-8.2

PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH NOISE IMPACT ASSESSMENTS

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

WESTERN ANTELOPE BLUE SKY RANCH
(CUP 7-29)
NOISE IMPACTS REPORT

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1.0 SUMMARY

A noise and vibration technical analysis was conducted to assess the potential impacts from construction and operation of the Western Antelope Blue Sky Ranch (Project) Solar Generating Facility (SGF).

Temporary construction noise may impact residences close to the Project. Pile driving with an impact pile driver is required to install the photovoltaic (PV) module mounting system and will produce the most noise during construction. Noise levels originating at the Project centroid during pile driving activities are predicted to be 66 A-weighted decibels (dBA). This is representative of the average pile driving sound level for the Project. Temporary noise levels from other construction equipment are predicted to range from 54 dBA L_{eq} to 58 dBA L_{eq} originating at the project centroid. Temporary elevated noise levels from construction activities will be mitigated in several ways, such as containing construction activities to daytime hours (7:00 AM to 7:00 PM) only Monday through Friday, and electric construction equipment will be used instead of equipment outfitted with a combustion engine when possible.

Construction vibration from the Project should not be a concern for the structures near the Project and people living nearby. Project-related pile driving has the potential to produce the highest vibration levels. The predicted maximum vibration level of 0.08 peak particle velocity (PPV) at the nearest residence, located 235 feet from the Project boundary, represents the worst case scenario. The average pile driving PPV, calculated using the distance from the Project centroid to the nearest residence, is 0.01 PPV. Vibration levels of 0.01 PPV would be barely perceptible to humans, would not cause any damage to nearby structures, and would be of minimal concern.

Operational sound levels associated with the Project would predominately be a result of the transformer used in the substation that is required by the Project. The Project site layout has been designed to reduce the potential for even the minimal impacts to nearby residences. With an assumed background sound level of 35 dBA, the Project's operational noise levels cannot exceed 40 dBA, or 5 dBA above the assumed background ambient to meet local laws, ordinances, regulations, and standards (LORS). As a result, the transformer for the Project would be designed to emit noise levels of 68 dBA or less at the location of the transformer. This will ensure that received sound levels at the nearest residence do not exceed 40 dBA during operation of the Project.

2.0 INTRODUCTION

Silverado Power, LLC (Silverado Power) is proposing the construction and operation of the Project. This technical report presents information on the noise and vibration levels generated by construction and operation of the Project.

The following approach was used to complete this Noise Impact Assessment:

- Determine the applicable LORs;
- Describe the existing noise environment in the Project vicinity;

- Identify existing land uses that are sensitive to noise, including residential areas, hospitals or healthcare facilities, libraries, parks, and schools;
- Evaluate the anticipated Project noise impacts during construction and operation;
- Recommend measures to mitigate the potential Project noise impacts, as needed; and
- Provide conclusions of the noise impact analysis.

3.0 PROJECT DESCRIPTION

The Project will have a generating capacity of up to 40 megawatts (MW). The site has a total area of 157 acres, although only 118 acres will be developed for the Project. The site is located on primarily unproductive agricultural land in Los Angeles County approximately 10.8 miles west of Lancaster (Figure 1 and Figure 2). The Project will utilize PV modules to convert the sun's radiance directly into electrical energy without the use of heat transfer fluid or cooling water. In addition to the PV modules, the Project will include the following associated facilities:

- Module mounting system;
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects);
- Electrical inverters and transformers;
- Electrical collection system, including switchgear;
- Data Monitoring Equipment; and
- Access roads and chain link perimeter security fencing.

The Project will not require the construction of an on-site operations and maintenance (O&M) facility. The Project will connect to an existing 1.9-mile generation tie running north/south along the eastern border of the Project site (110th Street West).

The facility will operate year-round, producing renewable electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2013 and complete construction and begin commercial operation by the third quarter of 2013. The Project construction activities are anticipated to take approximately 8 months to complete. Project design information is currently only at a schematic level. The following preliminary design information has been provided by the Project engineers:

- Underground gen-tie line to existing 66 kV line.
- 1 main GSU transformer, approximately 25 megavolt ampere (MVA), NEMA TR-1 sound levels. 29 inverter-level transformers, 1 MVA each, NEMA TR-1 sound levels.
- Inverter rating 500 kilovolt-ampere, 57 total with NEMA 3R enclosures.

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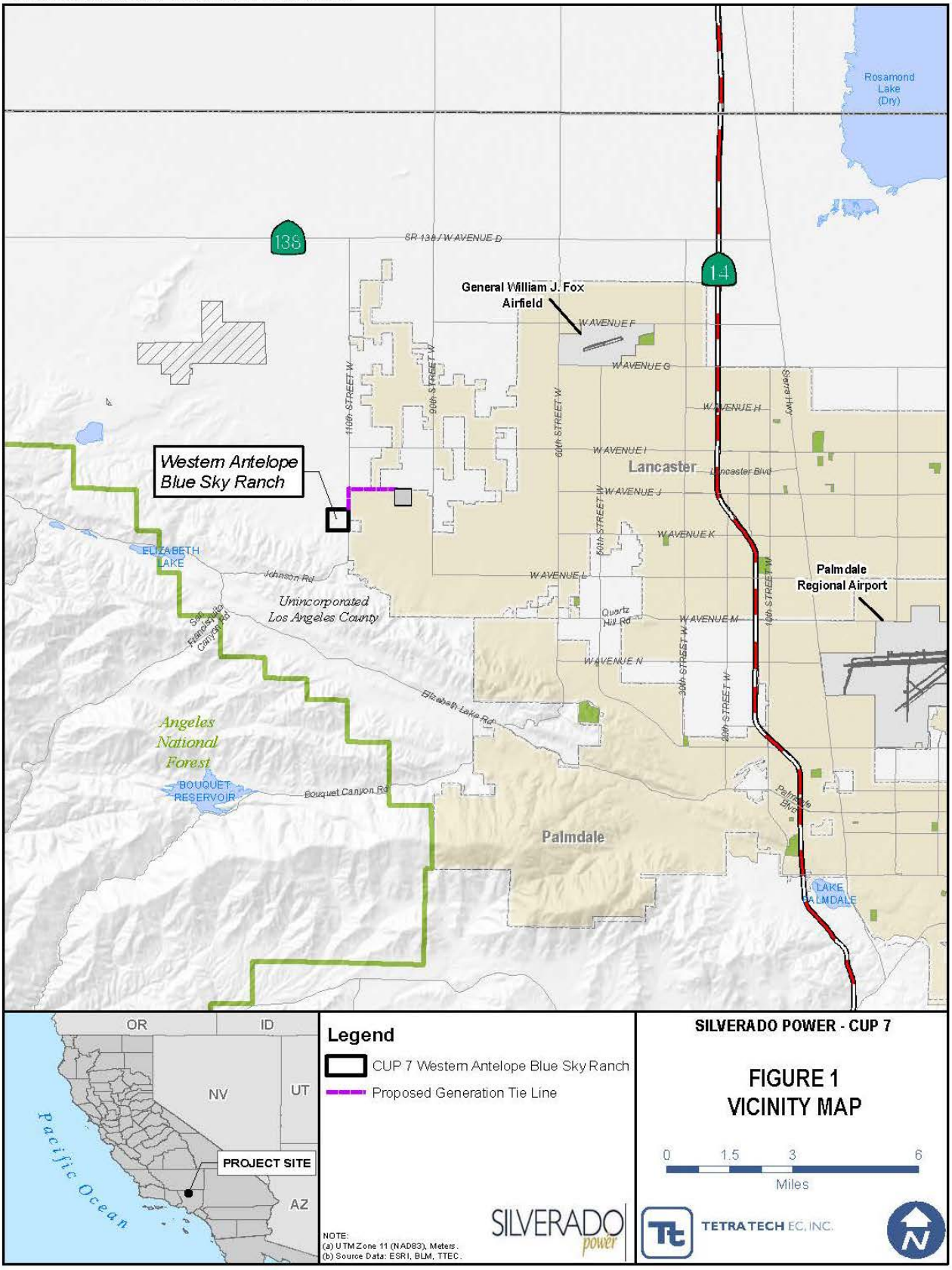

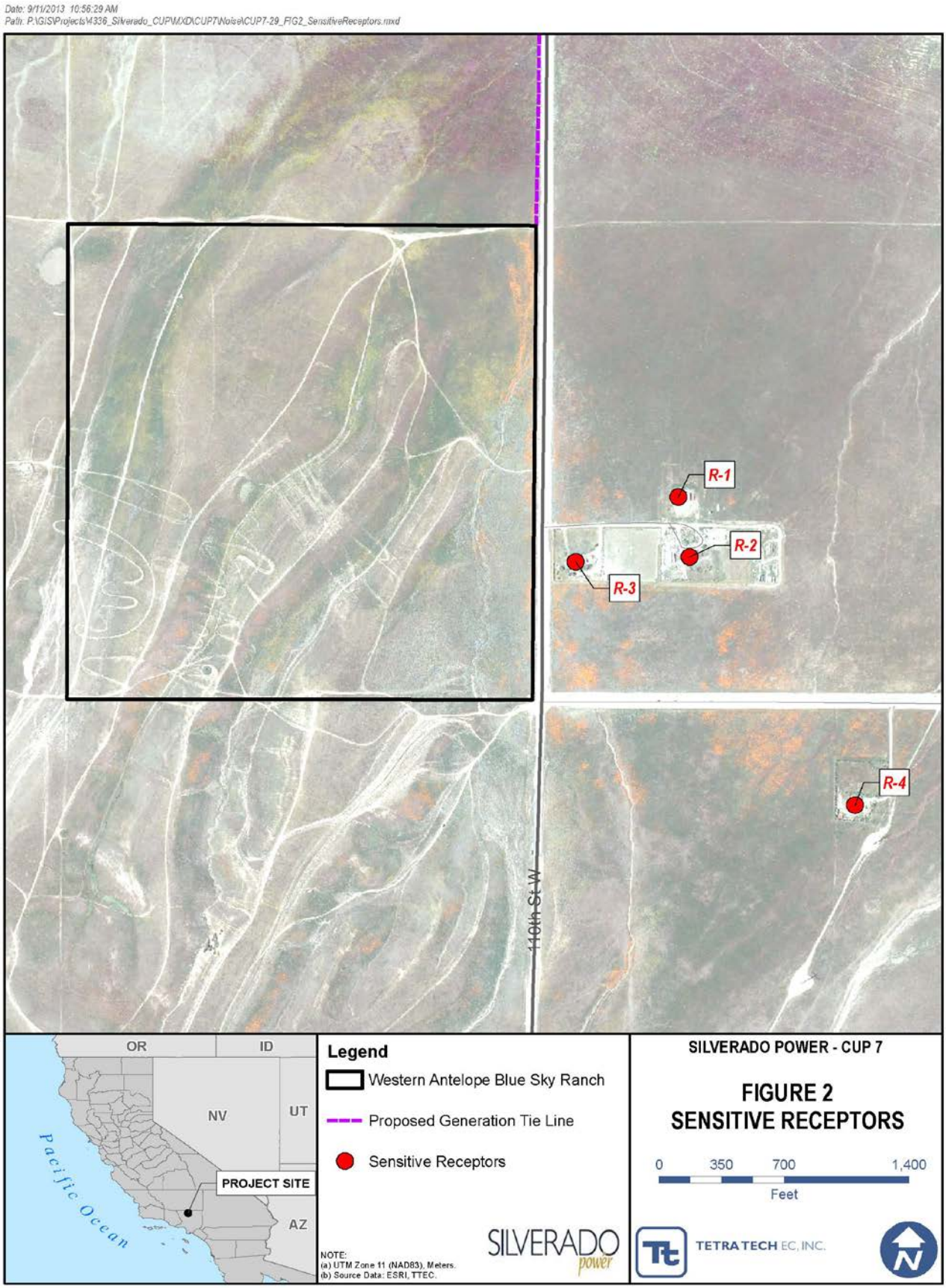
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4.0 ACOUSTIC AND VIBRATION TERMINOLOGY

4.1.1 Acoustic Terminology

Sound levels are presented on a logarithmic scale to account for the large pressure response range of the human ear, and are expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing defined as 20 micropascals (μPa). Typically, a noise analysis examines 11 octave (or 33 1/3 octave) bands ranging from 16 Hz (low) to 16,000 Hz (high), which encompasses the human audible frequency range. Since the human ear does not perceive every frequency with equal loudness, spectrally varying sounds are often adjusted with a weighting filter. The A-weighted filter is applied to compensate for the frequency response of the human auditory system, known as dBA. Unweighted sound levels are referred to as linear. Linear decibels are used to determine a sound's tonality and to engineer solutions to reduce or control noise as techniques are different for low and high frequency noise. Sound levels that are linear are presented as dBL.

An inherent property of the logarithmic decibel scale is that the sound pressure levels of two separate sources are not directly additive. For example, if a sound of 50 dBA is added to another sound of 50 dBA, the result is a 3-decibel increase (or 53 dBA), not an arithmetic doubling to 100 dBA. With respect to how the human ear perceives changes in sound pressure level relative to changes in "loudness", scientific research demonstrates the following general relationships between sound level and human perception for two sound levels with the same or very similar frequency characteristics:

- 1 dBA is the practical limit of accuracy for sound measurement systems and corresponds to an approximate 10 percent variation in the sound pressure level. A 1 dBA increase or decrease is a non-perceptible change in sound.
- 3 dBA increase or decrease is a doubling (or halving) of acoustic pressure level and it corresponds to the threshold of change in loudness perceptible in a laboratory environment. In practice, the average person is not able to distinguish a 3 dBA difference in environmental sound outdoors.
- 5 dBA increase or decrease is described as a perceptible change in sound level and is a discernible change in an outdoor environment.
- 10 dBA increase or decrease is a tenfold increase or decrease in acoustic pressure level but is perceived as a doubling or halving in loudness (i.e., the average person will judge a 10 dBA change in sound level to be twice or half as loud).

Estimations of common noise sources and outdoor acoustic environments, and the comparison of relative loudness are presented in Table 1.

Table 1 Sound Pressure Levels (L_P) and Relative Loudness of Common Noise Sources and Soundscapes

Noise Source or Activity	Sound Level (dBA)	Subjective Impression	Relative Loudness (perception of different sound levels)
Jet aircraft takeoff from carrier (50 ft)	140	Threshold of pain	64 times as loud
50-hp siren (100 ft)	130		32 times as loud
Loud rock concert near stage Jet takeoff (200 ft)	120	Uncomfortably loud	16 times as loud
Float plane takeoff (100 ft)	110		8 times as loud
Jet takeoff (2,000 ft)	100	Very loud	4 times as loud
Heavy truck or motorcycle (25 ft)	90		2 times as loud
Garbage disposal Food blender (2 ft) Pneumatic drill (50 ft)	80	Loud	Reference loudness
Vacuum cleaner (10 ft)	70		1/2 as loud
Passenger car at 65 mph (25 ft)	65	Moderate	
Large store air-conditioning unit (20 ft)	60		1/4 as loud
Light auto traffic (100 ft)	50	Quiet	1/8 as loud
Quiet rural residential area with no activity	45		
Bedroom or quiet living room Bird calls	40	Faint	1/16 as loud
Typical wilderness area	35		
Quiet library, soft whisper (15 ft)	30	Very quiet	1/32 as loud
Wilderness with no wind or animal activity	25	Extremely quiet	
High-quality recording studio	20		1/64 as loud
Acoustic test chamber	10	Just audible	
	0	Threshold of hearing	

Sound levels can be measured, modeled and presented in various formats. The sound metrics that were employed in this analysis have the following definitions:

L_{eq}: Conventionally expressed in dBA, the L_{eq} is the energy-averaged, A-weighted sound level over a specified time period. It is defined as the steady, continuous sound level over a specified time, which has the same acoustic energy as the actual varying sound levels over the specified period.

L_{max}: The maximum A-weighted sound level as determined during a specified measurement period. It can also be described as the maximum instantaneous sound pressure level generated by a piece of equipment or during a construction activity.

L_{dn}: The L_{dn} measures the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. The L_{dn} is calculated by averaging the 24-hour hourly L_{eq} levels at a given location after adding 10 dB to the nighttime period (10:00 p.m. - 7:00 a.m.) to account for the increased sensitivity of people to noises that occur at night.

CNEL: Community Noise Equivalent Level (CNEL) is another average A-weighted L_{eq} sound level measured over a 24-hour period; however, this noise scale is adjusted to account for some individuals' increased sensitivity to noise levels during the evening and nighttime hours. A CNEL noise measurement is obtained after adding 5 dB to sound levels occurring during evening hours (7:00 p.m. to 10:00 p.m.) and 10 dB to sound levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.).

4.1.2 Vibration Terminology

According to the Federal Transit Authority Noise and Vibration Impact Assessment (FTA 2006), construction activities can be a source of ground-borne vibration. Activities such as pile driving and operation of heavy equipment may cause ground born vibration while constructing the Project. Vibration is an oscillatory motion which can be described in terms of the displacement, velocity or acceleration (FTA 2008). Velocity or acceleration are typically used to describe vibration. Two descriptors are frequently used when discussing quantification of vibration, the peak particle velocity (PPV) and the root mean square (rms).

Peak particle velocity (PPV) – The maximum instantaneous positive or negative peak of the vibration signal (FTA 2006).

Root mean square (rms) – The square root of the average of the squared amplitude of the vibration signal, typically calculated over a one-second period (FTA 2006)

The PPV is often used to assess stress on structures and the rms is used to describe the human response to vibration. The Caltrans construction vibration guidance is used in this assessment. This guidance includes a human response equivalent based on the PPV instead of using rms.

5.0 REGULATORY SETTING

This section provides an overview of federal, state, and local regulations related to noise issues applicable to the Project.

5.1 Federal

Federal laws, regulation and guidance establish the national framework for noise regulations and include those from the Occupational Safety and Health Administration and the EPA.

5.1.1 Occupational Safety and Health Administration, Occupational Noise Exposure; Hearing Conservation Amendment (29 CFR 1910.95)

This standard establishes mandates to protect employees from excessive noise exposure and requires a Hearing Conservation Program when routine exposure to high noise levels would occur.

5.1.2 U.S. Environmental Protection Agency in "Information of Levels on Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." (EPA 550/9-74-004)

Published in 1974, this document identifies safe levels of environmental noise exposure and is intended to "provide State and Local governments as well as the Federal Government and the private sector with an informational point of departure for the purpose of decision making." While the EPA has no regulation governing environmental noise, the agency has conducted several extensive studies to identify the effects of sound level on public health and welfare. For outdoor residential areas, the recommended EPA guideline is an L_{dn} of 55 dBA and an indoor L_{dn} limit of 45 dBA. These levels are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and healthcare areas. Noise-level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour L_{eq} values of 70 dBA (both outdoors and indoors). This publication remains the authoritative study based on a large sampling of community reaction to noise. The EPA sound level guidelines do not provide an absolute measure of noise impact, but rather a consensus on potential activity interference, human health and welfare effects, and annoyance. Since these protective levels were derived without concern for technical or economic feasibility, and contain a margin of safety to ensure their protective value, they should not be viewed as standards, criteria, regulations, or goals. Rather, they should be viewed as levels below which there is no reason to suspect that the general population will be at risk from any of the identified effects of noise. The EPA guideline limits are summarized in Table 2.

Table 2 Summary of EPA Cause and Effect Noise Levels

Location	Level	Effect
All public accessible areas with prolonged exposure	70 dBA $L_{eq(24)}$	Safety
Outdoor at residential structure and other noise sensitive receptors where a large amount of time is spent	55 dBA L_{dn}	Protection against annoyance and activity interference
Outdoor areas where limited amounts of time are spent, e.g., park areas, school yards, golf courses, etc.	55 dBA $L_{eq(24)}$	
Indoor residential	45 dBA L_{dn}	
Indoor non-residential	55 dBA $L_{eq(24)}$	

USEPA (U.S. Environmental Protection Agency). 1974

5.2 State

In 1987, the California Department of Health Services published guidelines for the noise element of local general plans. These guidelines include a noise level/land use compatibility chart that categorizes various outdoor L_{dn} ranges into up to four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), depending on land use. For many land uses, the chart shows L_{dn} ranges for two or more compatibility categories. The noise element guidelines chart identifies the normally acceptable range for low-density residential uses as less than 60 dBA, while the conditionally acceptable range is 60-70 dBA. The normally acceptable range for high-density residential uses is identified as L_{dn} values below 65 dBA, while the conditionally acceptable range is identified as 65-70 dBA. For educational and medical facilities, L_{dn} values below 60 dB are considered normally acceptable, while L_{dn} values of 60-70 dBA are considered conditionally acceptable. For

office and commercial land uses, L_{dn} values below 67.5 dBA are considered normally acceptable, while L_{dn} values of 67.5-77.5 dBA are categorized as conditionally acceptable. These normally and conditionally acceptable L_{dn} ranges are intended to indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations. These guidelines are used by many agencies, environmental planners, and acoustical specialists as a starting point to evaluate the potential for noise impact on and by a project. The guidelines are also employed to evaluate methods for achieving noise compatibility with respect to nearby existing uses. Table 3 summarizes these guidelines for the normally and conditionally acceptable L_{dn} exposures.

Table 3 California Department of Health Services Noise Guidelines

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)	
	Normally Acceptable	Conditionally Acceptable
Residential – Low Density	50 - 60	60 - 70
Residential – High Density	50 - 65	65 - 70
Transient Lodging – Motels, Hotels	50 - 65	65 – 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 60	60 - 65
Auditoriums, Concert Halls, Amphitheaters	NA	50 - 70
Sports Arenas, Outdoor Spectator Sports	NA	50 - 75
Playgrounds, Neighborhood Parks	50 – 67.5	NA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 70	NA
Office Buildings, Business Commercial and Professional	50 – 67.5	67.5 – 77.5
Industrial, Manufacturing, Utilities, Agriculture	50 - 70	70 - 80

The California Department of Housing and Community Development has adopted noise insulation performance standards for new hotels, motels, and dwellings other than detached single-family structures (24 CCR T25-28). These standards require that "interior CNEL with windows closed, attributable to exterior sources, shall not exceed an annual CNEL of 45 dB in any habitable room."

Occupational exposure to noise is regulated by the California Occupational Safety and Health Act in Title 8, Group 15, Article 105, Sections 5095–5100. The standard stipulates that protection against the effects of noise exposure will be provided when sound levels exceed 90 dBA over an 8-hour exposure period.

5.2.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and that such impacts be eliminated or mitigated to the extent feasible. The CEQA guidelines (AEP 2012) set forth characteristics that signal a potentially significant impact. Under CEQA the proposed Project would be considered to have significant noise and vibration impacts if it results in the following:

- **NZ-1** Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- **NZ-2** Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?
- **NZ-3** A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?
- **NZ-4** A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?
- **NZ-5** For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?
- **NZ-6** For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

For the proposed Project, the following criteria were determined to be inapplicable or to result in no impact:

- Exposure of on-site workers to noise levels that exceed occupational safety standards (90 dBA as a time-weighted 8-hour average or peak noise levels above 115 dBA).
- Exposure of residents to airport or private airstrip-related noise levels above a CNEL of 65 dBA.

Occupational noise exposure is governed by federal and state regulations. The California Divisions of Occupational Safety and Health (Cal/OSHA) administers industrial safety regulations in California. Cal/OSHA regulations establish a time-weighted noise exposure limit of 90 dBA averaged over 8 hours (California Code of Regulations, Title 8, Article 105). Noise source controls, administrative procedures, or worker hearing protection must be provided if worker noise exposure would exceed the 90 dBA limit. The construction contractor selected for this Project will be required to follow Cal/OSHA requirements for construction worker noise exposure. Consequently, worker noise exposure issues are not discussed further under any of the alternatives.

There are two aviation uses in the general Project vicinity. Bohunk's Airpark is located approximately 2.5 miles east/northeast of the proposed Project site, and General Fox Airfield is located 6.5 miles northeast of the Project site. Bohunk's Airpark has very low use levels; General Fox Airfield has moderate use levels and is predominately used for general aviation with some cargo operations. Sound contours developed for General Fox Airfield indicate that the Project is over 6 miles from the 55 dBA CNEL contour. No airfield noise contours have been developed for Bohunk's Airpark facility, but due to low operation levels and distance from the airport, sound levels at Bohunk's Airpark are assumed to be below 55 dBA CNEL. The Project would not create residential land uses, and all Project features are outside the airfield properties. Consequently, airport-related noise issues are not discussed further.

5.3 Local

5.3.1 Los Angeles County 2011 Draft General Plan 2035

The Draft General Plan 2035 lists policies related to noise that include using land uses such as parks to buffer noise-sensitive uses from excessive noise impacts, promoting land use compatibility, and ensuring adequate mitigation.

5.3.2 Los Angeles County Code

The County Noise Control Ordinance, Title 12 of the County Code, was established to reduce and restrict certain noise-producing activities. Activities may not generate noise levels above the specified limits either at the exterior or interior areas of neighboring land uses. The limits are derived from tabulated values that depend on the land use, with adjustments to create a series of noise standards. The exterior limits are presented in Table 4. Additional standards are provided in the event that the exterior limits are exceeded.

Table 4 Exterior Noise Standards, Los Angeles County Code

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level (dB)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 p.m. to 7:00 a.m. (night-time)	45
		7:00 a.m. to 10:00 p.m. (daytime)	50
III	Commercial properties	10:00 p.m. to 7:00 a.m. (night-time)	55
		7:00 a.m. to 10:00 p.m. (daytime)	60
IV	Industrial properties	Anytime	70

Source: Section 12.08.390 of the Los Angeles County Code (a portion of the Noise Control Ordinance).

In addition, the County Noise Control Ordinance also prohibits construction activities and noise during certain times in areas that would affect a residential or commercial property. The prohibited times are between the weekday hours of 7:00 p.m. and 7:00 a.m. and any time on Sundays or holidays. The Ordinance identifies maximum noise levels for mobile and stationary equipment as shown in Table 5. All internal combustion-engine-powered equipment "shall be equipped with suitable exhaust and air intake silencers in proper working order." A 5 dBA penalty is applied to noises that are considered impulsive.

Table 5 Maximum Noise Levels for Construction Noise from Stationary Equipment (10 days or more)

	Single-family Residential	Multi-family Residential	Semi-residential/ Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

Source: Section 12.08.440 of the Los Angeles County Code (a portion of the Noise Control Ordinance).

5.3.3 Antelope Valley Areawide General Plan

The 1986 Antelope Valley Areawide Plan designates areas within the 60-dBA noise contour from transportation sources such as airports, railroads, and major highways as Noise Management Areas. Plan policy for these areas calls for the reduction of noise impacts on adjacent land uses through both hazard avoidance actions, where practical, and hazard mitigation practices, in other cases. The Antelope Valley Areawide General Plan is currently in the process of being updated. However, no updated guidelines or standards related to noise are available. The Project is not located close enough to an airport to be within an aviation related 60 dBA L_{dn} noise contour. No railroads are located within 0.5 mile of the Project, and therefore sound from railroad activities is anticipated to be less than 60 dBA. The nearest roadways are East Avenue K, 110th street West, and 115th Street West, none of which are designated as a major highway (i.e. US Highway, State Route or Interstate). The nearest major highway is State Route 14, located approximately 9 miles east of the Project site. Peak hour traffic volumes on rural roads, such as those listed above, are unlikely to be heavy enough to generate traffic noise within the Project area of 60 dBA L_{eq} or greater. Therefore the Project site is not located within a NMA.

6.0 EXISTING CONDITIONS

The degree of audibility of a new or modified sound source is dependent in a large part upon the existing ambient sound level. A wide range of noise settings may occur within the Project study area, which consists of all areas that could be potentially affected by construction or operational noise resulting from the Project. The Project site encompasses previously disturbed, fallow agricultural land in northern Los Angeles County. The Project vicinity includes agricultural fields and scattered residences intermixed with non-native grasslands. The closest residence (receptor) is located approximately 235 feet east of the Project site, across 110th Street West (Figure 2). Additionally two residences are located further east both approximately 815 feet east of the Project site. Another residence is located southeast of the intersection between 110th Street West and West Avenue K approximately 1,900 feet from the Project site.

Existing ambient sound levels within the Project vicinity are expected to be relatively low, although sound levels may be sporadically elevated in localized areas due to roadway noise or periods of human activity. Background sound levels will vary both spatially and temporally depending on proximity to area sound sources, roadways and natural and/or weather related sounds. Principal contributors to the existing acoustic environment likely include motor vehicle traffic, mobile farming equipment, farming activities such as plowing and irrigation, all-terrain vehicles, local roadways, periodic aircraft flyovers, and natural sounds such as birds, insects, and leaf or vegetation rustle during elevated wind conditions. Open lands, predominantly or rural in nature, will have comparatively lower ambient sound levels than more developed areas. Diurnal effects result in sound levels that are typically quieter during the night than during the daytime, except during periods when evening and nighttime insect noise may dominate in warmer seasons.

7.0 NOISE AND VIBRATION IMPACT ANALYSIS

Sound generated by the Project will consist of: (1) short duration sounds resulting from construction activities and (2) sound during normal facility operations. Vibration from the Project would only result during construction. Construction activities would take place only during daytime hours. An evaluation was performed of expected noise and vibration levels in conjunction with review of applicable agency policies and regulatory requirements.

Airborne noise dissipates with increasing distance from the noise source. The distances involved depend primarily on the intensity of the noise generated by the source, terrain and ground cover between source and receiver, and partly on weather conditions such as wind speed and direction, the height and strength of temperature inversions, and the height of cloud cover. Temperature inversions and cloud cover can reflect or refract sound that is radiated upwards; this effect can increase noise levels at locations that receive the reflected or refracted sound. Such reflection and refraction effects are important primarily for high intensity sounds and for the calculation of sound propagation over large distances. For noise sources such as construction activity and vehicle traffic, the region of influence is typically less than 0.5 mile from the noise source. Temperature inversions and cloud cover are not accounted for in this analysis.

The region of interest for noise and vibration issues is typically localized. Ground-borne vibrations generally attenuate rapidly with increasing distance from the vibration source. The distances involved depend primarily on the intensity of the vibrations generated by the source, and partly on soil and geologic conditions. Detectable vibrations will travel the greatest distance through solid rock and the least distance through loose, unconsolidated soils or saturated soils. For vibration sources such as construction activity and vehicle traffic, the region of influence is typically less than 1,000 feet from the vibration source. Table 6 compares the distance of the closest existing residence to the SGF components.

Table 6 Comparison of Distances (feet) of the Closest Residence to SGF Component

Project Component	Distance to Closest Residence	Direction
Solar Farm	235	E
Gen-Tie Transmission Line (underground)	175	E
Substation	1,511	NE

7.1 Construction

7.1.1 Construction Noise

Construction noise, although temporary, can be a source of concern for sensitive receptors, such as nearby residences. Construction is anticipated to take place between the first and third quarters of 2013. Construction of the Project will require the use of heavy equipment that may be periodically audible at offsite locations. Received sound levels will fluctuate, depending on the construction activity, equipment type, and distance between noise source and receiver.

Sound from construction equipment will vary dependent on the construction phase and the number and class of equipment at a location at any given time. The first phase of construction will be mass grading, which is anticipated to take approximately 2 months. Fine grading and onsite road construction will follow for approximately 2 months, followed by trenching and infrastructure development, also 2 months in duration. PV module installation is the final construction phase with a duration to complete of 2 months.

The variation in power and usage imposes additional complexity in characterizing construction noise levels. Expected equipment types for each phase of construction are presented in Table 7. Each construction phase identified will require different types of construction equipment. The estimated composite site noise level is based on the assumption that all equipment would operate at a given usage load factor, over a standard eight-hour workday, to calculate the composite average daytime L_{eq}. The load factor accounts for the fraction of time that the equipment is in use over the specified time period. The composite noise level from several pieces of equipment operating during the same phase is obtained from decibel addition of the L_{eq} of each individual unit.

In addition to the above listed construction equipment, pile driving is the method planned for installation of the foundations for the solar PV modules. Pile driving can generate high noise levels. Noise is generated from both the ram striking the pile as well as the operating air or diesel exhaust as it is exhausted from the cylinder (this is not present with hydraulic impact hammers). The current plan for construction of the Project is to use a GAYK 2L41C ram pile driver, which produces a sound pressure level of 111 dBA at 20 feet assuming an impact rate of 1400 blows per minute. This is the pile driver used for this acoustic analysis, but the Project may choose to use a different pile driver that produces equal or lesser sound pressure depending upon Project need. Actual pile driving averages 30-45 seconds per pile at a 6-foot embedment depth and the engine would typically run close to 3000 rpm for use with this ram. Pile drivers are classified as impact devices in the Los Angeles County Noise Ordinance; therefore, the applicable standard is 55 dBA. Assuming a load or usage factor of 20% (FHWA 2006), it is expected that sound from pile driving would attenuate to 83 dBA at the nearest residence, 66 dBA at the Project site centroid (1,545 feet) and would attenuate to below 60 dBA within 1 linear mile of this construction activity, depending on meteorological and topographical effects. A variance to the noise ordinance in the county of Los Angeles will be required for construction involving pile driving since the pile driving is expected to last more than 10 days.

Construction sound will attenuate with increased distance from the sound sources. Other factors, such as vegetation, terrain and obstacles, such as buildings, will act to limit the impact of construction noise levels, but were not considered in the evaluation. Trees free of foliage, such as deciduous trees in the late fall to early spring, provide little screening. According to the Federal Highway Administration (FHWA) “Vegetation must be a minimum of 100 feet thick, a minimum of 20 feet high, and sufficiently dense so that it cannot be seen through in order to provide a 5-dBA noise reduction. Anything less than that thickness will not result in any significant noise reduction” (FHWA 2012). Actual received sound levels will fluctuate, depending on the construction activity, equipment type, and separation distances between source and receiver. As a general construction practice, functional mufflers will be maintained on all equipment to maintain noise levels as low as reasonably achievable.

Table 7 Summary of Solar Farm Construction Noise by Phase at Nearest Residence

Phase No.	Construction Phase	Construction Equipment	Load Factor %	Maximum L_{max} Equipment Noise Level at 50 ft (15 m) dBA	Composite L_{eq} Noise Level at 235 ft (72 m) Average Daytime dBA	Composite Noise Level at Acoustic Centroid 1,545 ft (489 m) Average Daytime dBA
1	Mass Grading	(2) Graders (174 hp) (1) Rubber Tired Dozer (357 hp) (2) Water Trucks (189 hp)	57 59 50	85 85 80	75	58
2	Fine Grading - Road Construction	(1) Tractor/Loader/Backhoe (108 hp) (1) Water Truck (189 hp)	55 50	85 80	70	54
3	Trenching / Infrastructure Construction	(1) Tractor/Loader/Backhoe (108 hp) (1) Trencher (63 hp) (1) Water Truck (189 hp)	55 75 50	85 83 80	72	56
4	Building Construction / PV Installation	(1) Crane (399 hp) (1) Forklift (145 hp) (1) Other Equipment (190 hp) (1) Tractor/Loader/Backhoe (108 hp) (1) Water Truck (189 hp)	30 74 62 55 50	85 81 80 85 80	73	57

Sub Phase	Construction Phase	Construction Equipment	Load Factor %	Maximum L_{max} Spec. Sound Pressure Level at 20 feet	Composite L_{eq} Noise Level at 225 ft (72 m) Average Daytime dBA	Composite Noise Level at Acoustic Centroid 1,535 ft (489 m) Average Daytime dBA
4a	PV Installation	GAYK 2L41C ram pile driver (impact device)	20*	111	83	66

Data compiled and methodologies developed in part from:

Federal Highway Administration, “Construction Noise Handbook”, Report FHWA-HEP-06-015, 2006.

Communication with equipment manufacturers of comparable equipment.

*Usage factor is based on FHWA assumption of 20%.

Construction noise is a temporary noise source that would only occur during daytime hours. Sound levels from construction are expected to be comparable to sound produced by farm machinery, such as equipment used in nearby agricultural fields. Worst case construction noise levels listed in Table 7 for the nearest residence would last no more than a few weeks, as construction activities progress across the Project site. Therefore, no one residence will be exposed to significant noise levels for any extended period of time. Traffic noise generated during construction on and offsite will also temporarily add to overall sound levels. The Project will make reasonable efforts to minimize noise resulting from construction activities.

7.1.2 Construction Vibration

Vibration associated with construction of the Project has the potential to be an annoyance to nearby residences. Structural damage to nearby residences from construction activities is unlikely and not anticipated. Vibratory motion is typically described by identifying the PPV (Caltrans, June 2004) for damage to buildings. To assess the human response to vibration, the rms amplitude is typically used (Caltrans, June 2004).

The California Department of Transportation (Caltrans) Construction Induced Vibration Guidance Manual identifies two impact criteria for buildings and humans. Table 8 describes impact criteria for buildings and Table 9 describes impact criteria for humans. Although the rms is typically used to assess human response, Caltrans has provided threshold guidance for human response relative to PPV to maintain a consistent metric for both human response and structural impacts to buildings.

Table 8 Caltrans Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans, June 2004

Table 9 Caltrans Guideline Vibration Annoyance Potential

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
Source: Caltrans, June 2004

Installation of the PV solar module foundations requires pile driving and has the potential for vibration impacts to structures and humans. The Project is planning to use a pneumatic pile driver (GAYK 2L41C ram pile driver) which is a type of impact pile driver. Because pile drivers are an impact device, they are considered continuous/frequent sources of vibration. Other construction activities are assumed to be less intensive than pile driving and therefore would have lower PPV than pile driving. Therefore, vibration levels from pile driving are considered worst case for solar facility construction. Caltrans vibration guidance provides the following equation to calculate PPV at sensitive receptors, such as residences:

$$PPV_{Impact\ Pile\ Driver} = PPV_{Ref} (25/D)^{n} \times (E_{equip}/E_{Ref})\ (in/sec)$$

Where:

PPVRef = 0.65 in/sec for a reference pile driver at 25 ft.
D = distance from pile driver to the receiver in ft.
n = 1.1 is a value related to the vibration attenuation rate through ground
ERef = 36,000 ft-lb (rated energy of reference pile driver)
Eequip = rated energy of impact pile driver in ft-lbs.

Using the referenced formula and an assumed 80,000 ft-lb rated energy for the impact pile driver, the calculated PPV at the nearest residence (235 feet), the Project site centroid (1,545 feet), and at the residence when construction is occurring on the Project site furthest away are listed in Table 10.

Table 10 Pile Driving Vibration Analysis

Pile Driving Location compared to nearest residence	Estimated Pile Driving PPV
Project site boundary minimum distance to residence (235 feet)	0.09
Project site centroid distance to residence (1,535 feet)	0.01
Project site boundary maximum distance to residence (2,850 feet)	0.005

The worst case pile driving has been calculated as 0.08 PPV when pile driving is at the minimum distance from the nearest residence. The value of 0.01 PPV at the Project site centroid could be considered an “average” vibration level from pile driving. At the furthest distance from the Project site relative to the residence closest to the project site, vibration from pile driving is predicted to be 0.005 PPV. According to Caltrans guidance a PPV of 0.08 would not damage the nearest residential structure, however, a PPV of 0.08 is predicted to be distinctly to almost strongly perceptible to humans. Like noise from pile driving, vibration from pile driving will only last for a few weeks at most. The value of 0.01 PPV at the centroid is representative of the vibration that can be expected for most of the pile driving phase of construction. A value of 0.01 PPV is considered barely perceptible to humans according to Caltrans.

7.2 Operation

The Project would generate power using PV modules mounted in rows of parallel racks. The SGF is anticipated to be unmanned during normal operation. Systems monitoring will be

completed remotely and onsite staff will be limited to repair or cleaning of the PV modules. Maintenance staff will visit periodically to clean the PV modules, clearing vegetation, and other general maintenance activities.

Sound sources considered in the Project operational acoustic analysis include the inverters and transformers associated with the PV modules, the proposed substation, and the transmission line. The principal sources of noise are the cooling-ventilation fans, the electrical components of the inverters and the step-up transformers at the on-site substations. Transmission lines for the Project would be underground and therefore sound from the transmission lines would not be perceptible. The interconnections associated with the Project will be lower and therefore is not expected to be a significant generator of corona noise.

Each PV module 1 MW block will have two inverters and a ventilation fan housed inside pre-fabricated enclosure and one transformer mounted on a concrete pad. Each inverter generates a noise level of about 75 dBA at a distance of 10 feet and it is expected that the enclosure would provide 15 to 20 dBA of noise reduction, reducing the inverter noise to approximately 58-63 dBA at a distance of 10 feet from the enclosure. The transformers generate a noise level of about 58 dBA at a distance of six feet. The transformers and inverters would be centrally located within each 1 MW Block of solar modules. No solar arrays will be located within 100 feet of the property line and would be expected to generate low noise levels beyond the Project extents. PV station transformers and power inverters located within the facility are generally considered a low level source of noise, limited to daytime hours when the solar arrays are generating electricity.

Substations have switching, protection and control equipment and a transformer, which generate the sound generally described as a low humming. There are three main sound sources associated with a transformer: core noise, load noise and noise generated by the operation of the cooling equipment. The core is the principal noise source and does not vary significantly with electrical load. The load noise is primarily caused by the load current in the transformer's conducting coils (or windings) and consequently the main frequency of this sound is twice the supply frequency: 100 Hz for 50 Hz transformers and 120 Hz for 60 Hz transformers. The cooling equipment (fans) may also be an important noise component, depending on fan design. During air forced cooling method, cooling fan noise is produced in addition to the core noise. The resulting audible sound is a combination of hum and the broadband fan noise. After sunset, when the plant no longer receives solar radiation, the inverters will not produce noise and the transformers will be energized but likely operating under low noise condition using natural draft cooling but not in operation (no fans) due to lower nighttime heat loads. Breaker noise is a sound event of very short duration, expected to occur only a few times throughout the year. Just as horsepower ratings designate the power capacity of an electric motor, a transformer's MVA rating indicates its maximum power output capacity. The transformers included in the PV modules are rated at 1-MVA whereas the transformers at the Project substation are rated at 25-MVA.

Transformers are designed and catalogued by MVA rating. The American National Standards Institute and the International Electrotechnical Commission have established methodologies for measurement of noise from transformers and other electrical devices. Measurements involve

taking reference sound level measurements using microphones positioned 0.3 m (1 ft) from a tautly drawn string that encircles the device at a height above grade set at one-half the overall height of the device. The transformer noise output is the average of all measurements taken around the perimeter, incorporating contributions from both cooling fans and auxiliary equipment. The National Electrical Manufacturers Association (NEMA) published standards TR1-1993 (R2000) also establishes the maximum noise level allowed for transformers, voltage regulators, and shunt reactors based on the equipment's method of cooling its dielectric fluid (air-cooled vs. oil-cooled) and the electric power rating.

8.0 ANALYSIS RESULTS

Based on CEQA guidance, an incremental increase of 5 dBA over the existing L_{eq} is identified as the threshold when adverse noise impacts may begin to occur. Receptors that experience Project-related received sound levels below the 5 dBA cumulative increase threshold have a lower likelihood of disturbance. For example, if a background sound level of 35 dBA is assumed, the total cumulative sound level of 40 dBA, or 5 dBA above the estimated background sound level, would become the onset threshold of potential adverse noise impact per CEQA guidelines. For areas where potential exceedances of the 5 dBA threshold might be expected, a second level noise mitigation evaluation may be necessary towards evaluating potential exceedance condition(s). This second level noise mitigation evaluation involves the re-evaluation of transformer NEMA ratings used at the on-site substations and is described in further detail below.

Numerical modeling was used to estimate the maximum substation transformer sound source level, or NEMA sound rating, which would result in received sound levels remaining at or below 40 dBA at the nearest residence. The estimated NEMA sound rating is based on preliminary Project design information that best represents their expected acoustic performance, inclusive of a standardized engineering safety factor. The surface area [S] of the transformers was estimated using the following empirical relationship based on rated capacity [MVA]. The assumed MVA is 25 for the Project transformer:

$$10\log [S] = 14 + 2.5\log [MVA]$$

Assuming transformer dimensions of 11-ft length, 10-ft width, and 15-ft height, the above equation yields an estimated surface area of 630 ft^2 (or 58.5 m^2). The above equation yields an estimated surface area of 604.6 ft^2 (or 56.2 m^2). Using the surface area and MVA rating the maximum substation transformer NEMA sound rating was determined to be 81 dBA. This will ensure that the Project transformer complies with CEQA by not increasing the sound levels in the area and at the closest residences (1,511 feet away) by more than 5 dBA over the assumed background ambient of 35 dBA. Currently, substation design is only at a schematic level, but the transformer installed will conform to all relevant NEMA standards. Actual equipment installed for the Project will be designed to have a similar sound power profile, or less, and NEMA ratings to those assumed for this analysis.

9.0 MITIGATION MEASURES

The following noise mitigation measures will be considered and incorporated into the Project contract specifications as necessary to minimize noise levels associated with Project construction to the extent practicable:

- Construction operations will not occur between 7:00pm and 7:00am on weekdays or Saturday, or at any time on Sunday within 500 feet of an occupied residence;
- Construction site and access road speed limits will be established and enforced during the construction period;
- Electrically-powered equipment will be used instead of pneumatic or internal combustion powered equipment, where feasible;
- Material stockpiles and mobile equipment staging, parking, and maintenance areas will be located as far as practicable from noise-sensitive receptors;
- The use of noise-producing signals, including horns, whistles, alarms, and bells, will be for safety warning purposes only;
- No Project-related public address or music system will be audible at any adjacent receptor; and
- All noise-producing construction equipment and vehicles using internal combustion engines will be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed “package” equipment (e.g., arc-welders, air compressors) will be equipped with shrouds and noise control features that are readily available for that type of equipment.

With respect to mitigation during operation, potential impacts associated with on-site substations are considered. Depending on the Project’s acoustic design goal, final substation design may incorporate appropriate mitigation measures:

- Siting substations as far from residential receptors as is feasible; and
- Specifying NEMA low noise rated equipment to ensure that Project noise impacts will be less than significant. Quieted design can readily achieve a 10 dBA or greater reduction as compared to standard NEMA-rated transformers of a similar size and rated capacity.

10.0 CONCLUSION AND RECOMMENDATION

Operational sound levels associated with the Project would predominately be a result of the transformer used in the substation that is required by the Project. The transformer for the Project would be designed to emit noise levels of 81 dBA or less to ensure that received sound levels at the nearest residence do not exceed 40 dBA from operation of the Project.

Complaints are unlikely for collection substations with transformers less than 10 MVA capacities. Complaints are more likely at collection substations with transformers ranging in sizes of 10 to 150 MVA with separation distances of 500 to 600 feet or less. The Project substation transformers are rated at 25 MVA and the closest noise sensitive receptor (i.e., residence) is located approximately 235 feet away; therefore complaints are unlikely to result from the Project. Based on the available data and screening level calculations, employing

transformers that adhere to the identified NEMA sound ratings representative of maximum fan cooling operation as detailed in Section 8.0, demonstrate the feasibility of the Project to operate in compliance with County of Los Angeles Codes and Exterior Noise Standards, Antelope Valley Areawide General Plan, and CEQA guidelines assuming a typical background sound level of 35 dBA.

Acoustic analysis results may change as a result of adjustments to equipment components including the use of noise mitigation measures during final Project design, in modeling and other assumptions including receptor status, or based on assumptions or measurement data used to estimate background sound levels within the acoustic study area. The information available during the initial engineering phases is only at a conceptual level and does not allow design details to be finalized for specific mitigation measures.

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APPENDIX B-8.3

PROJECT 3 AMERICAN SOLAR GREENWORKS NOISE IMPACT ASSESSMENTS

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

AMERICAN SOLAR GREENWORKS
(CUP GROUP 9)
NOISE IMPACTS REPORT

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1.0 SUMMARY

A noise and vibration technical analysis was conducted to assess the potential impacts from construction and operation of the American Solar Greenworks (Project) Solar Generating Facility (SGF).

Temporary construction noise may impact residences close to the Project. Pile driving with an impact pile driver is required to install the photovoltaic (PV) module mounting system and will produce the most noise during construction. Noise levels originating at the Project centroid during pile driving activities are predicted to be 68 A-weighted decibels (dBA) at the closest residence. Temporary noise levels originating from the Project centroid from other construction equipment are predicted to range from 58 dBA to 60 dBA at the closest residence. Elevated noise levels from construction activities will be mitigated in several ways, such as restricting construction activities to weekday daytime hours (7:00 a.m. to 7:00 p.m.) and using electric construction equipment instead of equipment outfitted with a combustion engine when possible.

Construction vibration from the Project should not be a concern for the structures near the Project and people living nearby. Project-related pile driving has the potential to produce the highest vibration levels. The maximum vibration level of 0.15 peak particle velocity (PPV) was predicted at the nearest residence, located 133 feet (ft) from the Project boundary. The average pile driving PPV, calculated using the distance from the Project centroid to the nearest residence, is 0.01 PPV. Vibration levels of 0.01 PPV would be barely perceptible to humans, would not cause any damage to nearby structures, and would be of minimal concern.

Operational sound levels associated with the Project are mostly related to the on-site substation transformer. The Project site layout has been designed to reduce the potential for impacts to nearby residences. With an assumed background sound level of 35 dBA, the Project's operational noise levels cannot exceed 40 dBA, or 5 dBA above the assumed background ambient to meet local laws, ordinances, regulations, and standards (LORS). As a result, the Project substation transformer will be designed to meet a National Electrical Manufacturers Association (NEMA) sound rating of 76 dBA. This will ensure that received sound levels at the nearest residence do not exceed 40 dBA during Project operation.

2.0 INTRODUCTION

Silverado Power, LLC (Silverado Power) is proposing the construction and operation of the Project and this technical report presents information on the noise and vibration levels associated with these activities. The following approach was used to complete this Noise Impact assessment:

- Determine the applicable LORs;
- Describe the existing noise environment in the Project vicinity;
- Identify existing land uses that are sensitive to noise, including residential areas, hospitals or healthcare facilities, libraries, parks, and schools;
- Evaluate the anticipated Project noise impacts during construction and operation;

- Recommend measures to mitigate the potential Project noise impacts, as needed; and
- Provide conclusions of the noise impact analysis.

3.0 PROJECT DESCRIPTION

The Project will have a generating capacity of up to 35 megawatts (MW). The site is located on 136 acres of primarily unproductive agricultural land in Los Angeles County approximately 6.7 miles northwest of Lancaster (Figures 1 and 2). The Project will utilize PV modules to convert the sun's radiance directly into electrical energy without the use of heat transfer fluid or cooling water. In addition to the PV modules, the Project will include the following associated facilities:

- Module mounting system;
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects);
- PV module electrical inverters and transformers;
- Electrical collection system, including switchgear;
- Data monitoring equipment; and
- Access roads and chain link perimeter security fencing.

The Project will not require the construction of an on-site operations and maintenance (O&M) facility. Electricity from the Project will be delivered to the existing Southern California Edison 66 kilovolt (kV) transmission line adjacent to the property. The 66 kV transmission line is adjacent to the northern border of the facility and runs east/west immediately north of the Project along West Avenue G.

The facility will operate year-round, producing renewable electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the second quarter of 2014 and complete construction and begin commercial operation by the first quarter of 2015. The Project construction activities are anticipated to take from 9 to 12 months to complete. Project design information is currently only at a schematic level. The following preliminary design information has been provided by the Project engineers:

- Underground generation tie (gen-tie) line to existing 66 kV line.
- 1 main GSU transformer, approximately 25 megavolt ampere (MVA), NEMA TR-1 sound levels. 29 inverter-level transformers, 1 MVA each, NEMA TR-1 sound levels.
- Inverter rating 500 kilovolt-ampere, 57 total with NEMA 3R enclosures.

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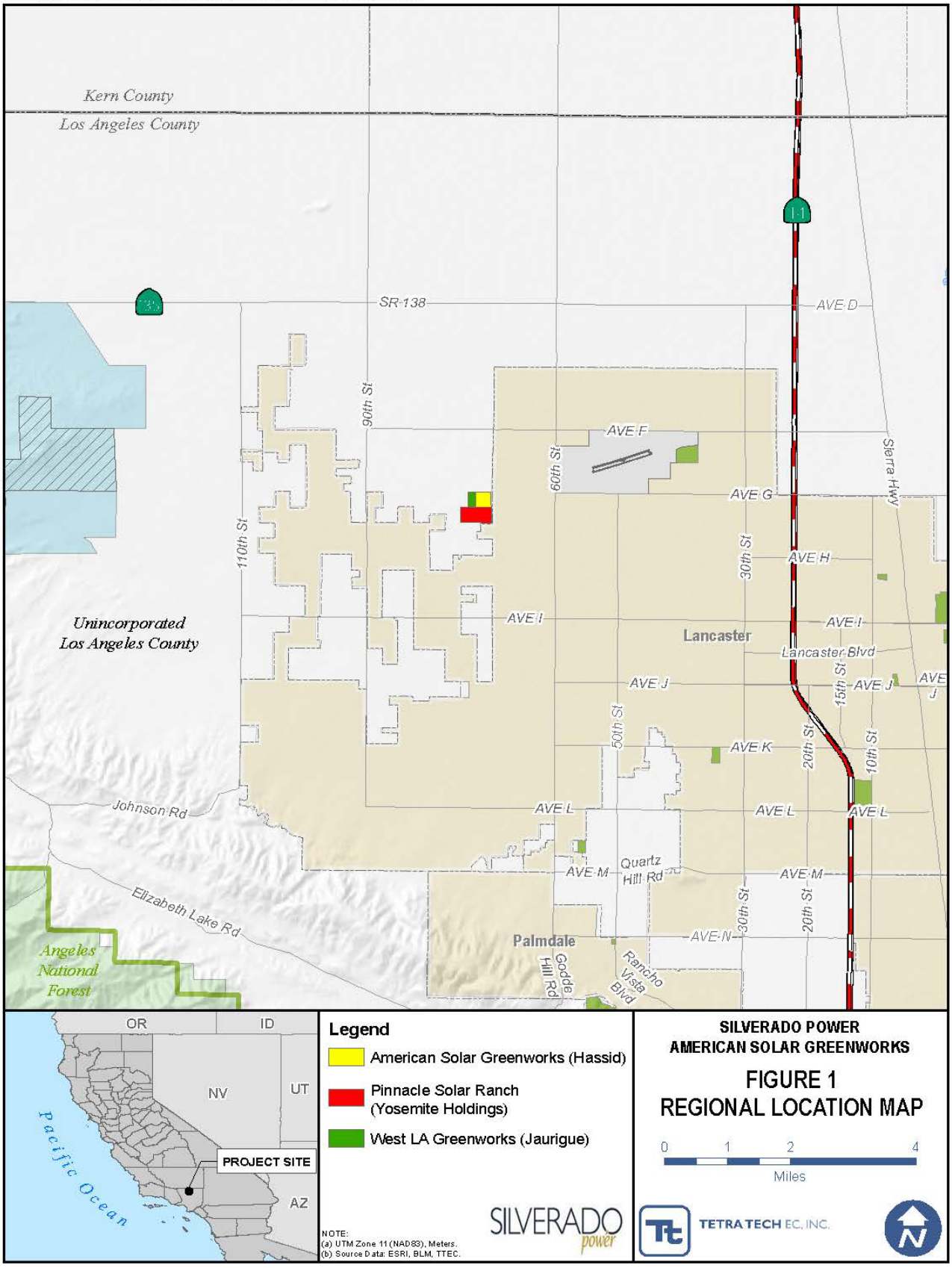

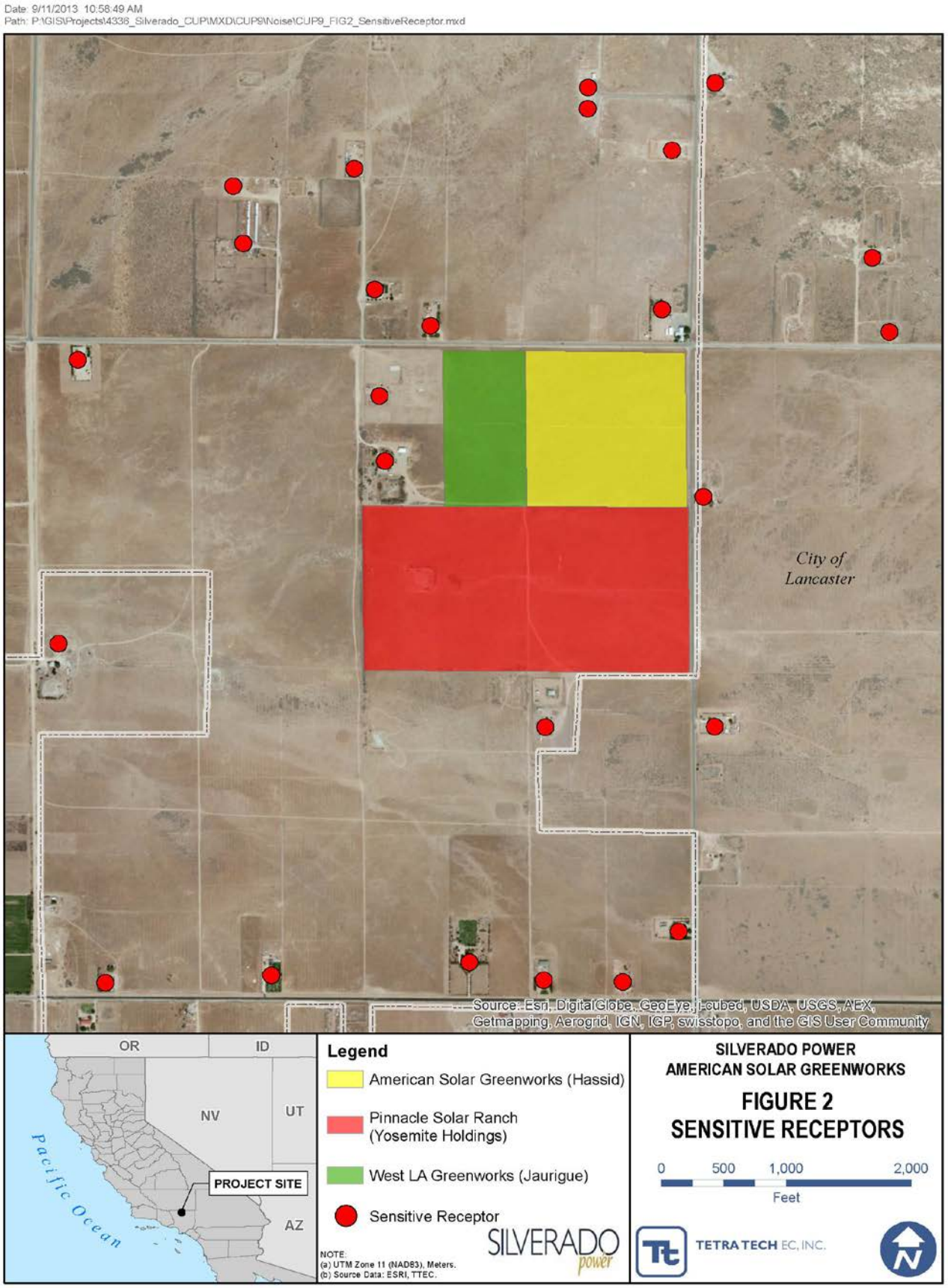
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4.0 ACOUSTIC AND VIBRATION TERMINOLOGY

4.1.1 Acoustic Terminology

Sound levels are presented on a logarithmic scale to account for the large pressure response range of the human ear, and are expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing defined as 20 micropascals. Typically, a noise analysis examines 11 octave (or 33 1/3 octave) bands ranging from 16 Hertz (Hz) (low) to 16,000 Hz (high), which encompasses the human audible frequency range. Since the human ear does not perceive every frequency with equal loudness, spectrally varying sounds are often adjusted with a weighting filter. The A-weighted filter is applied to compensate for the frequency response of the human auditory system, known as dBA. Unweighted sound levels are referred to as linear. Linear decibels are used to determine a sound's tonality and to engineer solutions to reduce or control noise as techniques are different for low and high frequency noise. Sound levels that are linear are presented as dBL.

An inherent property of the logarithmic decibel scale is that the sound pressure levels of two separate sources are not directly additive. For example, if a sound of 50 dBA is added to another sound of 50 dBA, the result is a 3-decibel increase (or 53 dBA), not an arithmetic doubling to 100 dBA. With respect to how the human ear perceives changes in sound pressure level relative to changes in "loudness," scientific research demonstrates the following general relationships between sound level and human perception for two sound levels with the same or very similar frequency characteristics:

- 1 dBA is the practical limit of accuracy for sound measurement systems and corresponds to an approximate 10 percent variation in the sound pressure level. A 1 dBA increase or decrease is a non-perceptible change in sound.
- A 3 dBA increase or decrease is a doubling (or halving) of acoustic pressure level and it corresponds to the threshold of change in loudness perceptible in a laboratory environment. In practice, the average person is not able to distinguish a 3 dBA difference in environmental sound outdoors.
- A 5 dBA increase or decrease is described as a perceptible change in sound level and is a discernible change in an outdoor environment.
- A 10 dBA increase or decrease is a tenfold increase or decrease in acoustic pressure level but is perceived as a doubling or halving in loudness (i.e., the average person will judge a 10 dBA change in sound level to be twice or half as loud).

Estimations of common noise sources and outdoor acoustic environments, and the comparison of relative loudness, are presented in Table 1.

Table 1. Sound Pressure Levels (L_p) and Relative Loudness of Common Noise Sources and Soundscapes

Noise Source or Activity	Sound Level (dBA)	Subjective Impression	Relative Loudness (perception of different sound levels)
Jet aircraft takeoff from carrier (50 ft)	140	Threshold of pain	64 times as loud
50-horsepower (hp) siren (100 ft)	130		32 times as loud
Loud rock concert near stage Jet takeoff (200 ft)	120	Uncomfortably loud	16 times as loud
Float plane takeoff (100 ft)	110		8 times as loud
Jet takeoff (2,000 ft)	100	Very loud	4 times as loud
Heavy truck or motorcycle (25 ft)	90		2 times as loud
Garbage disposal Food blender (2 ft) Pneumatic drill (50 ft)	80	Loud	Reference loudness
Vacuum cleaner (10 ft)	70	Moderate	1/2 as loud
Passenger car at 65 mph (25 ft)	65		
Large store air-conditioning unit (20 ft)	60		1/4 as loud
Light auto traffic (100 ft)	50	Quiet	1/8 as loud
Quiet rural residential area with no activity	45		
Bedroom or quiet living room Bird calls	40	Faint	1/16 as loud
Typical wilderness area	35		
Quiet library, soft whisper (15 ft)	30	Very quiet	1/32 as loud
Wilderness with no wind or animal activity	25	Extremely quiet	
High-quality recording studio	20		1/64 as loud
Acoustic test chamber	10	Just audible	
	0	Threshold of hearing	

Sound levels can be measured, modeled, and presented in various formats. The sound metrics that were employed in this analysis have the following definitions:

L_{eq}: Conventionally expressed in dBA, the L_{eq} is the energy-averaged, A-weighted sound level over a specified time period. It is defined as the steady, continuous sound level over a specified time, which has the same acoustic energy as the actual varying sound levels over the specified period.

L_{max}: The maximum A-weighted sound level as determined during a specified measurement period. It can also be described as the maximum instantaneous sound pressure level generated by a piece of equipment or during a construction activity.

L_{dn}: The L_{dn} measures the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure (USEPA 1971). The L_{dn} is calculated by averaging the 24-hour hourly L_{eq} levels at a given location after adding 10 dB to the nighttime period (10:00 p.m. – 7:00 a.m.) to account for the increased sensitivity of people to noises that occur at night.

CNEL: Community Noise Equivalent Level (CNEL) is another average A-weighted L_{eq} sound level measured over a 24-hour period; however, this noise scale is adjusted to account for some individuals' increased sensitivity to noise levels during the evening and nighttime hours. A CNEL noise measurement is obtained after adding 5 dB to sound levels occurring during evening hours (7:00 p.m. to 10:00 p.m.) and 10 dB to sound levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.).

4.1.2 Vibration Terminology

According to the Federal Transit Administration's Transit Noise and Vibration Impact Assessment (FTA 2006), construction activities can be a source of ground-borne vibration. Activities such as pile driving and operation of heavy equipment may cause ground-borne vibration while constructing the Project. Vibration is an oscillatory motion which can be described in terms of displacement, velocity, or acceleration (FTA 2006). Velocity or acceleration is typically used to describe vibration. Two descriptors are frequently used when discussing quantification of vibration, the PPV and the root mean square (rms).

Peak particle velocity (PPV) – The maximum instantaneous positive or negative peak of the vibration signal (FTA 2006).

Root mean square (rms) – The square root of the average of the squared amplitude of the vibration signal, typically calculated over a 1-second period (FTA 2006)

The PPV is often used to assess stress on structures and the rms is used to describe the human response to vibration. The California Department of Transportation (Caltrans) construction vibration guidance is used in this assessment. This guidance includes a human response equivalent based on the PPV instead of using rms.

5.0 REGULATORY SETTING

This section provides an overview of federal, state, and local regulations related to noise issues applicable to the Project.

5.1 Federal

Federal laws, regulations and guidance establish the national framework for noise regulations and include those from the Occupational Safety and Health Administration and the EPA.

5.1.1 Occupational Safety and Health Administration, Occupational Noise Exposure; Hearing Conservation Amendment (29 Code of Federal Regulations [CFR] 1910.95)

This standard establishes mandates to protect employees from excessive noise exposure and requires a Hearing Conservation Program when routine exposure to high noise levels is expected to occur.

5.1.2 U.S. Environmental Protection Agency in "Information of Levels on Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." (EPA 550/9-74-004)

Published in 1974, this document identifies safe levels of environmental noise exposure and is intended to "provide State and Local governments as well as the Federal Government and the private sector with an informational point of departure for the purpose of decision making." While the EPA has no regulation governing environmental noise, the agency has conducted several extensive studies to identify the effects of sound level on public health and welfare. For outdoor residential areas, the recommended EPA guideline is an L_{dn} of 55 dBA and an indoor L_{dn} limit of 45 dBA. These levels are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and healthcare areas. Noise-level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour L_{eq} values of 70 dBA (both outdoors and indoors). This publication remains the authoritative study based on a large sampling of community reaction to noise. The EPA sound level guidelines do not provide an absolute measure of noise impact, but rather a consensus on potential activity interference, human health and welfare effects, and annoyance. Since these protective levels were derived without concern for technical or economic feasibility, and contain a margin of safety to ensure their protective value, they should not be viewed as standards, criteria, regulations, or goals. Rather, they should be viewed as levels below which there is no reason to suspect that the general population will be at risk from any of the identified effects of noise. The EPA guideline limits are summarized in Table 2.

Table 2. Summary of EPA Cause and Effect Noise Levels

Location	Level	Effect
All public accessible areas with prolonged exposure	70 dBA $L_{eq(24)}$	Safety
Outdoor at residential structure and other noise sensitive receptors where a large amount of time is spent	55 dBA L_{dn}	Protection against annoyance and activity interference
Outdoor areas where limited amounts of time are spent, e.g., park areas, school yards, golf courses, etc.	55 dBA $L_{eq(24)}$	
Indoor residential	45 dBA L_{dn}	
Indoor non-residential	55 dBA $L_{eq(24)}$	

(USEPA 1974)

5.2 State

In 1987, the California Department of Health Services published guidelines for the noise element of local general plans. These guidelines include a noise level/land use compatibility chart that categorizes various outdoor L_{dn} ranges into up to four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), depending on land use. For many land uses, the chart shows L_{dn} ranges for two or more compatibility categories. The noise element guidelines chart identifies the normally acceptable range for low-density residential uses as less than 60 dBA, while the conditionally acceptable range is 60-70 dBA. The normally acceptable range for high-density residential uses is identified as L_{dn} values below 65 dBA, while the conditionally acceptable range is identified as 65-70 dBA. For educational and medical facilities, L_{dn} values below 60 dBA are considered normally acceptable, while L_{dn} values of 60-70 dBA are considered conditionally acceptable. For

office and commercial land uses, L_{dn} values below 67.5 dBA are considered normally acceptable, while L_{dn} values of 67.5-77.5 dBA are categorized as conditionally acceptable. These normally and conditionally acceptable L_{dn} ranges are intended to indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations. These guidelines are used by many agencies, environmental planners, and acoustical specialists as a starting point to evaluate the potential for noise impact on and by a project. The guidelines are also employed to evaluate methods for achieving noise compatibility with respect to nearby existing uses. Table 3 summarizes these guidelines for the normally and conditionally acceptable L_{dn} exposures.

Table 3. California Department of Health Services Noise Guidelines

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)	
	Normally Acceptable	Conditionally Acceptable
Residential – Low Density	50 - 60	60 - 70
Residential – High Density	50 - 65	65 - 70
Transient Lodging – Motels, Hotels	50 - 65	65 – 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 60	60 - 65
Auditoriums, Concert Halls, Amphitheaters	NA	50 - 70
Sports Arenas, Outdoor Spectator Sports	NA	50 - 75
Playgrounds, Neighborhood Parks	50 – 67.5	NA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 70	NA
Office Buildings, Business Commercial and Professional	50 – 67.5	67.5 – 77.5
Industrial, Manufacturing, Utilities, Agriculture	50 - 70	70 - 80

The California Department of Housing and Community Development have adopted noise insulation performance standards for new hotels, motels, and dwellings other than detached single-family structures (24 California Code of Regulations [CCR] T25-28). These standards require that “interior CNEL with windows closed, attributable to exterior sources, shall not exceed an annual CNEL of 45 dB in any habitable room.”

Occupational exposure to noise is regulated by the California Occupational Safety and Health Act in Title 8, Group 15, Article 105, Sections 5095–5100. The standard stipulates that protection against the effects of noise exposure will be provided when sound levels exceed 90 dBA over an 8-hour exposure period.

5.2.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and that such impacts be eliminated or mitigated to the extent feasible. The CEQA guidelines (AEP 2012) set forth characteristics that signal a potentially significant impact. Under CEQA the proposed Project would be considered to have significant noise and vibration impacts if it results in the following:

- **NZ-1** Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- **NZ-2** Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels.
- **NZ-3** A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- **NZ-4** A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- **NZ-5** For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.
- **NZ-6** For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

For the proposed Project, the following criteria were determined to be inapplicable or to result in no impact:

- Exposure of on-site workers to noise levels that exceed occupational safety standards (90 dBA as a time-weighted 8-hour average or peak noise levels above 115 dBA).
- Exposure of residents to airport or private airstrip-related noise levels above a CNEL of 65 dBA.

Occupational noise exposure is governed by federal and state regulations. The California Division of Occupational Safety and Health (Cal/OSHA) administers industrial safety regulations in California. Cal/OSHA regulations establish a time-weighted noise exposure limit of 90 dBA averaged over 8 hours (CCR, Title 8, Article 105). Noise source controls, administrative procedures, or worker hearing protection must be provided if worker noise exposure would exceed the 90 dBA limit. The construction contractor selected for this Project will be required to follow Cal/OSHA requirements for construction worker noise exposure. Consequently, worker noise exposure issues are not discussed further under any of the alternatives.

There are three aviation uses in the general Project vicinity. General William J. Fox Airfield (Fox Airfield) is located approximately 1 mile east/northeast of the Project site. Bohunk's Airpark is located approximately 2.4 miles southwest of the proposed Project site, and Little Buttes Antique Airfield is located about 4.8 miles north of the Project site. Bohunk's Airpark and Little Buttes Antique Airfield have very low use levels; Fox Airfield has moderate use levels and is predominantly used for general aviation with some cargo operations. Sound contours developed for Fox Airfield indicate that the Project is within the 55-60 dBA CNEL noise contour and Zone C, the extended approach/departure zone. According the the airport's land use compatibility plan (Los Angeles County Airport Land Use Commission 2004), industrial uses such as utilities are acceptable uses in this zone. No airfield noise contours have been developed for Bohunk's Airpark or Little Buttes Antique Airfield, but due to low operation levels and distance from the airports, sound levels at both airfields are assumed to be below 55 dBA CNEL. The Project would not create residential land uses, and all Project features are outside of the airfield properties. Consequently, airport-related noise issues are not discussed further.

5.3 Local

5.3.1 Los Angeles County 2011 Draft General Plan 2035

The Draft General Plan 2035 lists policies related to noise that include using land uses such as parks to buffer noise-sensitive uses from excessive noise impacts, promoting land use compatibility, and ensuring adequate mitigation (Los Angeles County 2011).

5.3.2 Los Angeles County Code

The County Noise Control Ordinance, Title 12 of the County Code, was established to reduce and restrict certain noise-producing activities. Activities may not generate noise levels above the specified limits either at the exterior or interior areas of neighboring land uses. The limits are derived from tabulated values that depend on the land use, with adjustments to create a series of noise standards. The exterior limits are presented in Table 4. Additional standards are provided in the event that the exterior limits are exceeded (Los Angeles County 2012).

Table 4. Exterior Noise Standards, Los Angeles County Code

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level (dB)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 p.m. to 7:00 a.m. (nighttime)	45
		7:00 a.m. to 10:00 p.m. (daytime)	50
III	Commercial properties	10:00 p.m. to 7:00 a.m. (nighttime)	55
		7:00 a.m. to 10:00 p.m. (daytime)	60
IV	Industrial properties	Anytime	70

Source: Section 12.08.390 of the Los Angeles County Code (a portion of the Noise Control Ordinance).

In addition, the County Noise Control Ordinance also prohibits construction activities and noise during certain times in areas that would affect a residential or commercial property. The prohibited times are between the weekday hours of 7:00 p.m. and 7:00 a.m. and any time on Sundays or holidays. The Ordinance identifies maximum noise levels for mobile and stationary equipment as shown in Table 5. All internal combustion-engine-powered equipment "shall be equipped with suitable exhaust and air intake silencers in proper working order." A 5 dBA penalty is applied to noises that are considered impulsive.

Table 5. Maximum Noise Levels for Construction Noise from Stationary Equipment (10 days or more)

	Single-family Residential	Multi-family Residential	Semi-residential/ Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

Source: Section 12.08.440 of the Los Angeles County Code (a portion of the Noise Control Ordinance).

5.3.3 Antelope Valley Areawide General Plan

The 1986 Antelope Valley Areawide Plan designates areas within the 60-dBA noise contour from transportation sources such as airports, railroads, and major highways as Noise Management Areas (NMA) (Los Angeles County 1986). Plan policy for these areas calls for the reduction of noise impacts on adjacent land uses through both hazard avoidance actions, where practical, and hazard mitigation practices, in other cases. The Antelope Valley Areawide General Plan is currently in the process of being updated; however, no updated guidelines or standards related to noise are currently available. The Project is not located close enough to an airport to be within an aviation related 60 dBA CNEL noise contour, although it is within the 55-60 dBA CNEL noise contour for Fox Airfield (see discussion above). No railroads are located within 0.5 mile of the Project, and therefore sound from railroad activities is anticipated to be less than 60 dBA. The nearest roadways are West Avenue G and 70th Street West, neither of which is designated as a major highway (i.e., U.S. Highway, State Route, or Interstate). The nearest major highway is State Route 14, located approximately 4.7 miles east of the Project site. Peak hour traffic volumes on rural roads, such as those listed above, are unlikely to be heavy enough to generate traffic noise within the Project area of 60 dBA L_{eq} or greater. Therefore, the Project site is not located within a NMA.

6.0 EXISTING CONDITIONS

The degree of audibility of a new or modified sound source is dependent in a large part upon the existing ambient sound level. A wide range of noise settings may occur within the Project study area, which consists of all areas that could be potentially affected by construction or operational noise resulting from the Project. The Project site encompasses previously disturbed, fallow agricultural land in northern Los Angeles County. The Project vicinity includes agricultural fields and scattered residences intermixed with non-native grasslands. The closest residences (receptors) are located approximately 336 ft north, 133 ft east, 452 ft south, 479 ft northwest of the Project site (Figure 2). The old Esperanza School is located at the northwest corner of the intersection of West Avenue G and 70th Street West. The school building is no longer an active school.

Existing ambient sound levels within the Project vicinity are expected to be relatively low, although sound levels may be sporadically elevated in localized areas due to roadway noise or periods of human activity. Background sound levels will vary both spatially and temporally depending on proximity to area sound sources, roadways, and natural and/or weather-related sounds. Principal contributors to the existing acoustic environment likely include motor vehicle traffic, mobile farming equipment, farming activities such as plowing and irrigation, all-terrain vehicles, local roadways, periodic aircraft flyovers, and natural sounds such as birds, insects, and leaf or vegetation rustle during elevated wind conditions. Open lands, predominantly rural in nature, will have comparatively lower ambient sound levels than more developed areas. Diurnal effects result in sound levels that are typically quieter during the night than during the daytime, except during periods when evening and nighttime insect noise may dominate in warmer seasons.

7.0 NOISE AND VIBRATION IMPACT ANALYSIS

Sound generated by the Project will consist of: (1) short duration sounds resulting from construction activities and (2) sound during normal facility operations. Vibration from the Project would only result during construction. Construction activities would take place only during daytime hours. An evaluation was performed of expected noise and vibration levels to assess compliance with applicable agency policies and regulatory requirements.

The region of interest for noise and vibration issues is typically localized. Ground-borne vibrations generally attenuate rapidly with increasing distance from the vibration source. The distances involved depend primarily on the intensity of the vibrations generated by the source, and partly on soil and geologic conditions. Detectable vibrations will travel the greatest distance through solid rock and the least distance through loose, unconsolidated soils or saturated soils. For vibration sources such as construction activity and vehicle traffic, the region of influence is typically less than 1,000 ft from the vibration source. Table 6 compares the distance of the closest existing residence to the SGF components.

Table 6. Comparison of Distances (ft) of the Closest Residence to SGF Component

Project Component	Distance to Closest Residence	Direction
Solar Farm	133	N
Gen-Tie Transmission Line (underground)	170	NW
Substation	650	NW

7.1 Construction

7.1.1 Construction Noise

Construction noise, although temporary, can be a source of concern for sensitive receptors, such as nearby residences. Construction is anticipated to take place between the second quarter of 2014 and the first quarter of 2015. Construction of the Project will require the use of heavy equipment that may be periodically audible at offsite locations. Received sound levels will fluctuate, depending on the construction activity, equipment type, and distance between noise source and receiver. Sound from construction equipment will vary dependent on the construction phase and the number and class of equipment at a location at any given time. The first phase of construction will be mass grading, which is anticipated to take 2 months. The next phase is fine grading and onsite road construction, which will last 1 month, followed by trenching and infrastructure development, approximately 2 months in duration. PV module installation is the final construction phase, which is expected to be completed in 4 months.

The variation in power and usage imposes additional complexity in characterizing construction noise levels. Expected equipment types for each phase of construction are presented in Table 7. Each construction phase identified will require different types of construction equipment. The estimated composite site noise level is based on the assumption that all equipment would operate at a given usage load factor, over a standard 8-hour workday, to calculate the composite average daytime L_{eq}. The load factor accounts for the fraction of time that the equipment is in use over the specified time period.

Table 7. Summary of Solar Farm Construction Noise by Phase at Nearest Residence

Phase No.	Construction Phase	Construction Equipment	Load Factor %	Maximum L_{max} Equipment Noise Level at 50 ft (15 Meters [m]) dBA	Composite L_{eq} Noise Level at 133 ft (41 m) Average Daytime dBA	Composite L_{eq} Noise Level at Acoustic Centroid 1,271 ft (387 m) Average Daytime dBA
1	Mass Grading	(2) Graders (174 hp) (1) Rubber Tired Dozer (357 hp) (2) Water Trucks (189 hp)	57 59 50	85 85 80	80	60
2	Fine Grading - Road Construction	(1) Rough Terrain Forklift (93 hp) (1) Tractor/Loader/Backhoe (108 hp) (1) Water Truck (189 hp)	60 55 50	85 85 80	78	58
3	Trenching / Infrastructure Construction	(1) Tractor/Loader/Backhoe (108 hp) (1) Trencher (63 hp) (1) Water Truck (189 hp)	55 75 50	85 83 80	77	58
4	Building Construction / PV Installation	(1) Crane (399 hp) (1) Forklift (145 hp) (1) Other Equipment (190 hp) (1) Tractor/Loader/Backhoe (108 hp) (1) Water Truck (189 hp)	30 74 62 55 50	85 81 80 85 80	78	59
Sub Phase	**Construction Phase**	**Construction Equipment**	**Load Factor %**	**Maximum L_{max} Spec. Sound Pressure Level at 20 ft**	**Composite L_{eq} Noise Level at 133 ft (41 m) Average Daytime dBA**	**Composite Noise Level at Acoustic Centroid 1,271 ft (387 m) Average Daytime dBA**
4a	PV Installation	GAYK 2L41C ram pile driver (impact device)	20*	111	88	68

Data compiled and methodologies developed in part from:

Federal Highway Administration, “Construction Noise Handbook”, Report FHWA-HEP-06-015, 2006.

Communication with equipment manufacturers of comparable equipment.

*Usage factor is based on FHWA assumption of 20%.

Pile driving is the method planned for installation of the foundations for the solar PV modules. Pile driving can generate high noise levels. Noise is generated from both the ram striking the pile as well as the operating air or diesel exhaust as it is exhausted from the cylinder (this is not present with hydraulic impact hammers). For this analysis it is assumed that the Project would use a GAYK 2L41C ram pile driver, which produces a sound pressure level of 111 dBA at 20 ft assuming an impact rate of 1,400 blows per minute. Depending on need the Project may choose to use a different pile driver that produces equal or lesser sound pressure. Actual pile driving averages 30-45 seconds per pile at a 6-ft embedment depth and the engine would typically run close to 3,000 revolutions per minute (rpm) for use with this ram. Pile drivers are classified as impact devices in the Los Angeles County Noise Ordinance; therefore, the applicable standard is 55 dBA. Assuming a load or usage factor of 20 percent (FHWA 2006), it is expected that sound from pile driving would attenuate to 88 dBA at the nearest residence, 68 dBA at a distance of approximately 1,271 ft, and would attenuate to below 60 dBA within 1 linear mile of this construction activity, depending on meteorological and topographical effects. A variance to the noise ordinance in the County of Los Angeles will be required for construction involving pile driving since the pile driving is expected to last more than 10 days.

Construction sound will attenuate with increased distance from the sound sources. Other factors, such as vegetation, terrain, and obstacles, such as buildings, will act to limit the impact of construction noise levels, but were not considered in the evaluation. Trees free of foliage, such as deciduous trees in the late fall to early spring, provide little screening. According to the Federal Highway Administration (FHWA), “Vegetation must be a minimum of 100 ft thick, a minimum of 20 ft high and sufficiently dense so that it cannot be seen through in order to provide a 5-dBA noise reduction. Anything less than that thickness will not result in any significant noise reduction” (FHWA 2012). Actual received sound levels will fluctuate, depending on the construction activity, equipment type, and separation distances between source and receiver. As a general construction practice, functional mufflers will be maintained on all equipment to maintain noise levels as low as reasonably achievable.

Construction noise is a temporary noise source that would only occur during daytime hours. Sound levels from construction are expected to be comparable to sound produced by farm machinery, such as equipment used in nearby agricultural fields. Worst case construction noise levels listed in Table 7 for the nearest residence would last no more than a few weeks, as construction activities progress across the Project site. Therefore, no one residence will be exposed to significant noise levels for any extended period of time. Traffic noise generated during construction on and offsite will also temporarily add to overall sound levels. As a general construction practice, functional mufflers will be maintained on all equipment to maintain noise levels as low as reasonably achievable. The Project will make reasonable efforts to minimize noise resulting from construction activities.

7.1.2 Construction Vibration

Vibration associated with construction of the Project has the potential to be an annoyance to nearby residences. Structural damage to nearby residences from construction activities is unlikely and not anticipated. Vibratory motion is typically described by identifying the PPV

(Caltrans 2004) for damage to buildings. To assess the human response to vibration, the rms amplitude is typically used (Caltrans 2004).

The Caltrans Construction Induced Vibration Guidance Manual identifies two impact criteria for buildings and humans. Table 8 describes impact criteria for buildings and Table 9 describes impact criteria for humans. Although the rms is typically used to assess human response, Caltrans has provided threshold guidance for human response relative to PPV to maintain a consistent metric for both human response and structural impacts to buildings.

Table 8. Caltrans Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2004

Table 9. Caltrans Guideline Vibration Annoyance Potential

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2004

Installation of the PV solar module foundations requires pile driving and has the potential for vibration impacts to structures and humans. The Project is planning to use a pneumatic pile driver which is a type of impact pile driver. Because pile drivers are an impact device, they are considered continuous/frequent sources of vibration. Other construction activities are assumed to be less intensive than pile driving and therefore would have lower PPV than pile driving. Therefore, vibration levels from pile driving are considered worst case for solar facility construction. Caltrans vibration guidance provides the following equation to calculate PPV at sensitive receptors, such as residences:

$$PPV_{Impact\ Pile\ Driver} = PPV_{Ref}\ (25/D)^{n}\ x\ (E_{equip}/E_{Ref})\ (in/sec)$$

Where:

PPV_{Ref} = 0.65 in/sec for a reference pile driver at 25 ft
D = distance from pile driver to the receiver in ft
n = 1.1 is a value related to the vibration attenuation rate through ground
E_{Ref} = 36,000 ft-lb (rated energy of reference pile driver)
E_{equip} = rated energy of impact pile driver in ft-lbs

Using the referenced formula and an assumed 80,000 ft-lb rated energy for the impact pile driver, the calculated PPV at the nearest residence (133 ft), the Project site centroid (1,271 ft), and at the residence when construction is occurring on the Project site furthest away are listed in Table 10.

Table 10. Pile Driving Vibration Analysis

Pile Driving Location Compared to Nearest Residence	Estimated Pile Driving PPV
Project site boundary minimum distance to residence (80 ft)	0.15
Project site centroid distance to residence (1,271 ft)	0.01
Project site boundary maximum distance to residence (3,056 ft)	0.005

The worst case pile driving has been calculated as 0.15 PPV when pile driving is at the minimum distance from the nearest residence. The value of 0.01 PPV at the Project site centroid could be considered an "average" vibration level from pile driving. At the furthest distance from the Project site relative to the residence closest to the Project site, vibration from pile driving is predicted to be 0.005 PPV. According to Caltrans guidance a PPV of 0.15 would not damage the nearest residential structure; however, a PPV of 0.15 is predicted to be strongly perceptible to humans. Like noise from pile driving, vibration from pile driving will only last for a few weeks at most. The value of 0.01 PPV at the centroid is representative of the vibration that can be expected for most of the pile driving phase of construction. A value of 0.01 PPV is considered barely perceptible to humans, according to Caltrans.

7.2 Operation

The Project would generate power using PV modules mounted in rows of parallel racks. The SGF is anticipated to be unmanned during normal operation. Systems monitoring will be completed remotely and onsite staff will be limited to repair or cleaning of the PV modules. Maintenance staff will visit periodically to clean the PV modules, clear vegetation, and other general maintenance activities.

Sound sources considered in the Project operational acoustic analysis include the inverters and transformers associated with the PV modules, the proposed substation, and the transmission line. The principal sources of noise are the cooling-ventilation fans, the electrical components of the inverters, and the step-up transformers at the on-site substations. Transmission lines for the Project would be underground and therefore sound from the transmission lines would not be perceptible. The interconnections associated with the Project will be lower and therefore are not expected to be a significant generator of corona noise.

Each PV module 1 MW block will have two inverters and a ventilation fan housed inside a pre-fabricated enclosure and one transformer mounted on a concrete pad. Each inverter generates a noise level of about 75 dBA at a distance of 10 ft and it is expected that the enclosure would provide 15 to 20 dBA of noise reduction, reducing the inverter noise to approximately 58-63 dBA at a distance of 10 ft from the enclosure. The transformers generate a noise level of about 58 dBA at a distance of 6 ft. The transformers and inverters would be centrally located within each 1 MW block of solar modules. No solar arrays will be located within 100 ft of the property line and would be expected to generate low noise levels beyond the Project extents. PV station transformers and power inverters located within the facility are generally considered a low level source of noise, limited to daytime hours when the solar arrays are generating electricity.

Substations have switching, protection and control equipment, and a transformer, which generate the sound generally described as a low humming. There are three main sound sources associated with a transformer: core noise, load noise, and noise generated by the operation of the cooling equipment. The core is the principal noise source and does not vary significantly with electrical load. The load noise is primarily caused by the load current in the transformer's conducting coils (or windings), and consequently the main frequency of this sound is twice the supply frequency: 100 Hz for 50 Hz transformers and 120 Hz for 60 Hz transformers. The cooling equipment (fans) may also be an important noise component, depending on fan design. During an air forced cooling method, cooling fan noise is produced in addition to the core noise. The resulting audible sound is a combination of hum and the broadband fan noise. After sunset, when the plant no longer receives solar radiation, the inverters will not produce noise and the transformers will be energized but likely operating under low noise condition using natural draft cooling, but not be in operation (no fans) due to lower nighttime heat loads. Breaker noise is a sound event of very short duration, expected to occur only a few times throughout the year. Just as horsepower ratings designate the power capacity of an electric motor, a transformer's MVA rating indicates its maximum power output capacity. The transformers included in the PV modules are rated at 1 MVA whereas the transformer at the Project substation are rated at 25 MVA.

Transformers are designed and catalogued by MVA rating. The American National Standards Institute and the International Electrotechnical Commission have established methodologies for measurement of noise from transformers and other electrical devices. Measurements involve taking reference sound level measurements using microphones positioned 0.3 m (1 ft) from a tautly drawn string that encircles the device at a height above grade set at one-half the overall height of the device. The transformer noise output is the average of all measurements taken around the perimeter, incorporating contributions from both cooling fans and auxiliary equipment. The NEMA published standards TR1-1993 (R2000) also establish the maximum noise level allowed for transformers, voltage regulators, and shunt reactors based on the equipment's method of cooling its dielectric fluid (air-cooled versus oil-cooled) and the electric power rating (NEMA TRI-1993).

8.0 ANALYSIS RESULTS

Based on CEQA guidance, an incremental increase of 5 dBA over the existing L_{eq} is identified as the threshold when adverse noise impacts may begin to occur. Receptors that experience Project-related received sound levels below the 5 dBA cumulative increase threshold have a lower likelihood of disturbance. For example, if a background sound level of 35 dBA is assumed, the total cumulative sound level of 40 dBA, or 5 dBA above the estimated background sound level, would become the onset threshold of potential adverse noise impact per CEQA guidelines. For areas where potential exceedances of the 5 dBA threshold might be expected, a second level noise mitigation evaluation may be necessary. This second level noise mitigation evaluation involves the re-evaluation of transformer NEMA ratings used at the on-site substations and is described in further detail below.

Numerical modeling was used to estimate the maximum substation transformer sound source level, or NEMA sound rating, which would result in received sound levels remaining at or below 40 dBA at the nearest residence. The estimated NEMA sound rating is based on preliminary Project design information that best represents their expected acoustic performance, inclusive of a standardized engineering safety factor. The surface area [S] of the transformers was estimated using the following empirical relationship based on rated capacity [MVA]. The assumed MVA is 25 for the Project transformer:

$$10\log [S] = 14 + 2.5\log [MVA]$$

The above equation yields an estimated surface area of 604.6 ft^2 (or 56.2 m^2). Using the surface area and MVA rating, the maximum substation transformer NEMA sound rating was determined to be 74 dBA. This will ensure that the Project transformer complies with CEQA by not increasing the sound levels in the area and at the closest residence (650 ft from the Project substation transformer) by more than 5 dBA over the assumed background ambient of 35 dBA.

Currently, substation design is only at a schematic level, but any transformer installed will conform to all relevant NEMA standards. Actual equipment installed for the Project will be designed to have a similar sound power profile and NEMA rating to what was assumed for this analysis.

9.0 MITIGATION MEASURES

The following noise mitigation measures will be considered and incorporated into the Project contract specifications as necessary to minimize noise levels associated with Project construction to the extent practicable:

- Construction operations will not occur between 7:00 pm and 7:00 am on weekdays or Saturday, or at any time on Sunday within 500 ft of an occupied residence;
- Construction site and access road speed limits will be established and enforced during the construction period;
- Electrically-powered equipment will be used instead of pneumatic or internal combustion powered equipment, where feasible;

- Material stockpiles and mobile equipment staging, parking, and maintenance areas will be located as far as practicable from noise-sensitive receptors;
- The use of noise-producing signals, including horns, whistles, alarms, and bells, will be for safety warning purposes only;
- No Project-related public address or music system will be audible at any adjacent receptor; and
- All noise-producing construction equipment and vehicles using internal combustion engines will be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed "package" equipment (e.g., arc-welders, air compressors) will be equipped with shrouds and noise control features that are readily available for that type of equipment.

With respect to mitigation during operation, potential impacts associated with on-site substations are considered. Depending on the Project's acoustic design goal, final substation design may incorporate appropriate mitigation measures including:

- Siting substations as far from residential receptors as is feasible; and
- Specifying NEMA low noise rated equipment to ensure that Project noise impacts will be less than significant. Quieted design can readily achieve a 10 dBA or greater reduction as compared to standard NEMA-rated transformers of a similar size and rated capacity.

10.0 CONCLUSION AND RECOMMENDATION

Operational sound levels associated with the Project would predominantly be a result of the transformer used in the substation that is required by the Project. The transformer for the Project would be designed with a NEMA rating of 74 dBA or less to ensure that received sound levels resulting from Project operation do not exceed 40 dBA at the nearest residence.

Complaints are unlikely for collection substations with transformers less than 10 MVA capacities. Complaints are more likely at collection substations with transformers ranging in sizes of 10 to 150 MVA with separation distances of 500 to 600 ft or less. The Project substation transformers are rated at 25 MVA and the closest noise sensitive receptor (i.e., residence) is located approximately 650 ft away; therefore, complaints are unlikely to result from the Project. Based on the available data and screening level calculations, employing transformers that adhere to the identified NEMA sound ratings representative of maximum fan cooling operation as detailed in Section 8.0, demonstrate the feasibility of the Project to operate in compliance with County of Los Angeles Codes and Exterior Noise Standards, Antelope Valley Areawide General Plan, and CEQA guidelines assuming a typical background sound level of 35 dBA.

Acoustic analysis results may change as a result of adjustments to equipment components including the use of noise mitigation measures during final Project design, in modeling and other assumptions including receptor status, or based on assumptions or measurement data used to estimate background sound levels within the Project study area. The information available during the initial engineering phases is only at a conceptual level and does not allow design details to be finalized for specific mitigation measures.

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APPENDIX B-8.4

PROJECT 4 ANTELOPE SOLAR GREENWORKS NOISE IMPACT ASSESSMENTS

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

ANTELOPE SOLAR GREENWORKS
(CUP GROUP 10A)
NOISE IMPACTS REPORT

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September 2013

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1.0 SUMMARY

A noise and vibration technical analysis was conducted to assess the potential impacts from construction and operation of the Antelope Solar Greenworks (Project) Solar Generating Facility (SGF).

Temporary construction noise may impact residences close to the Project. Pile driving with an impact pile driver is required to install the photovoltaic (PV) module mounting system and will produce the most noise during construction. Noise levels originating at the Project centroid during pile driving activities are predicted to be 71 A-weighted decibels (dBA) at the nearest residence. This is representative of the average pile driving sound level for the Project. Temporary noise levels from other construction equipment are predicted to range from 63 dBA L_{eq} to 69 dBA L_{eq} originating at the Project centroid. Temporary elevated noise levels from construction activities will be mitigated in several ways, such as limiting construction activities to daytime hours (7:00 a.m. to 7:00 p.m.) only Mondays through Fridays, and using electric construction equipment instead of equipment outfitted with a combustion engine when possible.

Construction vibration from the Project should not be a concern for both structures near the Project and for people living nearby. Project-related pile driving has the potential to produce the highest vibration levels. The predicted maximum vibration level of 0.34 peak particle velocity (PPV) at the nearest residence, located 64 feet from the Project boundary, represents the worst case scenario. The average pile driving PPV, calculated using the distance from the Project centroid to the nearest residence, is 0.02 PPV. Vibration levels of 0.02 PPV would be barely perceptible to humans, would not cause any damage to nearby structures, and would be of minimal concern.

Operational sound levels associated with the Project would predominantly be a result of the transformer used in the substation that is required by the Project. The Project site layout has been designed to reduce the potential for even the minimal impacts to nearby residences. With an assumed background sound level of 35 dBA, the Project's operational noise levels cannot exceed 40 dBA, or 5 dBA above the assumed background ambient to meet local laws, ordinances, regulations, and standards (LORS). As a result, the transformer for the Project would be designed to emit noise levels of 83 dBA or less at the location of the transformer. This will ensure that received sound levels at the nearest residence do not exceed 40 dBA during operation of the Project.

2.0 INTRODUCTION

Silverado Power, LLC (Silverado Power) is proposing the construction and operation of the Project. This technical report presents information on the noise and vibration levels generated by construction and operation of the Project.

The following approach was used to complete this Noise Impact Assessment:

- Determine the applicable LORs;
- Describe the existing noise environment in the Project vicinity;

- Identify existing land uses that are sensitive to noise, including residential areas, hospitals or healthcare facilities, libraries, parks, and schools;
- Evaluate the anticipated Project noise impacts during construction and operation;
- Recommend measures to mitigate the potential Project noise impacts, as needed; and
- Provide conclusions of the noise impact analysis.

3.0 PROJECT DESCRIPTION

The Project will consist of the following five separate SGFs with a generating capacity totaling up to 52 megawatts (MW) on approximately 256 acres of primarily unproductive agricultural land in Los Angeles County. As illustrated on Figure 1 and Figure 2, the five SGFs are:

- Antelope Solar Greenworks – 6 MW – 37.8 acres
- Apex Greenworks – 15 MW – 60 acres
- Central Antelope Dry Farm Ranch – 16 MW – 98.19 acres
- Halcyon Solar – 10 MW – 40 acres
- Lancaster Blue Sky Ranch Solar – 5 MW – 20 acres

The Project will utilize PV modules to convert the sun's radiance directly into electrical energy without the use of heat transfer fluid or cooling water. In addition to the PV modules, the Project will include the following associated facilities:

- Module mounting system;
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects);
- Electrical inverters and transformers;
- Electrical collection system, including switchgear;
- Data monitoring equipment; and
- Access roads and chain link perimeter security fencing.

The Project will not require the construction of an on-site operations and maintenance (O&M) facility. The Project will connect to the existing Southern California Edison Antelope Substation (SCEAS) via a 0.8 mile generation-tie (gen-tie) line originating at the collection system within the SGF. SCEAS is located approximately 0.5 mile south of the Project site on the south side of W Avenue J.

The facility will operate year-round, producing renewable electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2013, and complete construction and begin commercial operation by the fourth quarter of 2013. The Project construction activities are anticipated to take approximately 9 months to complete. Project design information is currently only at a schematic level. The following preliminary design information has been provided by the Project engineers:

- One SGF, the Central Antelope Dry Farm Ranch, on 66 kilovolt (kV) transmission lines, buried, single circuit vertical configuration, approximately 200 amp-rated aluminum conductors.

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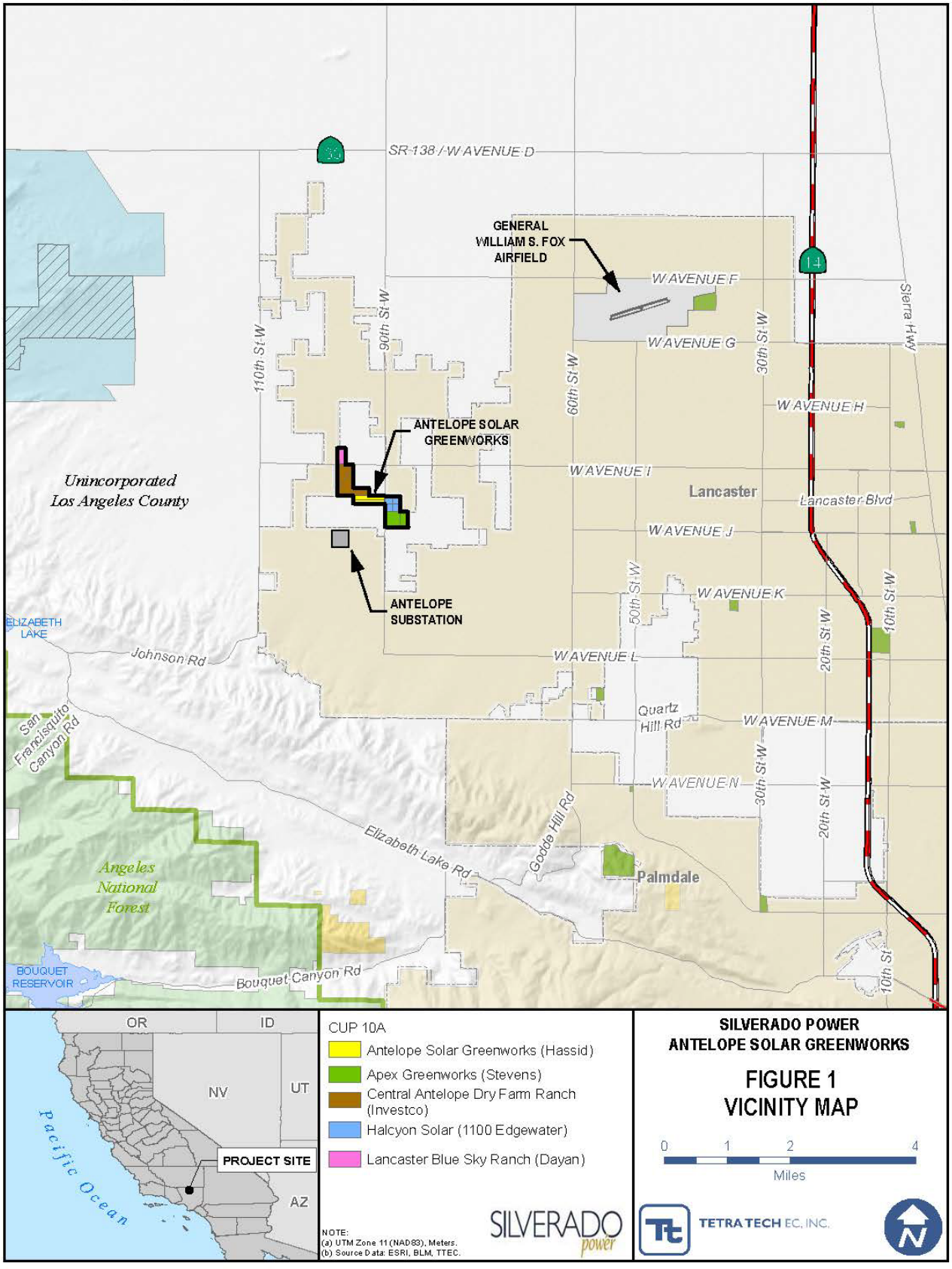

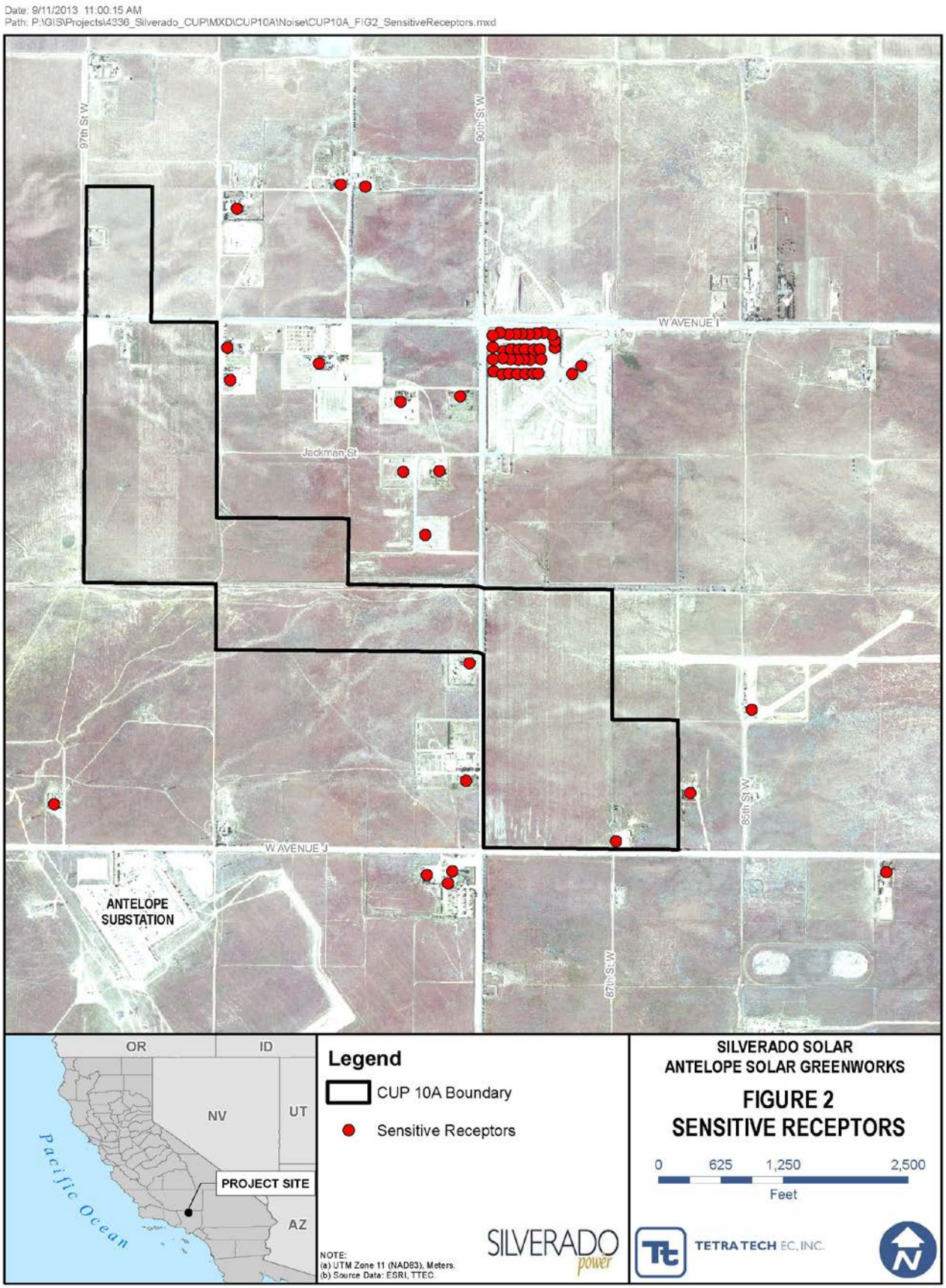
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Sensitive Receptors
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC
SILVERADO power
SILVERADO SOLAR
ANTELOPE SOLAR GREENWORKS
FIGURE 2
SENSITIVE RECEPTORS
0 625 1,250 2,500
Feet
TETRA TECH EC, INC.

- The remaining four SGFs will be on 12 kV transmission lines, buried, double or single circuit vertical configuration, approximately 200 amp-rated aluminum conductors.
- 1 main GSU transformer, approximately 25 megavolt ampere (MVA), NEMA TR-1 sound levels.
- 29 inverter-level transformers, 1 MVA each, NEMA TR-1 sound levels.
- Inverter rating 500 kilovolt-ampere, 57 total with NEMA 3R enclosures.

4.0 ACOUSTIC AND VIBRATION TERMINOLOGY

4.1 Acoustic Terminology

Sound levels are presented on a logarithmic scale to account for the large pressure response range of the human ear, and are expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing defined as 20 micropascals. Typically, a noise analysis examines 11 octave (or 33 1/3 octave) bands ranging from 16 Hertz (Hz) (low) to 16,000 Hz (high), which encompasses the human audible frequency range. Since the human ear does not perceive every frequency with equal loudness, spectrally varying sounds are often adjusted with a weighting filter. The A-weighted filter is applied to compensate for the frequency response of the human auditory system, known as dBA. Unweighted sound levels are referred to as linear. Linear decibels are used to determine a sound's tonality and to engineer solutions to reduce or control noise as techniques are different for low and high frequency noise. Sound levels that are linear are presented as dBL.

An inherent property of the logarithmic decibel scale is that the sound pressure levels of two separate sources are not directly additive. For example, if a sound of 50 dBA is added to another sound of 50 dBA, the result is a 3-decibel increase (or 53 dBA), not an arithmetic doubling to 100 dBA. With respect to how the human ear perceives changes in sound pressure level relative to changes in "loudness," scientific research demonstrates the following general relationships between sound level and human perception for two sound levels with the same or very similar frequency characteristics:

- 1 dBA is the practical limit of accuracy for sound measurement systems and corresponds to an approximate 10 percent variation in the sound pressure level. A 1 dBA increase or decrease is a non-perceptible change in sound.
- A 3 dBA increase or decrease is a doubling (or halving) of acoustic pressure level and it corresponds to the threshold of change in loudness perceptible in a laboratory environment. In practice, the average person is not able to distinguish a 3 dBA difference in environmental sound outdoors.
- A 5 dBA increase or decrease is described as a perceptible change in sound level and is a discernible change in an outdoor environment.
- A 10 dBA increase or decrease is a tenfold increase or decrease in acoustic pressure level but is perceived as a doubling or halving in loudness (i.e., the average person will judge a 10 dBA change in sound level to be twice or half as loud).

Estimations of common noise sources and outdoor acoustic environments, and the comparison of relative loudness, are presented in Table 1.

Table 1 Sound Pressure Levels (L_p) and Relative Loudness of Common Noise Sources and Soundscapes

Noise Source or Activity	Sound Level (dBA)	Subjective Impression	Relative Loudness (perception of different sound levels)
Jet aircraft takeoff from carrier (50 feet [ft])	140	Threshold of pain	64 times as loud
50-hp siren (100 ft)	130		32 times as loud
Loud rock concert near stage Jet takeoff (200 ft)	120	Uncomfortably loud	16 times as loud
Float plane takeoff (100 ft)	110		8 times as loud
Jet takeoff (2,000 ft)	100	Very loud	4 times as loud
Heavy truck or motorcycle (25 ft)	90		2 times as loud
Garbage disposal Food blender (2 ft) Pneumatic drill (50 ft)	80	Loud	Reference loudness
Vacuum cleaner (10 ft)	70	Moderate	1/2 as loud
Passenger car at 65 mph (25 ft)	65		
Large store air-conditioning unit (20 ft)	60		1/4 as loud
Light auto traffic (100 ft)	50	Quiet	1/8 as loud
Quiet rural residential area with no activity	45		
Bedroom or quiet living room Bird calls	40	Faint	1/16 as loud
Typical wilderness area	35		
Quiet library, soft whisper (15 ft)	30	Very quiet	1/32 as loud
Wilderness with no wind or animal activity	25	Extremely quiet	
High-quality recording studio	20		1/64 as loud
Acoustic test chamber	10	Just audible	
	0	Threshold of hearing	

Sound levels can be measured, modeled and presented in various formats. The sound metrics that were employed in this analysis have the following definitions:

L_{eq}: Conventionally expressed in dBA, the L_{eq} is the energy-averaged, A-weighted sound level over a specified time period. It is defined as the steady, continuous sound level over a specified time, which has the same acoustic energy as the actual varying sound levels over the specified period.

L_{max}: The maximum A-weighted sound level as determined during a specified measurement period. It can also be described as the maximum instantaneous sound pressure level generated by a piece of equipment or during a construction activity.

L_{dn}: The L_{dn} measures the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. The L_{dn} is calculated by averaging the 24-hour hourly L_{eq} levels at a given location after adding 10 dB to the nighttime period (10:00 p.m. – 7:00 a.m.) to account for the increased sensitivity of people to noises that occur at night.

CNEL: Community Noise Equivalent Level (CNEL) is another average A-weighted L_{eq} sound level measured over a 24-hour period; however, this noise scale is adjusted to account for some individuals' increased sensitivity to noise levels during the evening and nighttime hours. A CNEL noise measurement is obtained after adding 5 dB to sound levels occurring during evening hours (7:00 p.m. to 10:00 p.m.) and 10 dB to sound levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.).

4.2 Vibration Terminology

According to the Federal Transit Authority (FTA) Noise and Vibration Impact Assessment (FTA 2006), construction activities can be a source of ground-born vibration. Activities such as pile driving and operation of heavy equipment may cause ground-born vibration while constructing the Project. Vibration is an oscillatory motion which can be described in terms of the displacement, velocity, or acceleration (FTA 2006). Velocity or acceleration are typically used to describe vibration. Two descriptors are frequently used when discussing quantification of vibration, the PPV and the root mean square (rms).

Peak particle velocity (PPV) – The maximum instantaneous positive or negative peak of the vibration signal (FTA 2006).

Root mean square (rms) – The square root of the average of the squared amplitude of the vibration signal, typically calculated over a 1-second period (FTA 2006)

The PPV is often used to assess stress on structures and the rms is used to describe the human response to vibration. The California Department of Transportation (Caltrans) construction vibration guidance is used in this assessment. This guidance includes a human response equivalent based on the PPV instead of using rms.

5.0 REGULATORY SETTING

This section provides an overview of federal, state, and local regulations related to noise issues applicable to the Project.

5.1 Federal

Federal laws, regulation, and guidance establish the national framework for noise regulations and include those from the Occupational Safety and Health Administration and the EPA.

5.1.1 Occupational Safety and Health Administration, Occupational Noise Exposure; Hearing Conservation Amendment (29 Code of Federal Regulations [CFR] 1910.95)

This standard establishes mandates to protect employees from excessive noise exposure and requires a Hearing Conservation Program when routine exposure to high noise levels would occur.

5.1.2 U.S. Environmental Protection Agency in "Information of Levels on Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." (EPA 550/9-74-004)

Published in 1974, this document identifies safe levels of environmental noise exposure and is intended to "provide State and Local governments as well as the Federal Government and the private sector with an informational point of departure for the purpose of decision making." While the EPA has no regulation governing environmental noise, the agency has conducted several extensive studies to identify the effects of sound level on public health and welfare. For outdoor residential areas, the recommended EPA guideline is an L_{dn} of 55 dBA and an indoor L_{dn} limit of 45 dBA. These levels are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and healthcare areas. Noise-level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour L_{eq} values of 70 dBA (both outdoors and indoors). This publication remains the authoritative study based on a large sampling of community reaction to noise. The EPA sound level guidelines do not provide an absolute measure of noise impact, but rather a consensus on potential activity interference, human health and welfare effects, and annoyance. Since these protective levels were derived without concern for technical or economic feasibility, and contain a margin of safety to ensure their protective value, they should not be viewed as standards, criteria, regulations, or goals. Rather, they should be viewed as levels below which there is no reason to suspect that the general population will be at risk from any of the identified effects of noise. The EPA guideline limits are summarized in Table 2.

Table 2. Summary of EPA Cause and Effect Noise Levels

Location	Level	Effect
All public accessible areas with prolonged exposure	70 dBA $L_{eq(24)}$	Safety
Outdoor at residential structure and other noise sensitive receptors where a large amount of time is spent	55 dBA L_{dn}	Protection against annoyance and activity interference
Outdoor areas where limited amounts of time are spent, e.g., park areas, school yards, golf courses, etc.	55 dBA $L_{eq(24)}$	
Indoor residential	45 dBA L_{dn}	
Indoor non-residential	55 dBA $L_{eq(24)}$	

USEPA 1974.

5.2 State

In 1987, the California Department of Health Services published guidelines for the noise element of local general plans. These guidelines include a noise level/land use compatibility chart that categorizes various outdoor L_{dn} ranges into up to four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), depending on land use. For many land uses, the chart shows L_{dn} ranges for two or more compatibility categories. The noise element guidelines chart identifies the normally acceptable range for low-density residential uses as less than 60 dBA, while the conditionally acceptable range is 60-70 dBA. The normally acceptable range for high-density residential uses is identified as L_{dn} values below 65 dBA, while the conditionally acceptable range is identified as 65-70 dBA. For educational and medical facilities, L_{dn} values below 60 dB are considered normally acceptable, while L_{dn} values of 60-70 dBA are considered conditionally acceptable. For

office and commercial land uses, L_{dn} values below 67.5 dBA are considered normally acceptable, while L_{dn} values of 67.5-77.5 dBA are categorized as conditionally acceptable. These normally and conditionally acceptable L_{dn} ranges are intended to indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations. These guidelines are used by many agencies, environmental planners, and acoustical specialists as a starting point to evaluate the potential for noise impact on and by a project. The guidelines are also employed to evaluate methods for achieving noise compatibility with respect to nearby existing uses. Table 3 summarizes these guidelines for the normally and conditionally acceptable L_{dn} exposures.

Table 3. California Department of Health Services Noise Guidelines

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)	
	Normally Acceptable	Conditionally Acceptable
Residential – Low Density	50 – 60	60 – 70
Residential – High Density	50 – 65	65 – 70
Transient Lodging – Motels, Hotels	50 – 65	65 – 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 60	60 – 65
Auditoriums, Concert Halls, Amphitheaters	NA	50 – 70
Sports Arenas, Outdoor Spectator Sports	NA	50 – 75
Playgrounds, Neighborhood Parks	50 – 67.5	NA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 70	NA
Office Buildings, Business Commercial and Professional	50 – 67.5	67.5 – 77.5
Industrial, Manufacturing, Utilities, Agriculture	50 – 70	70 – 80

The California Department of Housing and Community Development has adopted noise insulation performance standards for new hotels, motels, and dwellings other than detached single-family structures (24 California Code of Regulations [CCR] T25-28). These standards require that “interior CNEL with windows closed, attributable to exterior sources, shall not exceed an annual CNEL of 45 dB in any habitable room.”

Occupational exposure to noise is regulated by the California Occupational Safety and Health Act in Title 8, Group 15, Article 105, Sections 5095–5100. The standard stipulates that protection against the effects of noise exposure will be provided when sound levels exceed 90 dBA over an 8-hour exposure period.

5.2.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and that such impacts be eliminated or mitigated to the extent feasible. The CEQA guidelines (AEP 2012) set forth characteristics that signal a potentially significant impact. Under CEQA the proposed Project would be considered to have significant noise and vibration impacts if it results in the following:

- **NZ-1** Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- **NZ-2** Exposure of persons to or generation of excessive ground-born vibration or ground-born noise levels.
- **NZ-3** A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- **NZ-4** A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- **NZ-5** For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.
- **NZ-6** For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

For the proposed Project, the following criteria were determined to be inapplicable or to result in no impact:

- Exposure of on-site workers to noise levels that exceed occupational safety standards (90 dBA as a time-weighted 8-hour average or peak noise levels above 115 dBA).
- Exposure of residents to airport or private airstrip-related noise levels above a CNEL of 65 dBA.

Occupational noise exposure is governed by federal and state regulations. The California Division of Occupational Safety and Health (Cal/OSHA) administers industrial safety regulations in California. Cal/OSHA regulations establish a time-weighted noise exposure limit of 90 dBA averaged over 8 hours (CCR, Title 8, Article 105). Noise source controls, administrative procedures, or worker hearing protection must be provided if worker noise exposure would exceed the 90 dBA limit. The construction contractor selected for this Project will be required to follow Cal/OSHA requirements for construction worker noise exposure. Consequently, worker noise exposure issues are not discussed further under any of the alternatives.

There are two aviation uses in the general Project vicinity. Bohunk's Airpark is located approximately 500 feet east of the eastern boundary of the proposed Project site and General William J. Fox Airfield (Fox Airfield) is located approximately 4 miles northeast of the Project site. Bohunk's Airpark has very low use levels, and Fox Airfield has moderate use levels. Fox Airfield is predominantly used for general aviation with some cargo operations. Sound contours developed for Fox Airfield indicate that the Project is over 3 miles from the 55 dBA CNEL contour. No airfield noise contours have been developed for Bohunk's Airpark facility, but due to low operation levels and distance from the airport, sound levels at Bohunk's Airpark are assumed to be below 55 dBA CNEL. The Project would not create residential land uses, and all Project features are outside the airfield properties. Consequently, airport-related noise issues are not discussed further.

5.3 Local

5.3.1 Los Angeles County 2011 Draft General Plan 2035

The Draft General Plan 2035 lists policies related to noise that include using land uses such as parks to buffer noise-sensitive uses from excessive noise impacts, promoting land use compatibility, and ensuring adequate mitigation (Los Angeles County 2011).

5.3.2 Los Angeles County Code

The County Noise Control Ordinance, Title 12 of the County Code, was established to reduce and restrict certain noise-producing activities. Activities may not generate noise levels above the specified limits either at the exterior or interior areas of neighboring land uses. The limits are derived from tabulated values that depend on the land use, with adjustments to create a series of noise standards. The exterior limits are presented in Table 4. Additional standards are provided in the event that the exterior limits are exceeded.

Table 4. Exterior Noise Standards, Los Angeles County Code

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level (dB)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 p.m. to 7:00 a.m. (night-time)	45
		7:00 a.m. to 10:00 p.m. (daytime)	50
III	Commercial properties	10:00 p.m. to 7:00 a.m. (night-time)	55
		7:00 a.m. to 10:00 p.m. (daytime)	60
IV	Industrial properties	Anytime	70

Source: Section 12.08.390 of the Los Angeles County Code (a portion of the Noise Control Ordinance).

In addition, the County Noise Control Ordinance also prohibits construction activities and noise during certain times in areas that would affect a residential or commercial property. The prohibited times are between the weekday hours of 7:00 p.m. and 7:00 a.m. and any time on Sundays or holidays. The Ordinance identifies maximum noise levels for mobile and stationary equipment as shown in Table 5. All internal combustion engine-powered equipment "shall be equipped with suitable exhaust and air intake silencers in proper working order." A 5 dBA penalty is applied to noises that are considered impulsive.

Table 5. Maximum Noise Levels for Construction Noise from Stationary Equipment (10 days or more)

	Single-family Residential	Multi-family Residential	Semi-residential/ Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

Source: Section 12.08.440 of the Los Angeles County Code (a portion of the Noise Control Ordinance).

5.3.3 Antelope Valley Areawide General Plan

The 1986 Antelope Valley Areawide Plan (Los Angeles County 1986) designates areas within the 60-dBA noise contour from transportation sources such as airports, railroads, and major highways as Noise Management Areas (NMA). Plan policy for these areas calls for the reduction of noise impacts on adjacent land uses through both hazard avoidance actions, where practical, and hazard mitigation practices, in other cases. The Antelope Valley Areawide General Plan is currently in the process of being updated. However, no updated guidelines or standards related to noise are available. No railroads are located within 0.5 mile of the Project, and therefore sound from railroad activities is anticipated to be less than 60 dBA. The nearest roadways are West Avenue I, West Avenue J, 90th Street West, 95th Street West and 97th Street West, none of which are designated as a major highway (i.e., U.S. Highway, State Route, or Interstate). Peak hour traffic volumes on rural roads, such as those listed above, are unlikely to be heavy enough to generate traffic noise within the Project area of 60 dBA L_{eq} or greater. Therefore the Project site is not located within a NMA.

6.0 EXISTING CONDITIONS

The degree of audibility of a new or modified sound source is dependent in a large part upon the existing ambient sound level. A wide range of noise settings may occur within the Project study area, which consists of all areas that could be potentially affected by construction or operational noise resulting from the Project. The Project site encompasses previously disturbed, fallow agricultural land in northern Los Angeles County. The Project site is surrounded by agricultural fields, intermixed with non-native grasslands and scattered residences with some immediately adjacent to or across the street from the site. The nearest residences are immediately adjacent to or across the street from the Project site southeast of West Avenue I at 95th Street W and along 90th Street West north of West Avenue J (Figure 2).

Existing ambient sound levels within the Project vicinity are expected to be relatively low, although sound levels may be sporadically elevated in localized areas due to roadway noise or periods of human activity. Background sound levels will vary both spatially and temporally depending on proximity to area sound sources, roadways, and natural and/or weather-related sounds. Principal contributors to the existing acoustic environment likely include motor vehicle traffic, mobile farming equipment, farming activities such as plowing and irrigation, all-terrain vehicles, local roadways, periodic aircraft flyovers, and natural sounds such as birds, insects, and leaf or vegetation rustle during elevated wind conditions. Open lands, predominantly rural in nature, will have comparatively lower ambient sound levels than more developed areas. Diurnal effects result in sound levels that are typically quieter during the night than during the daytime, except during periods when evening and nighttime insect noise may dominate in warmer seasons.

7.0 NOISE AND VIBRATION IMPACT ANALYSIS

Sound generated by the Project will consist of: (1) short duration sounds resulting from construction activities, and (2) sound during normal facility operations. Vibration from the Project would only occur during construction. Construction activities would take place only during daytime hours. An evaluation was performed of expected noise and vibration levels in conjunction with review of applicable agency policies and regulatory requirements.

Airborne noise dissipates with increasing distance from the noise source. The distances involved depend primarily on the intensity of the noise generated by the source, terrain, and ground cover between the source and the receiver, and partly on weather conditions such as wind speed and direction, the height and strength of temperature inversions, and the height of cloud cover. Temperature inversions and cloud cover can reflect or refract sound that is radiated upwards; this effect can increase noise levels at locations that receive the reflected or refracted sound. Such reflection and refraction effects are important primarily for high intensity sounds and for the calculation of sound propagation over large distances. For noise sources such as construction activity and vehicle traffic, the region of influence is typically less than 0.5 mile from the noise source. Temperature inversions and cloud cover are not accounted for in this analysis.

The region of interest for noise and vibration issues is typically localized. Ground-born vibrations generally attenuate rapidly with increasing distance from the vibration source. The distances involved depend primarily on the intensity of the vibrations generated by the source, and partly on soil and geologic conditions. Detectable vibrations will travel the greatest distance through solid rock and the least distance through loose, unconsolidated soils or saturated soils. For vibration sources such as construction activity and vehicle traffic, the region of influence is typically less than 1,000 feet from the vibration source. Table 6 compares the distances of the closest existing residences to the SGF components.

Table 6. Comparison of Distances (feet) of the Closest Residences to the SGF

Project Component	Antelope Solar Greenworks	Apex Greenworks	Central Antelope Dry Farm Ranch	Halcyon Solar	Lancaster Blue Sky Ranch Solar
Solar Farm (modules)	77	64	117	120	764
Gen-Tie Transmission Line	901	681	1,350	901	1,350
Substation	No substation	843	1,920	No substation	No substation

7.1 Construction

7.1.1 Construction Noise

Construction noise, although temporary, can be a source of concern for sensitive receptors such as nearby residences. Construction is anticipated to take place between the first and fourth quarter of 2013. Construction of the Project will require the use of heavy equipment that may be periodically audible at offsite locations. Received sound levels will fluctuate, depending on the construction activity, equipment type, and distance between the noise source and the receiver. Sound from construction equipment will vary dependent on the construction phase and the number and class of equipment at a location at any given time. The first phase of construction will be demolition and is expected to last approximately 1 month. The second phase, mass grading, will follow with an expected duration of 4 months to complete. Fine grading and onsite road construction will last 1 month followed by trenching and infrastructure development, which will also be 1 month in duration. PV installation is the final construction phase with duration to complete of 2 months.

The variation in power and usage imposes additional complexity in characterizing construction noise levels. Expected equipment types for each phase of construction are presented in Table 7. Each construction phase identified will require different types of construction equipment. The estimated composite site noise level is based on the assumption that all equipment would operate at a given usage load factor, over a standard 8-hour workday, to calculate the composite average daytime L_{eq}. The load factor accounts for the fraction of time that the equipment is in use over the specified time period. The composite noise level from several pieces of equipment operating during the same phase is obtained from decibel addition of the L_{eq} of each individual unit.

In addition to the above-listed construction equipment, pile driving is the method planned for installation of the foundations for the solar PV modules. Pile driving can generate high noise levels. Noise is generated from both the ram striking the pile as well as the operating air or diesel exhaust as it is exhausted from the cylinder (this is not present with hydraulic impact hammers). The current plan for construction of the Project is to use a GAYK 2L41C ram pile driver, which produces a sound pressure level of 111 dBA at 20 feet assuming an impact rate of 1,400 blows per minute. This is the pile driver used for this acoustic analysis, but the Project may choose to use a different pile driver that produces equal or lesser sound pressure depending upon Project need. Actual pile driving averages 30-45 seconds per pile at a 6-foot embedment depth and the engine would typically run close to 3,000 revolutions per minute (rpm) for use with this ram. Pile drivers are classified as impact devices in the Los Angeles County Noise Ordinance; therefore, the applicable standard is 55 dBA. Assuming a load or usage factor of 20 percent (FHWA 2006), it is expected that sound at the nearest residences from pile driving would attenuate to 94 dBA at the closest point to pile driving activities, 71 dBA at the Project centroid a distance of approximately 887 feet, and would attenuate to below 60 dBA within 1 linear mile of this construction activity, depending on meteorological and topographical effects. A variance to the noise ordinance in the County of Los Angeles will be required for construction involving pile driving since the pile driving is expected to last more than 10 days.

Table 7. Summary of Solar Farm Construction Noise by Phase at Nearest Residence

Phase No.	Construction Phase	Construction Equipment	Load Factor %	Maximum L_{max} Equipment Noise Level at 50 ft (15 m) dBA	Composite L_{eq} Noise Level at 64 ft (20 m) Average Daytime dBA	Composite Noise Level at Acoustic Centroid 887 ft (270 m) Average Daytime dBA
1	Demolition	(3) Excavators (168 hp) (2) Rubber Tired Dozers (357 hp)	57 59	85 85	88	65
2	Mass Grading	(2) Graders (174 hp) (2) Rubber Tired Dozers (357 hp) (2) Scrapers (313 hp) (2) Tractors/Loaders/Backhoes (108 hp) (2) Water Trucks (189 hp)	57 59 72 55 50	85 85 89 85 80	92	69
3	Fine Grading – Road Construction	(1) Other Equipment (190 hp) (1) Rough Terrain Forklifts (93 hp) (2) Tractors/Loaders/Backhoes (108 hp) (1) Water Trucks (189 hp)	62 60 55 50	80 85 85 80	86	63
4	Trenching / Infrastructure Construction	(1) Generator Sets (549 hp) (1) Rubber Tired Loaders (164 hp) (2) Tractors/Loaders/Backhoes (108 hp) (1) Trenchers (63 hp) (1) Water Trucks (189 hp)	74 54 55 75 50	81 85 85 83 80	87	64
5	Building Construction / PV Installation	(1) Cranes (399 hp) (2) Forklifts (145 hp) (1) Generator Sets (549 hp) (1) Other Equipment (190 hp) (1) Tractors/Loaders/Backhoes (108 hp) (1) Water Trucks (189 hp)	43 30 74 62 55 50	83 85 81 80 85 80	86	63
Sub Phase	**Construction Phase**	**Construction Equipment**	**Load Factor %**	**Maximum L_{max} Spec. Sound Pressure Level at 20 feet**	**Composite L_{eq} Noise Level at 64 ft (20 m) Average Daytime dBA**	**Composite Noise Level at Acoustic Centroid 887 ft (270 m) Average Daytime dBA**
4a	PV Installation	GAYK 2L41C ram pile driver (impact device)	20*	111	94	71

Data compiled and methodologies developed in part from:

Federal Highway Administration, "Construction Noise Handbook", Report FHWA-HEP-06-015, 2006.

Communication with equipment manufacturers of comparable equipment.

*Usage factor is based on FHWA assumption of 20%.

m – meters
hp – horsepower

Construction sound will attenuate with increased distance from the sound sources. Other factors, such as vegetation, terrain, and obstacles such as buildings, will act to limit the impact of construction noise levels, but were not considered in the evaluation. Vegetation and trees in the Project area may provide minimal shielding from Project related noise. Trees free of foliage, such as deciduous trees in the late fall to early spring, provide little screening. According to the Federal Highway Administration (FHWA), "Vegetation must be a minimum of 100 feet thick, a minimum of 20 feet high, and sufficiently dense so that it cannot be seen through in order to provide a 5-dBA noise reduction. Anything less than that thickness will not result in any significant noise reduction" (FHWA 2012). Actual received sound levels will fluctuate, depending on the construction activity, equipment type, and separation distances between the source and the receiver. As a general construction practice, functional mufflers will be maintained on all equipment to maintain noise levels as low as reasonably achievable.

Construction noise is a temporary noise source that would only occur during daytime hours. Sound levels from construction are expected to be comparable to sound produced by farm machinery, such as equipment used in nearby agricultural fields. Worst case construction noise levels listed in Table 7 for the nearest residence would last no more than a few weeks as construction activities progress across the Project site. Therefore, no one residence will be exposed to significant noise levels for any extended period of time. Traffic noise generated during construction on and offsite will also temporarily add to overall sound levels. The Project will make reasonable efforts to minimize noise resulting from construction activities.

7.1.2 Construction Vibration

Vibration associated with construction of the Project has the potential to be an annoyance to nearby residences. Structural damage to nearby residences from construction activities is unlikely and not anticipated. Vibratory motion is typically described by identifying the PPV (Caltrans 2004) for damage to buildings. To assess the human response to vibration, the rms amplitude is typically used (Caltrans 2004).

The Caltrans Construction Induced Vibration Guidance Manual identifies two impact criteria for buildings and humans. Table 8 describes impact criteria for buildings and Table 9 describes impact criteria for humans. Although the rms is typically used to assess human response, Caltrans has provided threshold guidance for human response relative to PPV to maintain a consistent metric for both human response and structural impacts to buildings.

Table 8. Caltrans Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2004

Table 9. Caltrans Guideline Vibration Annoyance Potential

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2004

Installation of the PV solar module foundations requires pile driving and has the potential for vibration impacts to structures and humans. The Project is planning to use a pneumatic pile driver (GAYK 2L41C ram pile driver) which is a type of impact pile driver. Because pile drivers are an impact device, they are considered continuous/frequent sources of vibration. Other construction activities are assumed to be less intensive than pile driving and therefore would have lower PPV than pile driving. Therefore, vibration levels from pile driving are considered worst case for solar facility construction. Caltrans vibration guidance provides the following equation to calculate PPV at sensitive receptors, such as residences:

$$PPV_{Impact\ Pile\ Driver} = PPV_{Ref} (25/D)^{n} \times (E_{equip}/E_{Ref}) \text{ (in/sec)}$$

Where:

PPVRef = 0.65 in/sec for a reference pile driver at 25 ft
D = distance from pile driver to the receiver in ft
n = 1.1 is a value related to the vibration attenuation rate through ground
ERef = 36,000 ft-lb (rated energy of reference pile driver)
Eequip = rated energy of impact pile driver in ft-lbs

Using the referenced formula and an assumed 80,000 ft-lb rated energy for the impact pile driver, the calculated PPV at the nearest residence (64 feet), the Project site centroid (887 feet), and at the residence when construction is occurring on the Project site furthest away are listed in Table 10.

Table 10. Pile Driving Vibration Analysis

Pile Driving Location compared to nearest residence	Estimated Pile Driving PPV
Project site boundary minimum distance to residence (64 feet)	0.34
Project site centroid distance to residence (887 feet)	0.02
Project site boundary maximum distance to residence (6,700 feet)	0.0002

The worst case pile driving has been calculated as 0.34 PPV when pile driving is at the minimum distance from the nearest residence (64 feet). The value of 0.02 PPV at the Project site centroid could be considered an “average” vibration level from pile driving. At the furthest distance from the Project site relative to the residence closest to the Project site, vibration from pile driving is predicted to be 0.002 PPV. According to Caltrans guidance, a PPV of 0.34 would

not damage the nearest residential structure; however, a PPV of 0.34 is predicted to be distinctly perceptible to humans. Like noise from pile driving, vibration from pile will only last for a few weeks at most. The value of 0.02 PPV at the centroid is representative of the vibration that can be expected for most of the pile driving phase of construction. A value of 0.02 PPV is considered barely perceptible to humans, according to Caltrans.

7.2 Operation

The Project would generate power using PV modules mounted in rows of parallel racks. The SGFs are anticipated to be unmanned during normal operation. Systems monitoring will be completed remotely. Maintenance staff will visit periodically to clean the PV modules, clearing vegetation, and other general maintenance activities of the PV modules.

Sound sources considered in the Project operational acoustic analysis include the inverters and transformers associated with the PV modules, the proposed substation, and the transmission line. The principal sources of noise are the cooling-ventilation fans, the electrical components of the inverters and the step-up transformers at the on-site substations. Transmission lines for the Project would be underground and therefore sound from the transmission lines would not be perceptible. The interconnections associated with the Project will be lower and therefore is not expected to be a significant generator of corona noise.

Each PV module 1 MW block will have two inverters and a ventilation fan housed inside pre-fabricated enclosure and one transformer mounted on a concrete pad. Each inverter generates a noise level of about 75 dBA at a distance of 10 feet and it is expected that the enclosure would provide 15 to 20 dBA of noise reduction, reducing the inverter noise to approximately 58-63 dBA at a distance of 10 feet from the enclosure. The transformers generate a noise level of about 58 dBA at a distance of 6 feet. The transformers and inverters would be centrally located within each 1 MW block of solar modules. No solar arrays will be located within 100 feet of the property line and would be expected to generate low noise levels beyond the Project extents. PV station transformers and power inverters located within the facility are generally considered a low level source of noise, limited to daytime hours when the solar arrays are generating electricity.

Substations have switching, protection and control equipment, and a transformer, which generate the sound generally described as a low humming. There are three main sound sources associated with a transformer: core noise, load noise, and noise generated by the operation of the cooling equipment. The core is the principal noise source and does not vary significantly with electrical load. The load noise is primarily caused by the load current in the transformer's conducting coils (or windings) and consequently the main frequency of this sound is twice the supply frequency: 100 Hz for 50 Hz transformers and 120 Hz for 60 Hz transformers. The cooling equipment (fans) may also be an important noise component, depending on fan design. During air forced cooling method, cooling fan noise is produced in addition to the core noise. The resulting audible sound is a combination of hum and the broadband fan noise. After sunset, when the plant no longer receives solar radiation, the inverters will not produce noise and the transformers will be energized but likely operating under low noise condition using natural draft cooling but not in operation (no fans) due to lower

nighttime heat loads. Breaker noise is a sound event of very short duration, expected to occur only a few times throughout the year. Just as horsepower ratings designate the power capacity of an electric motor, a transformer's MVA rating indicates its maximum power output capacity. The transformers included in the PV modules are rated at 1 MVA whereas the transformers at the Project substation are rated at 25 MVA.

Transformers are designed and catalogued by MVA rating. The American National Standards Institute and the International Electrotechnical Commission have established methodologies for measurement of noise from transformers and other electrical devices. Measurements involve taking reference sound level measurements using microphones positioned 0.3 meters (1 ft) from a tautly drawn string that encircles the device at a height above grade set at one-half the overall height of the device. The transformer noise output is the average of all measurements taken around the perimeter, incorporating contributions from both cooling fans and auxiliary equipment. The National Electrical Manufacturers Association (NEMA) published standards TR1-1993 (R2000) also establishes the maximum noise level allowed for transformers, voltage regulators, and shunt reactors based on the equipment's method of cooling its dielectric fluid (air-cooled versus oil-cooled) and the electric power rating.

8.0 ANALYSIS RESULTS

Based on CEQA guidance, an incremental increase of 5 dBA over the existing L_{eq} is identified as the threshold when adverse noise impacts may begin to occur. Receptors below the 5 dBA cumulative increase threshold have a lower likelihood of disturbance dependent in part on individual sensitivities. For areas where potential exceedances of the 5 dBA threshold might be expected, a second level noise mitigation evaluation may be necessary towards evaluating potential exceedance condition(s). For example, if a background sound level of 35 dBA is assumed, the total cumulative sound level of 40 dBA, or 5 dBA above the estimated background sound level, would become the onset threshold of potential adverse noise impact per CEQA guidelines. This second level noise mitigation evaluation involves the re-evaluation of transformer NEMA ratings used at the on-site substations and is described in further detail below.

Numerical modeling enabled the "inverse" estimation of the maximum tolerable source level (the nominal NEMA sound rating that would be measured adjacent to the source) from substation transformers, if received levels of no more than 40 dBA were to be maintained at the nearest dwellings. The estimated NEMA sound rating is based on preliminary Project design information that best represents their expected acoustic performance, inclusive of a standardized engineering safety factor. The surface area [S] of the transformers was estimated using the following empirical relationship based on rated capacity [MVA]:

$$10\log [S] = 14 + 2.5\log [MVA]$$

This calculation yields an estimated surface area of 604.6 ft^2 (or 56.2 m^2). The associated NEMA sound rating for the Central Antelope Dry Ranch SGF, where the closest residence is located at a distance of 1,920 feet from the substation area represented at the acoustic centroid, is 83 dBA. The second proposed substation is located in the Apex Greenworks SGF. The closest noise sensitive receptor is located at a distance of 1,920 feet northwest from the

substation acoustic centroid. Using the same "inverse" estimation, the maximum tolerable NEMA sound rating for the proposed transformer is 83 dBA. This will ensure that the Project transformer complies with CEQA by not increasing the sound levels in the area by more than 5 dBA over the assumed background ambient of 35 dBA.

Currently, substation design is only at a schematic level, but any transformer installed will conform to all relevant NEMA standards. Actual equipment installed for the Project will be designed to have a similar sound power profile, or less, and NEMA ratings to those assumed for this analysis.

9.0 MITIGATION MEASURES

The following noise mitigation measures will be considered and incorporated into the Project contract specifications as necessary to minimize noise levels associated with Project construction to the extent practicable:

- Construction operations will not occur between 7:00 p.m. and 7:00 a.m. on weekdays or Saturday, or at any time on Sunday within 500 feet of an occupied residence;
- Construction site and access road speed limits will be established and enforced during the construction period;
- Electrically-powered equipment will be used instead of pneumatic or internal combustion powered equipment, where feasible;
- Material stockpiles and mobile equipment staging, parking, and maintenance areas will be located as far as practicable from noise-sensitive receptors;
- The use of noise-producing signals, including horns, whistles, alarms, and bells, will be for safety warning purposes only;
- No Project-related public address or music system will be audible at any adjacent receptor; and
- All noise-producing construction equipment and vehicles using internal combustion engines will be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed "package" equipment (e.g., arc-welders, air compressors) will be equipped with shrouds and noise control features that are readily available for that type of equipment.

With respect to mitigation during operation, potential impacts associated with on-site substations are considered. Depending on the Project's acoustic design goal, final substation design may incorporate appropriate mitigation measures:

- Siting substations as far from residential receptors as is feasible; and
- Specifying NEMA low noise rated equipment to ensure that Project noise impacts will be less than significant. Quieted design can readily achieve a 10 dBA or greater reduction as compared to standard NEMA-rated transformers of a similar size and rated capacity.

10.0 CONCLUSION AND RECOMMENDATION

Operational sound levels associated with the Project would predominantly be a result of the transformer used in the substation that is required by the Project. The transformer for the Project would be designed to emit noise levels of 83 dBA or less to ensure that received sound levels at the nearest residence do not exceed 40 dBA from operation of the Project.

Complaints are unlikely for collection substations with transformers less than 10 MVA capacities. Complaints are more likely at collection substations with transformers ranging in sizes of 10 to 150 MVA with separation distances of 500 to 600 feet or less. The Project substation transformers are rated at 25 MVA and the closest noise sensitive receptor (i.e., residence) is located approximately 1,920 feet away; therefore complaints are unlikely to result from the Project. Based on the available data and screening level calculations, employing transformers that adhere to the identified NEMA sound ratings representative of maximum fan cooling operation as detailed in Section 8.0, demonstrate the feasibility of the Project to operate in compliance with County of Los Angeles Codes and Exterior Noise Standards, Antelope Valley Areawide General Plan, and CEQA guidelines assuming a typical background sound level of 35 dBA.

Acoustic analysis results may change as a result of adjustments to equipment components including the use of noise mitigation measures during final Project design, in modeling and other assumptions including receptor status, or based on assumptions or measurement data used to estimate background sound levels within the acoustic study area. The information available during the initial engineering phases is only at a conceptual level and does not allow design details to be finalized for specific mitigation measures.

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APPENDIX B-8.5

PROJECT 5 SILVER SUN GREENWORKS NOISE IMPACT ASSESSMENTS

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

SILVER SUN GREENWORKS
(CUP GROUP 11)
NOISE IMPACTS REPORT

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1.0 SUMMARY

A noise and vibration technical analysis was conducted to assess the potential impacts from construction and operation of the Silver Sun Greenworks (Project) Solar Generating Facility (SGF).

Temporary construction noise may impact residences close to the Project. Pile driving with an impact pile driver is required to install the photovoltaic (PV) module mounting system and will produce the most noise during construction. Noise levels originating at the Project centroid during pile driving activities are predicted to be 68 A-weighted decibels (dBA) at the nearest residence. This is representative of the average pile driving sound level for the Project. Temporary noise levels from other construction equipment are predicted to range from 57 dBA L_{eq} to 64 dBA L_{eq} originating at the Project centroid. Temporary elevated noise levels from construction activities will be mitigated in several ways such as limiting construction activities to daytime hours (7:00 a.m. to 7:00 p.m.) only Mondays through Fridays, using electric construction equipment instead of equipment outfitted with a combustion engine when possible.

Construction vibration from the Project should not be a concern for both structures near the Project and for humans living nearby. Project related pile driving has the potential to produce the highest vibration levels. The predicted maximum vibration level of 0.04 peak particle velocity (PPV) at the nearest residence, located 466 feet (ft) from the Project boundary, represents the worst case scenario. The average pile driving PPV, calculated using the distance from the Project centroid to the nearest residence, is 0.01 PPV. Vibration levels of 0.01 PPV would be barely perceptible to humans, would not cause any damage to nearby structures, and would be of minimal concern.

Operational sound levels associated with the Project would predominantly be a result of the transformer used in the substation that is required by the Project. The Project site layout has been designed to reduce the potential for even minimal impacts to nearby residences. With an assumed background sound level of 35 dBA, the Project's operational noise levels cannot exceed 40 dBA, or 5 dBA above the assumed background ambient to meet local laws, ordinances, regulations, and standards (LORS). As a result, the transformer for the Project would be designed to emit noise levels of 75 dBA or less at the location of the transformer. This will ensure that received sound levels at the nearest residence do not exceed 40 dBA during operation of the Project.

2.0 INTRODUCTION

Silverado Power, LLC (Silverado Power) is proposing the construction and operation of the Project. This technical report presents information on the noise and vibration levels generated by construction and operation of the Project.

The following approach was used to complete this Noise Impact Assessment:

- Determine the applicable LORs;
- Describe the existing noise environment in the Project vicinity;

- Identify existing land uses that are sensitive to noise, including residential areas, hospitals or healthcare facilities, libraries, parks, and schools;
- Evaluate the anticipated Project noise impacts during construction and operation;
- Recommend measures to mitigate the potential Project noise impacts, as needed; and
- Provide conclusions of the noise impact analysis.

3.0 PROJECT DESCRIPTION

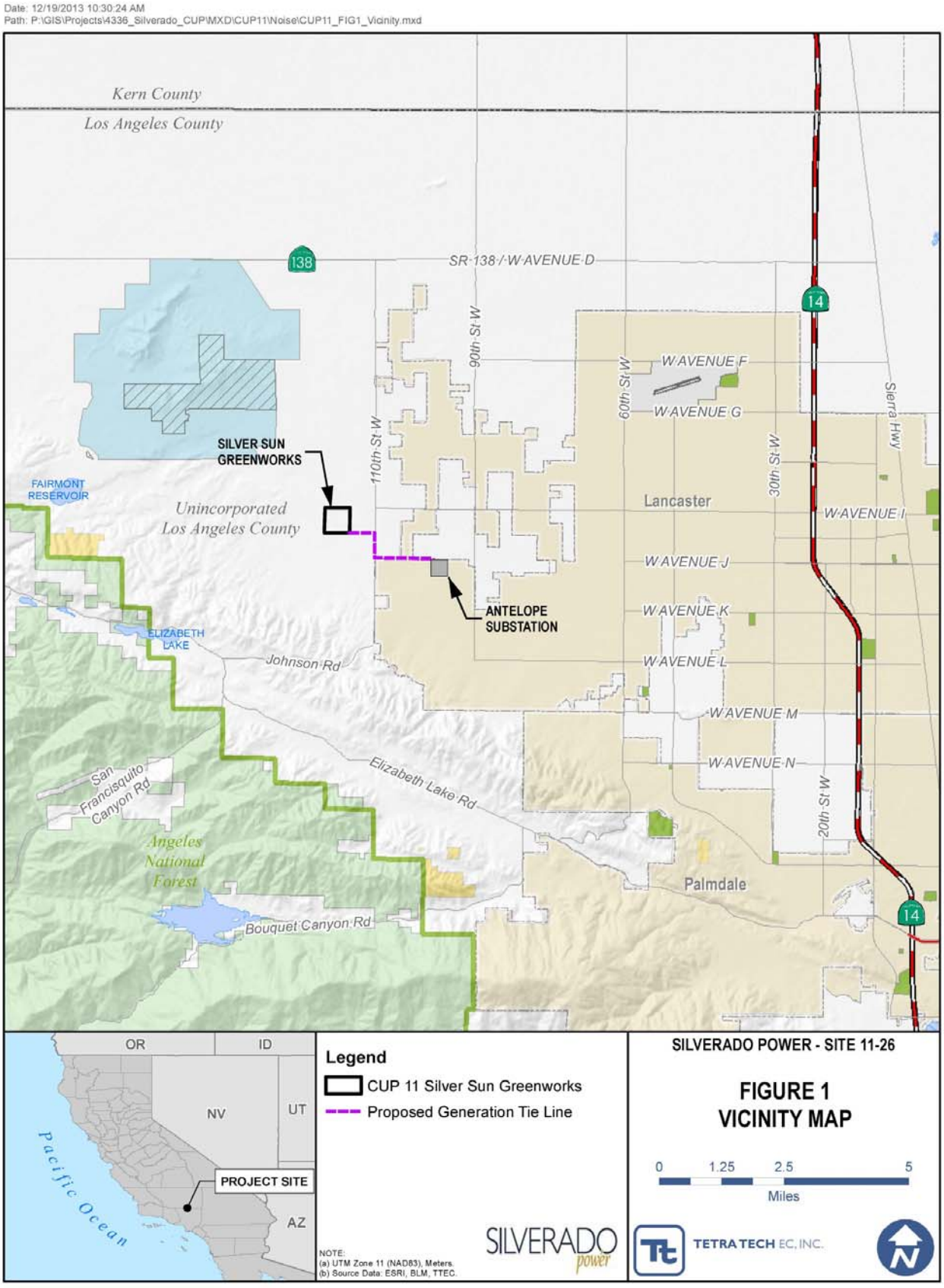
The Project will have a generating capacity of up to 20 megawatts (MW) and will be located on 160 acres of primarily unproductive agricultural land in Los Angeles County (Figures 1 and 2). The Project will utilize PV modules to convert the sun's radiance directly into electrical energy without the use of heat transfer fluid or cooling water. In addition to the PV modules, the Project will include the following associated facilities:

- Module mounting system;
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects);
- Electrical inverters and transformers;
- Electrical collection system, including switchgear;
- Data monitoring equipment; and
- Access roads and chain link perimeter security fencing.

The Project will not require the construction of an on-site operations and maintenance (O&M) facility. The Project will connect to the existing Southern California Edison Antelope Substation (SCEAS) via a 2.9 mile generation-tie (gen-tie) line originating at the collection system within the SGF. SCEAS is located approximately 2.5 miles southeast of the Project.

The facility will operate year-round, producing renewable electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the third quarter of 2013, and complete construction and begin commercial operation by the second quarter of 2014. The Project construction activities are anticipated to take approximately 8 months to complete. Project design information is currently only at a schematic level. The following preliminary design information has been provided by the Project engineers:

- 66 kilovolt (kV) transmission lines, approximately 60-75 ft tall, single-circuit vertical configuration, approximately 200 amp-rated aluminum conductors
- 1 main GSU transformer, approximately 25 megavolt ampere (MVA), NEMA TR-1 sound levels
- 29 inverter-level transformers, 1 MVA each, NEMA TR-1 sound levels
- Inverter rating 500 kilovolt-ampere (kVA), 57 total with NEMA 3R enclosures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Kern County
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SR-138 / W AVENUE D
138
14
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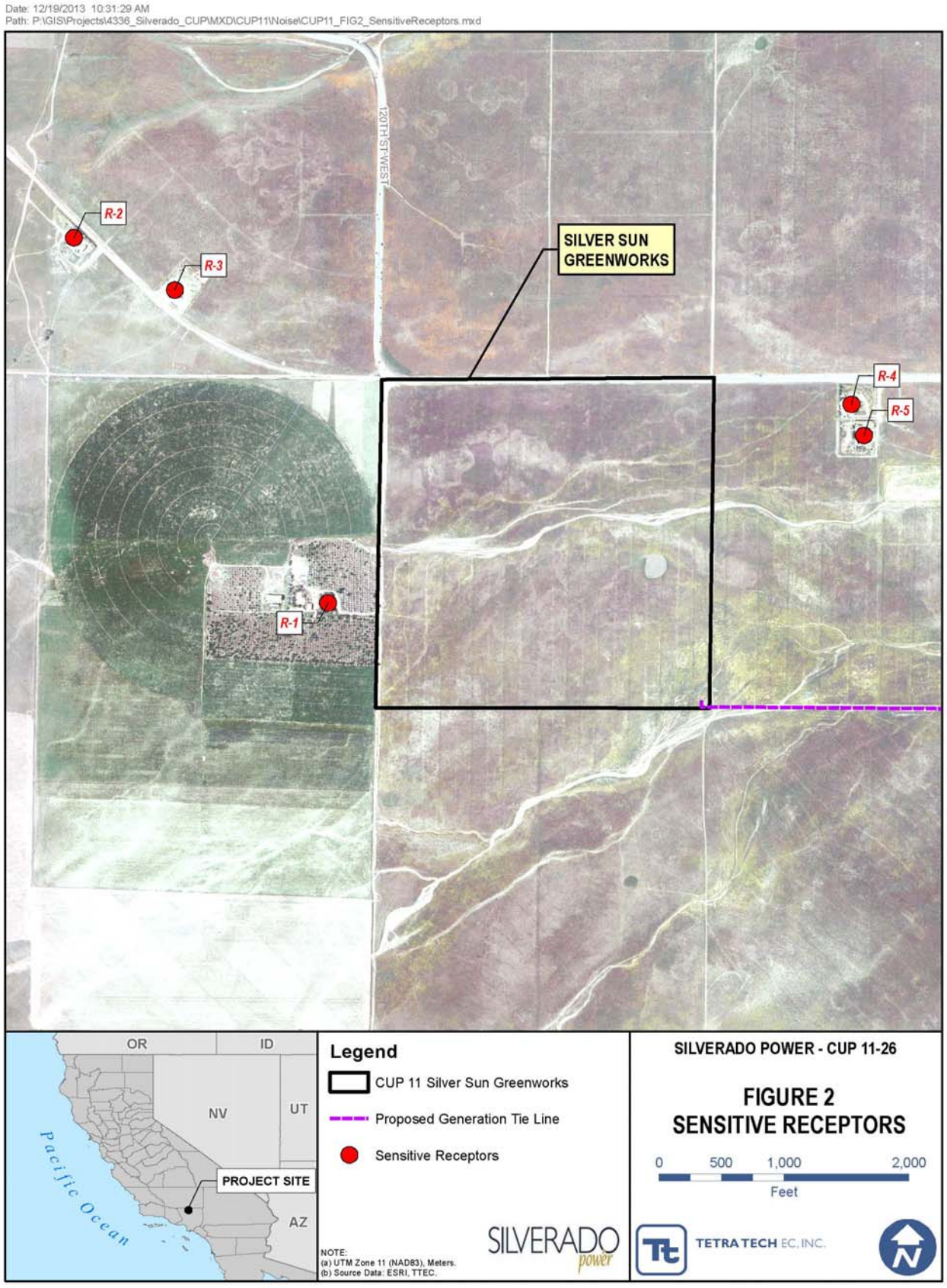
SILVER SUN GREENWORKS
ANTELOPE SUBSTATION
FAIRMONT RESERVOIR
Unincorporated Los Angeles County
Lancaster
Palmdale
ELIZABETH LAKE
Johnson Rd
Elizabeth Lake Rd
San Francisquito Canyon Rd
Angeles National Forest
Bouquet Canyon Rd
20th St W
OR
ID
NV
UT
AZ
Pacific Ocean
PROJECT SITE
Legend
CUP 11 Silver Sun Greenworks
Proposed Generation Tie Line
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.
SILVERADO power
SILVERADO POWER - SITE 11-26
FIGURE 1
VICINITY MAP
0 1.25 2.5 5
Miles
TETRA TECH EC, INC.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120TH ST WEST
R-1
R-2
R-3
R-4
R-5
SILVER SUN GREENWORKS
OR
ID
NV
UT
AZ
PROJECT SITE
Pacific Ocean
Legend
CUP 11 Silver Sun Greenworks
Proposed Generation Tie Line
Sensitive Receptors
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
SILVERADO power
SILVERADO POWER - CUP 11-26
FIGURE 2
SENSITIVE RECEPTORS
0 500 1,000 2,000
Feet
TETRA TECH EC, INC.

4.0 ACOUSTIC AND VIBRATION TERMINOLOGY

4.1 Acoustic Terminology

Sound levels are presented on a logarithmic scale to account for the large pressure response range of the human ear, and are expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing defined as 20 micropascals. Typically, a noise analysis examines 11 octave (or 33 1/3 octave) bands ranging from 16 Hertz (Hz) (low) to 16,000 Hz (high), which encompasses the human audible frequency range. Since the human ear does not perceive every frequency with equal loudness, spectrally varying sounds are often adjusted with a weighting filter. The A-weighted filter is applied to compensate for the frequency response of the human auditory system, known as dBA. Unweighted sound levels are referred to as linear. Linear decibels are used to determine a sound's tonality and to engineer solutions to reduce or control noise as techniques are different for low and high frequency noise. Sound levels that are linear are presented as dBL.

An inherent property of the logarithmic decibel scale is that the sound pressure levels of two separate sources are not directly additive. For example, if a sound of 50 dBA is added to another sound of 50 dBA, the result is a 3-decibel increase (or 53 dBA), not an arithmetic doubling to 100 dBA. With respect to how the human ear perceives changes in sound pressure level relative to changes in "loudness," scientific research demonstrates the following general relationships between sound level and human perception for two sound levels with the same or very similar frequency characteristics:

- 1 dBA is the practical limit of accuracy for sound measurement systems and corresponds to an approximate 10 percent variation in the sound pressure level. A 1 dBA increase or decrease is a non-perceptible change in sound.
- A 3 dBA increase or decrease is a doubling (or halving) of acoustic pressure level and it corresponds to the threshold of change in loudness perceptible in a laboratory environment. In practice, the average person is not able to distinguish a 3 dBA difference in environmental sound outdoors.
- A 5 dBA increase or decrease is described as a perceptible change in sound level and is a discernible change in an outdoor environment.
- A 10 dBA increase or decrease is a tenfold increase or decrease in acoustic pressure level but is perceived as a doubling or halving in loudness (i.e., the average person will judge a 10 dBA change in sound level to be twice or half as loud).

Estimations of common noise sources and outdoor acoustic environments, and the comparison of relative loudness, are presented in Table 1.

Table 1. Sound Pressure Levels (L_p) and Relative Loudness of Common Noise Sources and Soundscapes

Noise Source or Activity	Sound Level (dBA)	Subjective Impression	Relative Loudness (perception of different sound levels)
Jet aircraft takeoff from carrier (50 ft)	140	Threshold of pain	64 times as loud
50-hp siren (100 ft)	130		32 times as loud
Loud rock concert near stage Jet takeoff (200 ft)	120	Uncomfortably loud	16 times as loud
Float plane takeoff (100 ft)	110		8 times as loud
Jet takeoff (2,000 ft)	100	Very loud	4 times as loud
Heavy truck or motorcycle (25 ft)	90		2 times as loud
Garbage disposal Food blender (2 ft) Pneumatic drill (50 ft)	80	Loud	Reference loudness
Vacuum cleaner (10 ft)	70	Moderate	1/2 as loud
Passenger car at 65 mph (25 ft)	65		
Large store air-conditioning unit (20 ft)	60		1/4 as loud
Light auto traffic (100 ft)	50	Quiet	1/8 as loud
Quiet rural residential area with no activity	45		
Bedroom or quiet living room Bird calls	40	Faint	1/16 as loud
Typical wilderness area	35		
Quiet library, soft whisper (15 ft)	30	Very quiet	1/32 as loud
Wilderness with no wind or animal activity	25	Extremely quiet	
High-quality recording studio	20		1/64 as loud
Acoustic test chamber	10	Just audible	
	0	Threshold of hearing	

Sound levels can be measured, modeled, and presented in various formats. The sound metrics that were employed in this analysis have the following definitions:

L_{eq}: Conventionally expressed in dBA, the L_{eq} is the energy-averaged, A-weighted sound level over a specified time period. It is defined as the steady, continuous sound level over a specified time, which has the same acoustic energy as the actual varying sound levels over the specified period.

L_{max}: The maximum A-weighted sound level as determined during a specified measurement period. It can also be described as the maximum instantaneous sound pressure level generated by a piece of equipment or during a construction activity.

L_{dn}: The L_{dn} measures the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. The L_{dn} is calculated by averaging the 24-hour hourly L_{eq} levels at a given location after adding 10 dB to the nighttime period (10:00 p.m. – 7:00 a.m.) to account for the increased sensitivity of people to noises that occur at night.

CNEL: Community Noise Equivalent Level (CNEL) is another average A-weighted Leq sound level measured over a 24-hour period; however, this noise scale is adjusted to account for some

individuals' increased sensitivity to noise levels during the evening and nighttime hours. A CNEL noise measurement is obtained after adding 5 dB to sound levels occurring during evening hours (7:00 p.m. to 10:00 p.m.) and 10 dB to sound levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.).

4.1.1 Vibration Terminology

According to the Federal Transit Authority (FTA) Noise and Vibration Impact Assessment (FTA 2006) construction activities can be a source of ground-born vibration. Activities such as pile driving and operation of heavy equipment may cause ground-born vibration while constructing the Project. Vibration is an oscillatory motion which can be described in terms of the displacement, velocity, or acceleration (FTA 2006). Velocity or acceleration are typically used to describe vibration. Two descriptors are frequently used when discussing quantification of vibration, the PPV and the root mean square (rms).

Peak particle velocity (PPV) – The maximum instantaneous positive or negative peak of the vibration signal (FTA 2006).

Root mean square (rms) – The square root of the average of the squared amplitude of the vibration signal, typically calculated over a 1-second period (FTA 2006)

The PPV is often used to assess stress on structures and the rms is used to describe the human response to vibration. The California Department of Transportation (Caltrans) construction vibration guidance is used in this assessment. This guidance includes a human response equivalent based on the PPV instead of using rms.

5.0 REGULATORY SETTING

This section provides an overview of federal, state, and local regulations related to noise issues applicable to the Project.

5.1 Federal

Federal laws, regulation, and guidance establish the national framework for noise regulations and include those from the Occupational Safety and Health Administration and the EPA.

5.1.1 Occupational Safety and Health Administration, Occupational Noise Exposure; Hearing Conservation Amendment (29 Code of Federal Regulations [CFR] 1910.95)

This standard establishes mandates to protect employees from excessive noise exposure and requires a Hearing Conservation Program when routine exposure to high noise levels would occur.

5.1.2 U.S. Environmental Protection Agency in "Information of Levels on Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." (EPA 550/9-74-004)

Published in 1974, this document identifies safe levels of environmental noise exposure and is intended to "provide State and Local governments as well as the Federal Government and the

private sector with an informational point of departure for the purpose of decision making." While the EPA has no regulation governing environmental noise, the agency has conducted several extensive studies to identify the effects of sound level on public health and welfare. For outdoor residential areas, the recommended EPA guideline is an L_{dn} of 55 dBA and an indoor L_{dn} limit of 45 dBA. These levels are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and healthcare areas. Noise-level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour L_{eq} values of 70 dBA (both outdoors and indoors). This publication remains the authoritative study based on a large sampling of community reaction to noise. The EPA sound level guidelines do not provide an absolute measure of noise impact, but rather a consensus on potential activity interference, human health and welfare effects, and annoyance. Since these protective levels were derived without concern for technical or economic feasibility, and contain a margin of safety to ensure their protective value, they should not be viewed as standards, criteria, regulations, or goals. Rather, they should be viewed as levels below which there is no reason to suspect that the general population will be at risk from any of the identified effects of noise. The EPA guideline limits are summarized in Table 2.

Table 2. Summary of EPA Cause and Effect Noise Levels

Location	Level	Effect
All public accessible areas with prolonged exposure	70 dBA $L_{eq(24)}$	Safety
Outdoor at residential structure and other noise sensitive receptors where a large amount of time is spent	55 dBA L_{dn}	Protection against annoyance and activity interference
Outdoor areas where limited amounts of time are spent, e.g., park areas, school yards, golf courses, etc.	55 dBA $L_{eq(24)}$	
Indoor residential	45 dBA L_{dn}	
Indoor non-residential	55 dBA $L_{eq(24)}$	

Source: USEPA 1974

5.2 State

In 1987, the California Department of Health Services published guidelines for the noise element of local general plans. These guidelines include a noise level/land use compatibility chart that categorizes various outdoor L_{dn} ranges in up to four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), depending on land use. For many land uses, the chart shows L_{dn} ranges for two or more compatibility categories. The noise element guidelines chart identifies the normally acceptable range for low-density residential uses as less than 60 dBA, while the conditionally acceptable range is 60-70 dBA. The normally acceptable range for high-density residential uses is identified as L_{dn} values below 65 dBA, while the conditionally acceptable range is identified as 65-70 dBA. For educational and medical facilities, L_{dn} values below 60 dB are considered normally acceptable, while L_{dn} values of 60-70 dBA are considered conditionally acceptable. For office and commercial land uses, L_{dn} values below 67.5 dBA are considered normally acceptable, while L_{dn} values of 67.5-77.5 dBA are categorized as conditionally acceptable. These normally and conditionally acceptable L_{dn} ranges are intended to indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations. These guidelines are used by many agencies, environmental planners, and acoustical specialists as a starting point to evaluate the

potential for noise impact on and by a project. The guidelines are also employed to evaluate methods for achieving noise compatibility with respect to nearby existing uses. Table 3 summarizes these guidelines for the normally and conditionally acceptable L_{dn} exposures.

Table 3. California Department of Health Services Noise Guidelines

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)	
	Normally Acceptable	Conditionally Acceptable
Residential – Low Density	50 – 60	60 – 70
Residential – High Density	50 – 65	65 – 70
Transient Lodging – Motels, Hotels	50 – 65	65 – 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 60	60 – 65
Auditoriums, Concert Halls, Amphitheaters	NA	50 – 70
Sports Arenas, Outdoor Spectator Sports	NA	50 – 75
Playgrounds, Neighborhood Parks	50 – 67.5	NA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 70	NA
Office Buildings, Business Commercial and Professional	50 – 67.5	67.5 – 77.5
Industrial, Manufacturing, Utilities, Agriculture	50 – 70	70 - 80

The California Department of Housing and Community Development has adopted noise insulation performance standards for new hotels, motels, and dwellings other than detached single-family structures (24 California Code of Regulations [CCR] T25-28). These standards require that “interior CNEL with windows closed, attributable to exterior sources, shall not exceed an annual CNEL of 45 dB in any habitable room.”

Occupational exposure to noise is regulated by the California Occupational Safety and Health Act in Title 8, Group 15, Article 105, Sections 5095–5100. The standard stipulates that protection against the effects of noise exposure will be provided when sound levels exceed 90 dBA over an 8-hour exposure period.

5.2.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and that such impacts be eliminated or mitigated to the extent feasible. The CEQA guidelines (AEP 2012) set forth characteristics that signal a potentially significant impact. Under CEQA the proposed Project would be considered to have significant noise and vibration impacts if it results in the following:

- **NZ-1** Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- **NZ-2** Exposure of persons to or generation of excessive ground-born vibration or ground-born noise levels.
- **NZ-3** A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- **NZ-4** A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

- **NZ-5** For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?
- **NZ-6** For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

For the proposed Project, the following criteria were determined to be inapplicable or to result in no impact:

- Exposure of on-site workers to noise levels that exceed occupational safety standards (90 dBA as a time-weighted 8-hour average or peak noise levels above 115 dBA).
- Exposure of residents to airport or private airstrip-related noise levels above a CNEL of 65 dBA.

Occupational noise exposure is governed by federal and state regulations. The California Division of Occupational Safety and Health (Cal/OSHA) administers industrial safety regulations in California. Cal/OSHA regulations establish a time-weighted noise exposure limit of 90 dBA averaged over 8 hours (CCR, Title 8, Article 105). Noise source controls, administrative procedures, or worker hearing protection must be provided if worker noise exposure would exceed the 90 dBA limit. The construction contractor selected for this Project will be required to follow Cal/OSHA requirements for construction worker noise exposure. Consequently, worker noise exposure issues are not discussed further under any of the alternatives.

There are two aviation uses in the general Project vicinity. Bohunk's Airpark is located approximately 3 miles east of the eastern boundary of the proposed Project site and General William J. Fox Airfield (Fox Airfield) is about 6 miles northeast of the Project site. Bohunk's Airpark has very low use levels, and Fox Airfield had moderate use levels. Fox Airfield is predominantly used for general aviation with some cargo operations. Sound contours developed for Fox Airfield indicate that the Project is over 5 miles from the 55 dBA CNEL contour. No airfield noise contours have been developed for Bohunk's Airpark facility, but due to low operation levels and distance from the airport, sound levels at Bohunk's Airpark are assumed to be below 55 dBA CNEL. The Project would not create residential land uses, and all Project features are outside the airfield properties. Consequently, airport-related noise issues are not discussed further.

5.3 Local

5.3.1 Los Angeles County 2011 Draft General Plan 2035

The Draft General Plan 2035 lists policies related to noise that include using land uses such as parks to buffer noise-sensitive uses from excessive noise impacts, promoting land use compatibility, and ensuring adequate mitigation (Los Angeles County 2011).

5.3.2 Los Angeles County Code

The County Noise Control Ordinance, Title 12 of the County Code, was established to reduce and restrict certain noise-producing activities. Activities may not generate noise levels above the specified limits either at the exterior or interior areas of neighboring land uses. The limits are

derived from tabulated values that depend on the land use, with adjustments to create a series of noise standards. The exterior limits are presented in Table 4. Additional standards are provided in the event that the exterior limits are exceeded.

Table 4. Exterior Noise Standards, Los Angeles County Code

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level (dB)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 p.m. to 7:00 a.m. (night-time)	45
		7:00 a.m. to 10:00 p.m. (daytime)	50
III	Commercial properties	10:00 p.m. to 7:00 a.m. (night-time)	55
		7:00 a.m. to 10:00 p.m. (daytime)	60
IV	Industrial properties	Anytime	70

Source: Section 12.08.390 of the Los Angeles County Code (a portion of the Noise Control Ordinance).

In addition, the County Noise Control Ordinance also prohibits construction activities and noise during certain times in areas that would affect a residential or commercial property. The prohibited times are between the weekday hours of 7:00 p.m. and 7:00 a.m. and any time on Sundays or holidays. The Ordinance identified maximum noise levels for mobile and stationary equipment as shown in Table 5. All internal combustion engine-powered equipment "shall be equipped with suitable exhaust and air intake silencers in proper working order." A 5 dBA penalty is applied to noises that are considered impulsive.

Table 5. Maximum Noise Levels for Construction Noise from Stationary Equipment (10 days or more)

	Single-family Residential	Multi-family Residential	Semi-residential/ Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

Source: Section 12.08.440 of the Los Angeles County Code (a portion of the Noise Control Ordinance).

5.3.3 Antelope Valley Areawide General Plan

The 1986 Antelope Valley Areawide Plan (Los Angeles County 1986) designates areas within the 60 dBA noise contour from transportation sources such as airports, railroads, and major highways as Noise Management Areas (NMA). Plan policy for these areas calls for the reduction of noise impacts on adjacent land uses through both hazard avoidance actions, where practical, and hazard mitigation practices, in other cases. The Antelope Valley Areawide General Plan is currently in the process of being updated. However, no updated guidelines or standards related to noise are available. The Project is not located close enough to an airport to be within an aviation related 60 dBA L_{dn} noise contour. No railroads are located within ½-mile of the Project, and therefore sound from railroad activities is anticipated to be less than 60 dBA. The nearest roadway is West Avenue I, which is not designated as a major highway (i.e., U.S. Highway, State Route, or Interstate). Peak hour traffic volumes on rural roads, such as West Avenue I, are unlikely to be heavy enough to generate traffic noise within the Project area of 60 dBA L_{eq} or greater. Therefore the Project is not located within a NMA.

6.0 EXISTING CONDITIONS

The degree of audibility of a new or modified sound source is dependent in a large part upon the existing ambient sound level. A wide range of noise settings may occur within the Project study area, which consists of all areas that could be potentially affected by construction or operational noise resulting from the Project. The Project site encompasses previously disturbed, fallow agricultural land in northern Los Angeles County. The Project vicinity includes active agricultural fields, orchards, grasslands, major roads, and scattered residences (Figure 2). The nearest residence is located approximately 466 ft west of the Project site, separated from the Project site by an active orchard that spans roughly 400 ft between the residence and the Project site which allows for the noise impact to attenuate over this distance, and reduces its effects. The next closest residence is located nearly 1,800 ft northwest of the Project site. All other residences are at least 0.5 miles or greater from the Project site. Fox Airfield is located approximately 6 miles northeast of the Project site (Figure 1).

Existing ambient sound levels within the Project vicinity are expected to be relatively low, although sound levels may be sporadically elevated in localized areas due to roadway noise or periods of human activity. Background sound levels will vary both spatially and temporally depending on proximity to area sound sources, roadways, and natural and/or weather-related sounds. Principal contributors to the existing acoustic environment likely include motor vehicle traffic, mobile farming equipment, farming activities such as plowing and irrigation, all-terrain vehicles, local roadways, periodic aircraft flyovers, and natural sounds such as birds, insects, and leaf or vegetation rustle during elevated wind conditions. Open lands, predominantly rural in nature, will have comparatively lower ambient sound levels than more developed areas. Diurnal effects result in sound levels that are typically quieter during the night than during the daytime, except during periods when evening and nighttime insect noise may dominate in warmer seasons.

7.0 NOISE AND VIBRATION IMPACT ANALYSIS

Sound generated by the Project will consist of: (1) short duration sounds resulting from construction activities, and (2) sound during normal facility operations. Vibration from the Project would only occur during construction. Construction activities would take place only during daytime hours. An evaluation was performed of expected noise and vibration levels in conjunction with review of applicable agency policies and regulatory requirements.

Airborne noise dissipates with increasing distance from the noise source. The distances involved depend primarily on the intensity of the noise generated by the source, terrain, and ground cover between the source and the receiver, and partly on weather conditions such as wind speed and direction, the height and strength of temperature inversions, and the height of cloud cover. Temperature inversions and cloud cover can reflect or refract sound that is radiated upwards; this effect can increase noise levels at locations that receive the reflected or refracted sound. Such reflection and refraction effects are important primarily for high intensity sounds and for the calculation of sound propagation over large distances. For noise sources such as construction activity and vehicle traffic, the region of influence is typically less than ½ mile from the noise source. Temperature inversions and cloud cover are not accounted for in this analysis.

The region of interest for noise and vibration issues is typically localized. Ground-born vibrations generally attenuate rapidly with increasing distance from the vibration source. The distances involved depend primarily on the intensity of the vibrations generated by the source, and partly on soil and geologic conditions. Detectable vibrations will travel the greatest distance through solid rock and the least distance through loose, unconsolidated soils or saturated soils. For vibration sources such as construction activity and vehicle traffic, the region of influence is typically less than 1,000 ft from the vibration source. Table 6 compares the distances of the closest existing residences to the SGF components.

Table 6. Comparison of Distances (ft) of the Closest Residences to the SGF Component

Project Component	Distance (ft)	Direction
Solar Farm (modules)	1,519 (R-1)	E/NE
Gen-Tie Transmission Line	1,540 (R-3)	SW
Substation	2,960 (R-2)	E/NE

7.1 Construction

7.1.1 Construction Noise

Construction noise, although temporary, can be a source of concern for sensitive receptors such as nearby residences. Construction is anticipated to take place between the third quarter of 2013 and the second quarter of 2014. Construction of the Project will require the use of heavy equipment that may be periodically audible at offsite locations. Received sound levels will fluctuate, depending on the construction activity, equipment type, and distance between the noise source and the receiver. Sound from construction equipment will vary dependent on the construction phase and the number and class of equipment at a location at any given time. The first phase of construction is mass grading that will occur over an expected duration of 2 months. Fine grading and onsite road construction will last 2 months, followed by trenching and infrastructure development which will also be 2 months in duration. PV module installation is the final construction phase with a duration of 2 months to complete.

The variation in power and usage imposes additional complexity in characterizing construction noise levels. Expected equipment types for each phase of construction are presented in Table 7. Each construction phase identified will require different types of construction equipment. The estimated composite site noise level is based on the assumption that all equipment would operate at a given usage load factor, over a standard 8-hour workday, to calculate the composite average daytime L_{eq}. The load factor accounts for the fraction of time that the equipment is in use over the specified time period. The composite noise level from several pieces of equipment operating during the same phase is obtained from decibel addition of the L_{eq} of each individual unit.

Table 7. Summary of Solar Farm Construction Noise by Phase at Nearest Residence

Phase No.	Construction Phase	Construction Equipment	Load Factor %	Maximum L_{max} Equipment Noise Level at 50 ft (15 m) dBA	Composite L_{eq} Noise Level at R-11519 ft (463 m) Average Daytime dBA	Composite Noise Level at Project Site Centroid 2797 ft (853 m) Average Daytime dBA
1	Demolition	(3) Excavators (168 hp) (2) Rubber Tired Dozers (357 hp)	57 59	85 85	60	55
2	Mass Grading	(2) Graders (174 hp) (1) Rubber Tired Dozer (357 hp) (1) Water Truck (189 hp)	57 59 50	85 85 80	58	53
3	Fine Grading – Road Construction	(1) Rough Terrain Forklift (93 hp) (1) Tractor/Loader/Backhoe (108 hp) (1) Water Truck (189 hp)	60 55 50	85 85 80	57	51
4	Trenching / Infrastructure Construction	(1) Tractor/Loader/Backhoe (108 hp) (1) Trencher (63 hp) (1) Water Truck (189 hp)	55 75 50	85 83 80	56	51
5	Building Construction / PV Installation	(1) Crane (399 hp) (1) Forklift (145 hp) (1) Other Equipment (190 hp) (1) Tractor/Loader/Backhoe (108 hp) (1) Water Truck (189 hp)	30 74 62 55 50	85 81 80 85 80	57	52
Sub Phase	**Construction Phase**	**Construction Equipment**	**Load Factor %**	**Maximum L_{max} Spec. Sound Pressure Level at 20 ft**	**Composite L_{eq} Noise Level at R-1 1519 ft (463 m) Average Daytime dBA**	**Composite Noise Level at Acoustic Centroid 2,797 ft (853 m) Average Daytime dBA**
4a	PV Installation	GAYK 2L41C ram pile driver (impact device)	20*	111	66	61

Data compiled and methodologies developed in part from:

Federal Highway Administration, "Construction Noise Handbook", Report FHWA-HEP-06-015, 2006.

Communication with equipment manufacturers of comparable equipment.

*Usage factor is based on FHWA assumption of 20%.

hp – horsepower
m – meters

In addition to the above-listed construction equipment, pile driving is the method planned for installation of the foundations for the solar PV modules. Pile driving can generate high noise levels. Noise is generated from both the ram striking the pile as well as the operating air or diesel exhaust as it is exhausted from the cylinder (this is not present with hydraulic impact hammers). The current plan for construction of the Project is to use a GAYK 2L41C ram pile driver, which produces a sound pressure level of 111 dBA at 20 ft assuming an impact rate of 1,400 blows per minute. This is the pile driver used for this acoustic analysis, but the Project may choose to use a different pile driver that produces equal or lesser sound pressure depending upon Project need. Actual pile driving averages 30-45 seconds per pile at a 6-foot embedment depth and the engine would typically run close to 3,000 revolutions per minute (rpm) for use with this ram. Pile drivers are classified as impact devices in the Los Angeles County Noise Ordinance; therefore, the applicable standard is 55 dBA. Assuming a load or usage factor of 20 percent (FHWA 2006), it is expected that sound from pile driving would attenuate to 77 dBA at the nearest residence, 68 dBA at a distance of approximately 1,200 ft, and to below 60 dBA within 1 linear mile of this construction activity, depending on meteorological and topographical effects. A variance to the noise ordinance in the County of Los Angeles will be required for construction involving pile driving since the pile driving is expected to last more than 10 days.

Construction sound will attenuate with increased distance from the sound sources. Other factors, such as vegetation, terrain, and obstacles such as buildings, will act to limit the impact of construction noise levels, but were not considered in the evaluation. Because an active orchard is located between the Project site and the nearest residence, some screening of construction noise may occur, depending on the amount of foliage on the trees in the orchard. Trees free of foliage, such as deciduous trees in the late fall to early spring, provide little screening. According to the Federal Highway Administration (FHWA), “Vegetation must be a minimum of 100 ft thick, a minimum of 20 ft high, and sufficiently dense so that it cannot be seen through in order to provide a 5 dBA noise reduction. Anything less than that thickness will not result in any significant noise reduction” (FHWA 2012). Actual received sound levels will fluctuate, depending on the construction activity, equipment type, and separation distances between the source and the receiver. As a general construction practice, functional mufflers will be maintained on all equipment to maintain noise levels as low as reasonably achievable.

Construction noise is a temporary noise source that would only occur during daytime hours. Sound levels from construction are expected to be comparable to sound produced by farm machinery, such as equipment used in nearby agricultural fields. Worst case construction noise levels listed in Table 7 for the nearest residence would last no more than a few weeks as construction activities progress across the Project area. Therefore, no one residence will be exposed to significant noise levels for any extended period of time. Traffic noise generated during construction on and offsite will also temporarily add to overall sound levels. The Project will make reasonable efforts to minimize noise resulting from construction activities.

7.1.2 Construction Vibration

Vibration associated with construction of the Project has the potential to be an annoyance to nearby residences. Structural damage to nearby residences from construction activities is

unlikely and not anticipated. Vibratory motion is typically described by identifying the PPV (Caltrans 2004) for damage to buildings. To assess the human response to vibration, the rms amplitude is typically used (Caltrans 2004).

The Caltrans Construction Induced Vibration Guidance Manual identifies two impact criteria for buildings and humans. Table 8 describes impact criteria for buildings and Table 9 describes impact criteria for humans. Although the rms is typically used to assess human response, Caltrans has provided threshold guidance for human response relative to PPV to maintain a consistent metric for both human response and structural impacts to buildings.

Table 8. Caltrans Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2004

Table 9. Caltrans Guideline Vibration Annoyance Potential

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2004

Installation of the PV solar module foundations requires pile driving and has the potential for vibration impacts to structures and humans. The Project is planning to use a pneumatic pile driver (GAYK 2L41C ram pile driver) which is a type of impact pile driver. Because pile drivers are an impact device they are considered continuous/frequent sources of vibration. Other construction activities are assumed to be less intensive than pile driving and therefore would have lower PPV than pile driving. Therefore, vibration levels from pile driving are considered worst case for solar facility construction. Caltrans vibration guidance provides the following equation to calculate PPV at sensitive receptors, such as residences:

$$PPV_{Impact\ Pile\ Driver} = PPV_{Ref} (25/D)^{n} \times (E_{equip}/E_{Ref}) \text{ (in/sec)}$$

Where:

PPVRef = 0.65 in/sec for a reference pile driver at 25 ft
D = distance from pile driver to the receiver in ft
n = 1.1 is a value related to the vibration attenuation rate through ground
ERef = 36,000 ft-lb (rated energy of reference pile driver)
Eequip = rated energy of impact pile driver in ft-lbs

Using the referenced formula and an assumed 80,000 ft-lb rated energy for the impact pile driver, the calculated PPV at the nearest residence (466 ft), the Project site centroid (1,200 ft), and at the residence when construction is occurring on the Project site furthest away are listed in Table 10.

Table 10. Pile Driving Vibration Analysis

Pile Driving Location compared to nearest residence	Estimated Pile Driving PPV
Project site boundary minimum distance to R-1 (1,519 feet)	0.01
Project site centroid distance to residence (2,797 feet)	0.01
Project site boundary maximum distance to R-1 (4,000 feet)	0.004

The worst case pile driving has been calculated as 0.04 PPV when pile driving is at the minimum distance from the nearest residence. The value of 0.01 PPV at the Project site centroid could be considered an “average” vibration level from pile driving. At the furthest distance from the Project site relative to the residence closest to the Project site, vibration from pile driving is predicted to be 0.01 PPV. According to Caltrans guidance, a PPV of 0.04 would not damage the nearest residential structure; however, a PPV of 0.04 is predicted to be distinctly perceptible to humans. Like noise from pile driving, vibration from pile will only last for a few weeks at most. The value of 0.01 PPV at the centroid is representative of the vibration that can be expected for most of the pile driving phase of construction. A value of 0.01 PPV is considered barely perceptible to humans, according to Caltrans.

7.2 Operation

The Project would generate power using PV modules mounted in rows of parallel racks. The solar energy generating facilities are anticipated to be unmanned during normal operation. Systems monitoring will be completed remotely. Maintenance staff will visit periodically to clean the PV modules, clearing vegetation, and other general maintenance activities of the PV modules.

Sound sources considered in the Project operational acoustic analysis include the inverters and transformers associated with the PV modules, the proposed substation, and the transmission line. The principal sources of noise are the cooling-ventilation fans, the electrical components of the inverters and the step-up transformers at the on-site substations. Modern transmission lines are designed, constructed, and maintained so that the line will generate a minimum of corona-related noise during dry conditions. Corona is generally a concern with transmission lines of 345 kV and higher; however, the Project transmission line is rated at only 66 kV. The

interconnections associated with the Project will be lower and therefore is not expected to be a significant generator of corona noise.

Each PV module 1 MW block will have two inverters and a ventilation fan housed inside pre-fabricated enclosure and one transformer mounted on a concrete pad. Each inverter generates a noise level of about 75 dBA at a distance of 10 ft and it is expected that the enclosure would provide 15 to 20 dBA of noise reduction, reducing the inverter noise to approximately 58-63 dBA at a distance of 10 ft from the enclosure. The transformers generate a noise level of about 58 dBA at a distance of 6 ft. The transformers and inverters would be centrally located within each 1 MW block of solar modules. No solar arrays will be located within 100 ft of the property line and would be expected to generate low noise levels beyond the Project extents. PV station transformers and power inverters located within the facility are generally considered a low level source of noise, limited to daytime hours when the solar arrays are generating electricity.

Substations have switching, protection and control equipment, and a transformer, which generate the sound generally described as a low humming. There are three main sound sources associated with a transformer: core noise, load noise, and noise generated by the operation of the cooling equipment. The core is the principal noise source and does not vary significantly with electrical load. The load noise is primarily caused by the load current in the transformer's conducting coils (or windings) and consequently the main frequency of this sound is twice the supply frequency: 100 Hz for 50 Hz transformers and 120 Hz for 60 Hz transformers. The cooling equipment (fans) may also be an important noise component, depending on fan design. During the air-forced cooling method, cooling fan noise is produced in addition to the core noise. The resulting audible sound is a combination of hum and the broadband fan noise. After sunset, when the plant no longer receives solar radiation, the inverters will not produce noise and the transformers will be energized but likely operating under low noise condition using natural draft cooling but not in operation (no fans) due to lower nighttime heat loads. Breaker noise is a sound event of very short duration, expected to occur only a few times throughout the year. Just as horsepower ratings designate the power capacity of an electric motor, a transformer's MVA rating indicates its maximum power output capacity. The transformers included in the PV modules are rated at 1 MVA whereas the transformers at the Project substation are rated at 25 MVA.

Transformers are designed and catalogued by MVA rating. The American National Standards Institute and the International Electrotechnical Commission have established methodologies for measurement of noise from transformers and other electrical devices. Measurements involve taking reference sound level measurements using microphones positioned 0.3 meters (1 ft) from a tautly drawn string that encircles the device at a height above grade set at one-half the overall height of the device. The transformer noise output is the average of all measurements taken around the perimeter, incorporating contributions from both cooling fans and auxiliary equipment. The National Electrical Manufacturers Association (NEMA) published standards TR1-1993 (R2000) also establishes the maximum noise level allowed for transformers, voltage regulators, and shunt reactors based on the equipment's method of cooling its dielectric fluid (air-cooled vs. oil-cooled) and the electric power rating.

8.0 ANALYSIS RESULTS

Based on CEQA guidance, an incremental increase of 5 dBA over the existing L_{eq} is identified as the threshold when adverse noise impacts may begin to occur. Receptors below the 5 dBA cumulative increase threshold have a lower likelihood of disturbance dependent in part on individual sensitivities. For areas where potential exceedances of the 5 dBA threshold might be expected, a second level noise mitigation evaluation may be necessary towards evaluating potential exceedance condition(s). For example, if a background sound level of 35 dBA is assumed, the total cumulative sound level of 40 dBA, or 5 dBA above the estimated background sound level, would become the onset threshold of potential adverse noise impact per CEQA guidelines. This second level noise mitigation evaluation involves the re-evaluation of transformer NEMA ratings used at the on-site substations and is described in further detail below.

Numerical modeling enabled the “inverse” estimation of the maximum tolerable source level (the nominal NEMA sound rating that would be measured adjacent to the source) from substation transformers, if received levels of no more than 40 dBA were to be maintained at the nearest dwellings. The estimated NEMA sound rating is based on preliminary Project design information that best represents their expected acoustic performance, inclusive of a standardized engineering safety factor. The surface area [S] of the transformers was estimated using the following empirical relationship based on rated capacity [MVA]:

$$10\log [S] = 14 + 2.5\log [MVA]$$

This calculation yields an estimated surface area of 604.6 square ft (or 56.2 square meters). The associated NEMA sound rating for the Project transformer is therefore 75 dBA, where the closest residence located at a distance of 769 ft from the substation area would receive sound levels at 40 dBA or less from the transformer. This will ensure that the Project transformer complies with CEQA by not increasing the sound levels in the area by more than 5 dBA over the assumed background ambient of 35 dBA.

Currently, substation design is only at a schematic level, but any transformer installed will conform to all relevant NEMA standards. Actual equipment installed for the Project will be designed to have a similar sound power profile, or less, and NEMA ratings to those assumed for this analysis.

9.0 MITIGATION MEASURES

The following noise mitigation measures will be considered and incorporated into the Project contract specifications as necessary to minimize noise levels associated with Project construction to the extent practicable:

- Construction operations will not occur between 7:00 p.m. and 7:00 a.m. on weekdays or Saturday, or at any time on Sunday within 500 ft of an occupied residence;
- Construction site and access road speed limits will be established and enforced during the construction period;

- Electrically-powered equipment will be used instead of pneumatic or internal combustion powered equipment, where feasible;
- Material stockpiles and mobile equipment staging, parking, and maintenance areas will be located as far as practicable from noise-sensitive receptors;
- The use of noise-producing signals, including horns, whistles, alarms, and bells, will be for safety warning purposes only;
- No Project-related public address or music system will be audible at any adjacent receptor; and
- All noise-producing construction equipment and vehicles using internal combustion engines will be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed "package" equipment (e.g., arc-welders, air compressors) will be equipped with shrouds and noise control features that are readily available for that type of equipment.

With respect to mitigation during operation, potential impacts associated with on-site substations are considered. Depending on the Project's acoustic design goal, final substation design may incorporate appropriate mitigation measures:

- Siting substations as far from residential receptors as is feasible; and
- Specifying NEMA low noise rated equipment to ensure that Project noise impacts will be less than significant. Quieted design can readily achieve a 10 dBA or greater reduction as compared to standard NEMA-rated transformers of a similar size and rated capacity.

10.0 CONCLUSION AND RECOMMENDATION

Operational sound levels associated with the Project would predominantly be a result of the transformer used in the substation that is required by the Project. The transformer for the Project would be designed to emit noise levels of 75 dBA or less to ensure that received sound levels at the nearest residence do not exceed 40 dBA from operation of the Project.

Complaints are unlikely for collection substations with transformers less than 10 MVA capacities. Complaints are more likely at collection substations with transformers ranging in sizes of 10 to 150 MVA with separation distances of 500 to 600 ft or less. The Project substation transformers are rated at 25 MVA and the closest noise sensitive receptor (i.e., residence) is located approximately 769 ft away; therefore complaints are unlikely to result from the Project.

Based on the available data and screening level calculations, employing transformers that adhere to the identified NEMA sound ratings representative of maximum fan cooling operation as detailed in Section 8.0, demonstrate the feasibility of the Project to operate in compliance with County of Los Angeles Codes and Exterior Noise Standards, Antelope Valley Areawide General Plan, and CEQA guidelines assuming a typical background sound level of 35 dBA.

Acoustic analysis results may change as a result of adjustments to equipment components including the use of noise mitigation measures during final Project design, in modeling and other assumptions including receptor status, or based on assumptions or measurement data used to estimate background sound levels within the acoustic study area. The information available

during the initial engineering phases is only at a conceptual level and does not allow design details to be finalized for specific mitigation measures.

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APPENDIX B-8.6

PROJECT 6 LANCASTER WAD
NOISE IMPACT ASSESSMENTS

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

LANCASTER WAD
(CUP GROUP 15)
NOISE IMPACTS REPORT

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1.0 SUMMARY

A noise and vibration technical analysis was conducted to assess the potential impacts from construction and operation of the Lancaster WAD (Project) Solar Generating Facility (SGF).

Temporary construction noise may impact residences close to the Project. Pile driving with an impact pile driver is required to install the photovoltaic (PV) module mounting system and will produce the most noise during construction. Noise levels originating at the Project centroid during pile driving activities are predicted to be 68 A-weighted decibels (dBA). This is representative of the average pile driving sound level for the Project. Temporary noise levels from other construction equipment are predicted to range from 57 dBA L_{eq} to 62 dBA L_{eq} originating at the Project centroid. Temporary elevated noise levels from construction activities will be mitigated in several ways, such as limiting construction activities to daytime hours (7:00 a.m. to 7:00 p.m.) only on Mondays through Fridays, and using electric construction equipment instead of equipment outfitted with a combustion engine when possible.

Construction vibration from the Project should not be a concern for the structures near the Project and for people living nearby. Project-related pile driving has the potential to produce the highest vibration levels. The predicted maximum vibration level of 0.03 peak particle velocity (PPV) at the nearest residence, located 525 feet (ft) from the Project boundary, represents the worst case scenario. The average pile driving PPV, calculated using the distance from the Project centroid to the nearest residence, is 0.01 PPV. Vibration levels of 0.01 PPV would be barely perceptible to humans, would not cause any damage to nearby structures, and would be of minimal concern.

Operational sound levels associated with the Project would be minimal. The Project does not require an onsite substation, of which the transformer component is typically the primary source of operational noise for this type of SGF. Therefore, operational sound levels at the nearest residence will not exceed 40 dBA, or 5 dBA above the assumed background ambient sound level per local laws, ordinances, regulations, and standards (LORS).

2.0 INTRODUCTION

Silverado Power, LLC (Silverado Power) is proposing the construction and operation of the Project. This technical report presents information on the noise and vibration levels generated by construction and operation of the Project.

The following approach was used to complete this Noise Impact Assessment:

- Determine the applicable LORs;
- Describe the existing noise environment in the Project vicinity;
- Identify existing land uses that are sensitive to noise, including residential areas, hospitals or healthcare facilities, libraries, parks, and schools;
- Evaluate the anticipated Project noise impacts during construction and operation;
- Recommend measures to mitigate the potential Project noise impacts, as needed; and
- Provide conclusions of the noise impact analysis.

3.0 PROJECT DESCRIPTION

The Project will have a generating capacity of up to 5 megawatts (MW) and will be located on 39 acres of primarily unproductive agricultural land in Los Angeles County (Figure 1 and Figure 2). The Project will utilize PV modules to convert the sun's radiance directly into electrical energy without the use of heat transfer fluid or cooling water. In addition to the PV modules, the Project will include the following associated facilities:

- Module mounting system;
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects);
- Electrical inverters and transformers;
- Electrical collection system, including switchgear;
- Data monitoring equipment; and
- Access roads and chain link perimeter security fencing.

The Project will not require the construction of an on-site operations and maintenance (O&M) facility. The Project transmission line will connect to the existing Southern California Edison Antelope Substation, located approximately 9 miles southwest of the Project at the intersection of 95th St. W and W Avenue J, via an existing 12.47 kilovolt (kV) distribution line adjacent to the southern border of the property.

The facility will operate year-round, producing renewable electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the third quarter of 2013, and complete construction and begin commercial operation by the fourth quarter of 2013. The Project construction activities are anticipated to take approximately 5 months to complete. Project design information is currently only at a schematic level. The following preliminary design information has been provided by the Project engineers:

- Underground generation tie-line (gen-tie) to existing 12.47 kV line.
- No substation
- Inverter rating 500 kilovolt ampere (kVA) (57 total)
- All inverters have NEMA 3R enclosures

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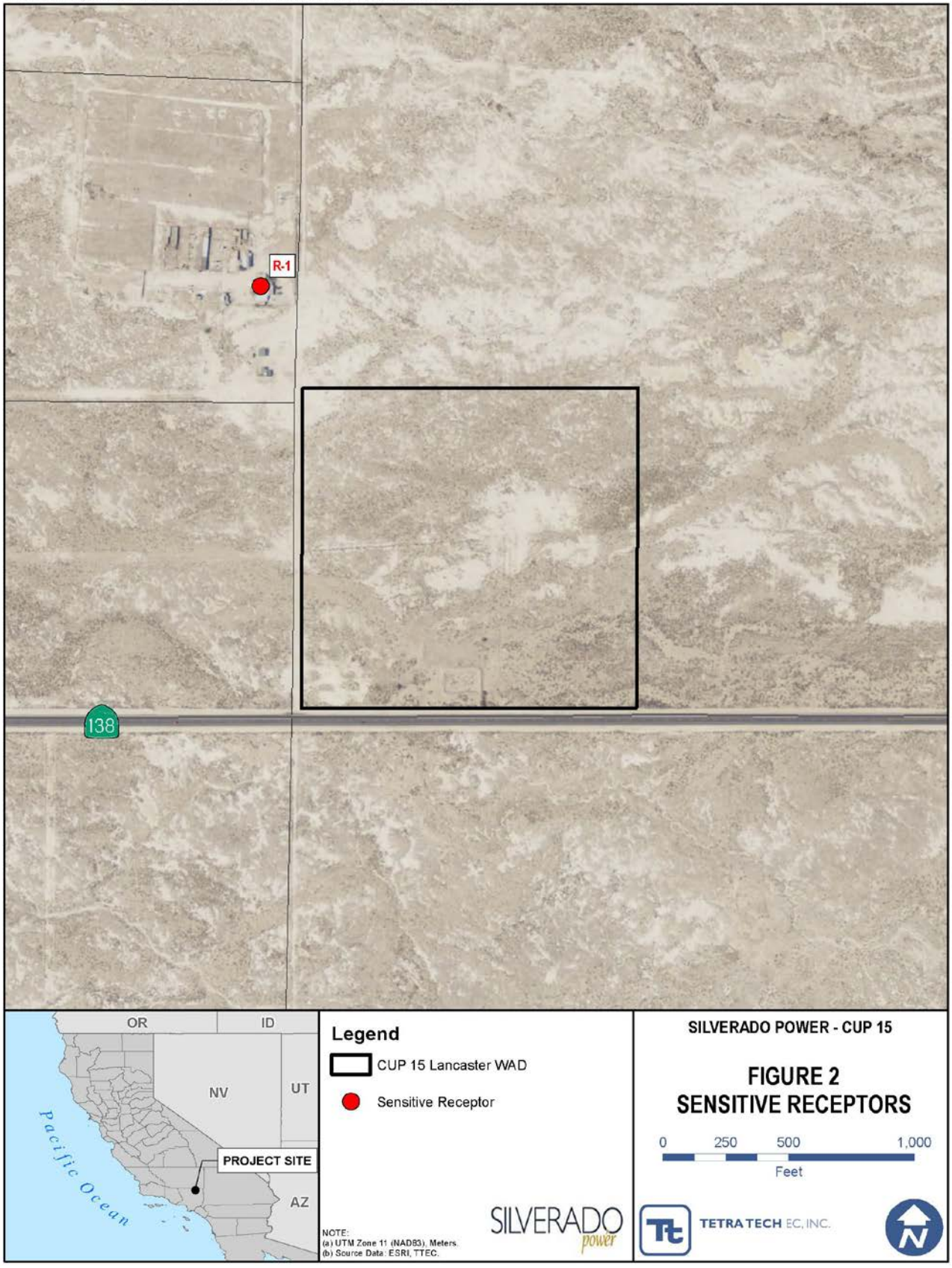

4.0 ACOUSTIC AND VIBRATION TERMINOLOGY

4.1 Acoustic Terminology

Sound levels are presented on a logarithmic scale to account for the large pressure response range of the human ear, and are expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing defined as 20 micropascals. Typically, a noise analysis examines 11 octave (or 33 1/3 octave) bands ranging from 16 Hertz (Hz) (low) to 16,000 Hz (high), which encompasses the human audible frequency range. Since the human ear does not perceive every frequency with equal loudness, spectrally varying sounds are often adjusted with a weighting filter. The A-weighted filter is applied to compensate for the frequency response of the human auditory system, known as dBA. Unweighted sound levels are referred to as linear. Linear decibels are used to determine a sound's tonality and to engineer solutions to reduce or control noise as techniques are different for low and high frequency noise. Sound levels that are linear are presented as dBL.

An inherent property of the logarithmic decibel scale is that the sound pressure levels of two separate sources are not directly additive. For example, if a sound of 50 dBA is added to another sound of 50 dBA, the result is a 3-decibel increase (or 53 dBA), not an arithmetic doubling to 100 dBA. With respect to how the human ear perceives changes in sound pressure level relative to changes in "loudness," scientific research demonstrates the following general relationships between sound level and human perception for two sound levels with the same or very similar frequency characteristics:

- 1 dBA is the practical limit of accuracy for sound measurement systems and corresponds to an approximate 10 percent variation in the sound pressure level. A 1 dBA increase or decrease is a non-perceptible change in sound.
- A 3 dBA increase or decrease is a doubling (or halving) of acoustic pressure level and it corresponds to the threshold of change in loudness perceptible in a laboratory environment. In practice, the average person is not able to distinguish a 3 dBA difference in environmental sound outdoors.
- A 5 dBA increase or decrease is described as a perceptible change in sound level and is a discernible change in an outdoor environment.
- A 10 dBA increase or decrease is a tenfold increase or decrease in acoustic pressure level but is perceived as a doubling or halving in loudness (i.e., the average person will judge a 10 dBA change in sound level to be twice or half as loud).

Estimations of common noise sources and outdoor acoustic environments, and the comparison of relative loudness, are presented in Table 1.

Table 1 Sound Pressure Levels (L_p) and Relative Loudness of Common Noise Sources and Soundscapes

Noise Source or Activity	Sound Level (dBA)	Subjective Impression	Relative Loudness (perception of different sound levels)
Jet aircraft takeoff from carrier (50 ft)	140	Threshold of pain	64 times as loud
50-hp siren (100 ft)	130		32 times as loud
Loud rock concert near stage Jet takeoff (200 ft)	120	Uncomfortably loud	16 times as loud
Float plane takeoff (100 ft)	110		8 times as loud
Jet takeoff (2,000 ft)	100	Very loud	4 times as loud
Heavy truck or motorcycle (25 ft)	90		2 times as loud
Garbage disposal Food blender (2 ft) Pneumatic drill (50 ft)	80	Loud	Reference loudness
Vacuum cleaner (10 ft)	70	Moderate	1/2 as loud
Passenger car at 65 mph (25 ft)	65		
Large store air-conditioning unit (20 ft)	60		1/4 as loud
Light auto traffic (100 ft)	50	Quiet	1/8 as loud
Quiet rural residential area with no activity	45		
Bedroom or quiet living room Bird calls	40	Faint	1/16 as loud
Typical wilderness area	35		
Quiet library, soft whisper (15 ft)	30	Very quiet	1/32 as loud
Wilderness with no wind or animal activity	25	Extremely quiet	
High-quality recording studio	20		1/64 as loud
Acoustic test chamber	10	Just audible	
	0	Threshold of hearing	

Sound levels can be measured, modeled, and presented in various formats. The sound metrics that were employed in this analysis have the following definitions:

L_{eq}: Conventionally expressed in dBA, the L_{eq} is the energy-averaged, A-weighted sound level over a specified time period. It is defined as the steady, continuous sound level over a specified time, which has the same acoustic energy as the actual varying sound levels over the specified period.

L_{max}: The maximum A-weighted sound level as determined during a specified measurement period. It can also be described as the maximum instantaneous sound pressure level generated by a piece of equipment or during a construction activity.

L_{dn}: The L_{dn} measures the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. The L_{dn} is calculated by averaging the 24-hour hourly L_{eq} levels at a given location after adding 10 dB to the nighttime period (10:00 p.m. - 7:00 a.m.) to account for the increased sensitivity of people to noises that occur at night.

CNEL: Community Noise Equivalent Level (CNEL) is another average A-weighted Leq sound level measured over a 24-hour period; however, this noise scale is adjusted to account for some individuals' increased sensitivity to noise levels during the evening and nighttime hours. A CNEL noise measurement is obtained after adding 5 dB to sound levels occurring during evening hours (7:00 p.m. to 10:00 p.m.) and 10 dB to sound levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.).

4.2 Vibration Terminology

According to the Federal Transit Authority (FTA) Noise and Vibration Impact Assessment (FTA 2006), construction activities can be a source of ground-born vibration. Activities such as pile driving and operation of heavy equipment may cause ground-born vibration while constructing the Project. Vibration is an oscillatory motion which can be described in terms of the displacement, velocity, or acceleration (FTA 2006). Velocity or acceleration are typically used to describe vibration. Two descriptors are frequently used when discussing quantification of vibration, the PPV and the root mean square (rms).

Peak particle velocity (PPV) – The maximum instantaneous positive or negative peak of the vibration signal (FTA 2006).

Root mean square (rms) – The square root of the average of the squared amplitude of the vibration signal, typically calculated over a 1-second period (FTA 2006)

The PPV is often used to assess stress on structures and the rms is used to describe the human response to vibration. The California Department of Transportation (Caltrans) construction vibration guidance is used in this assessment. This guidance includes a human response equivalent based on the PPV instead of using rms.

5.0 REGULATORY SETTING

This section provides an overview of federal, state, and local regulations related to noise issues applicable to the Project.

5.1 Federal

Federal laws, regulation, and guidance establish the national framework for noise regulations and include those from the Occupational Safety and Health Administration and the EPA.

5.1.1 Occupational Safety and Health Administration, Occupational Noise Exposure; Hearing Conservation Amendment (29 Code of Federal Regulations [CFR] 1910.95)

This standard establishes mandates to protect employees from excessive noise exposure and requires a Hearing Conservation Program when routine exposure to high noise levels would occur.

5.1.2 U.S. Environmental Protection Agency in "Information of Levels on Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety." (EPA 550/9-74-004)

Published in 1974, this document identifies safe levels of environmental noise exposure and is intended to "provide State and Local governments as well as the Federal Government and the private sector with an informational point of departure for the purpose of decision making." While the EPA has no regulation governing environmental noise, the agency has conducted several extensive studies to identify the effects of sound level on public health and welfare. For outdoor residential areas, the recommended EPA guideline is an L_{dn} of 55 dBA and an indoor L_{dn} limit of 45 dBA. These levels are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and healthcare areas. Noise-level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour L_{eq} values of 70 dBA (both outdoors and indoors). This publication remains the authoritative study based on a large sampling of community reaction to noise. The EPA sound level guidelines do not provide an absolute measure of noise impact, but rather a consensus on potential activity interference, human health and welfare effects, and annoyance. Since these protective levels were derived without concern for technical or economic feasibility and contain a margin of safety to ensure their protective value, they should not be viewed as standards, criteria, regulations, or goals. Rather, they should be viewed as levels below which there is no reason to suspect that the general population will be at risk from any of the identified effects of noise. The EPA guideline limits are summarized in Table 2.

Table 2. Summary of EPA Cause and Effect Noise Levels

Location	Level	Effect
All public accessible areas with prolonged exposure	70 dBA $L_{eq(24)}$	Safety
Outdoor at residential structure and other noise sensitive receptors where a large amount of time is spent	55 dBA L_{dn}	Protection against annoyance and activity interference
Outdoor areas where limited amounts of time are spent, e.g., park areas, school yards, golf courses, etc.	55 dBA $L_{eq(24)}$	
Indoor residential	45 dBA L_{dn}	
Indoor non-residential	55 dBA $L_{eq(24)}$	

USEPA 1974

5.2 State

In 1987, the California Department of Health Services published guidelines for the noise element of local general plans. These guidelines include a noise level/land use compatibility chart that categorizes various outdoor L_{dn} ranges in up to four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), depending on land use. For many land uses, the chart shows L_{dn} ranges for two or more compatibility categories. The noise element guidelines chart identifies the normally acceptable range for low-density residential uses as less than 60 dBA, while the conditionally acceptable range is 60-70 dBA. The normally acceptable range for high-density residential uses is identified as L_{dn} values below 65 dBA, while the conditionally acceptable range is identified as 65-70 dBA. For educational and medical facilities, L_{dn} values below 60 dB are considered normally acceptable, while L_{dn} values of 60-70 dBA are considered conditionally acceptable. For office

and commercial land uses, L_{dn} values below 67.5 dBA are considered normally acceptable, while L_{dn} values of 67.5-77.5 dBA are categorized as conditionally acceptable. These normally and conditionally acceptable L_{dn} ranges are intended to indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations. These guidelines are used by many agencies, environmental planners, and acoustical specialists as a starting point to evaluate the potential for noise impact on and by a project. The guidelines are also employed to evaluate methods for achieving noise compatibility with respect to nearby existing uses. Table 3 summarizes these guidelines for the normally and conditionally acceptable L_{dn} exposures.

Table 3. California Department of Health Services Noise Guidelines

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)	
	Normally Acceptable	Conditionally Acceptable
Residential – Low Density	50 – 60	60 – 70
Residential – High Density	50 – 65	65 – 70
Transient Lodging – Motels, Hotels	50 – 65	65 – 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 60	60 – 65
Auditoriums, Concert Halls, Amphitheaters	NA	50 – 70
Sports Arenas, Outdoor Spectator Sports	NA	50 – 75
Playgrounds, Neighborhood Parks	50 – 67.5	NA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 70	NA
Office Buildings, Business Commercial and Professional	50 – 67.5	67.5 – 77.5
Industrial, Manufacturing, Utilities, Agriculture	50 – 70	70 – 80

The California Department of Housing and Community Development has adopted noise insulation performance standards for new hotels, motels, and dwellings other than detached single-family structures (24 California Code of Regulations [CCR] T25-28). These standards require that “interior CNEL with windows closed, attributable to exterior sources, shall not exceed an annual CNEL of 45 dB in any habitable room.”

Occupational exposure to noise is regulated by the California Occupational Safety and Health Act in Title 8, Group 15, Article 105, Sections 5095–5100. The standard stipulates that protection against the effects of noise exposure will be provided when sound levels exceed 90 dBA over an 8-hour exposure period.

5.2.1 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and that such impacts be eliminated or mitigated to the extent feasible. The CEQA guidelines (AEP 2012) set forth characteristics that signal a potentially significant impact. Under CEQA the proposed Project would be considered to have significant noise and vibration impacts if it results in the following:

- **NZ-1** Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

- **NZ-2** Exposure of persons to or generation of excessive ground-born vibration or ground-born noise levels.
- **NZ-3** A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- **NZ-4** A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- **NZ-5** For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?
- **NZ-6** For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

For the proposed Project, the following criteria were determined to be inapplicable or to result in no impact:

- Exposure of on-site workers to noise levels that exceed occupational safety standards (90 dBA as a time-weighted 8-hour average or peak noise levels above 115 dBA).
- Exposure of residents to airport or private airstrip-related noise levels above a CNEL of 65 dBA.

Occupational noise exposure is governed by federal and state regulations. The California Division of Occupational Safety and Health (Cal/OSHA) administers industrial safety regulations in California. Cal/OSHA regulations establish a time-weighted noise exposure limit of 90 dBA averaged over 8 hours (CCR, Title 8, Article 105). Noise source controls, administrative procedures, or worker hearing protection must be provided if worker noise exposure would exceed the 90 dBA limit. The construction contractor selected for this Project will be required to follow Cal/OSHA requirements for construction worker noise exposure. Consequently, worker noise exposure issues are not discussed further under any of the alternatives.

There are two aviation uses in the general Project vicinity. Little Buttes Airfield is located approximately 5 miles west of the western boundary of the proposed Project site, and General William J. Fox Airfield (Fox Airfield) is located 2.3 miles south of the Project site. Little Buttes Airfield has very low use levels; Fox Airfield has moderate use levels and is predominantly used for general aviation with some cargo operations. Sound contours developed for Fox Airfield indicate that the Project is over 2 miles from the 55 dBA CNEL contour. No airfield noise contours have been developed for Little Buttes Airfield, but due to low operation levels and distance from the airport, sound levels are assumed to be below 55 dBA CNEL. The Project would not create residential land uses, and all Project features are outside the airfield properties. Consequently, airport-related noise issues are not discussed further.

5.3 Local

5.3.1 Los Angeles County 2011 Draft General Plan 2035

The Draft General Plan 2035 lists policies related to noise that include using land uses such as parks to buffer noise-sensitive uses from excessive noise impacts, promoting land use compatibility, and ensuring adequate mitigation (Los Angeles County 2011).

5.3.2 Los Angeles County Code

The County Noise Control Ordinance, Title 12 of the County Code, was established to reduce and restrict certain noise-producing activities. Activities may not generate noise levels above the specified limits either at the exterior or interior areas of neighboring land uses. The limits are derived from tabulated values that depend on the land use, with adjustments to create a series of noise standards. The exterior limits are presented in Table 4. Additional standards are provided in the event that the exterior limits are exceeded.

Table 4. Exterior Noise Standards, Los Angeles County Code

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level (dB)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 p.m. to 7:00 a.m. (night-time)	45
		7:00 a.m. to 10:00 p.m. (daytime)	50
III	Commercial properties	10:00 p.m. to 7:00 a.m. (night-time)	55
		7:00 a.m. to 10:00 p.m. (daytime)	60
IV	Industrial properties	Anytime	70

Source: Section 12.08.390 of the Los Angeles County Code (a portion of the Noise Control Ordinance).

In addition, the County Noise Control Ordinance also prohibits construction activities and noise during certain times in areas that would affect a residential or commercial property. The prohibited times are between the weekday hours of 7:00 p.m. and 7:00 a.m. and any time on Sundays or holidays. The Ordinance identifies maximum noise levels for mobile and stationary equipment as shown in Table 5. All internal combustion engine-powered equipment "shall be equipped with suitable exhaust and air intake silencers in proper working order." A 5 dBA penalty is applied to noises that are considered impulsive.

Table 5. Maximum Noise Levels for Construction Noise from Stationary Equipment (10 days or more)

	Single-family Residential	Multi-family Residential	Semi-residential/ Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

Source: Section 12.08.440 of the Los Angeles County Code (a portion of the Noise Control Ordinance).

5.3.3 Antelope Valley Areawide General Plan

The 1986 Antelope Valley Areawide Plan (Los Angeles County 1986) designates areas within the 60-dBA noise contour from transportation sources such as airports, railroads, and major highways as Noise Management Areas (NMA). Plan policy for these areas calls for the reduction of noise impacts on adjacent land uses through both hazard avoidance actions, where practical, and hazard mitigation practices, in other cases. The Antelope Valley Areawide General Plan is currently in the process of being updated. However, no updated guidelines or standards related to noise are available. The Project is not located close enough to an airport to be within an aviation related 60 dBA L_{dn} noise contour. No railroads are located within 0.5 mile of the Project, and therefore sound from railroad activities is anticipated to be less than 60 dBA. The nearest roadways are West Avenue D and 35th Street West, neither of which is designated as a major highway (i.e., U.S. Highway, State Route, or Interstate). The nearest major highway is State Route 14, located approximately 1 mile east of the Project site. Peak hour traffic volumes on rural roads, such as those listed above, are unlikely to be heavy enough to generate traffic noise within the Project area of 60 dBA L_{eq} or greater. Therefore the Project site is not located within a NMA.

6.0 EXISTING CONDITIONS

The degree of audibility of a new or modified sound source is dependent in a large part upon the existing ambient sound level. A wide range of noise settings may occur within the Project study area, which consists of all areas that could be potentially affected by construction or operational noise resulting from the Project. The Project site encompasses previously disturbed, fallow agricultural land in northern Los Angeles County. The Project vicinity includes agricultural fields and scattered residences intermixed with non-native grasslands. One residence (receptors) is located approximately 525 ft northwest of the Project site (Figure 2). Fox Airfield is located 2.3 miles south of the Project site (Figure 1).

Existing ambient sound levels within the Project vicinity are expected to be relatively low, although sound levels may be sporadically elevated in localized areas due to roadway noise or periods of human activity. Background sound levels will vary both spatially and temporally depending on proximity to area sound sources, roadways, and natural and/or weather-related sounds. Principal contributors to the existing acoustic environment likely include motor vehicle traffic, mobile farming equipment, farming activities such as plowing and irrigation, all-terrain vehicles, local roadways, periodic aircraft flyovers, and natural sounds such as birds, insects, and leaf or vegetation rustle during elevated wind conditions. Open lands, predominantly rural in nature, will have comparatively lower ambient sound levels than more developed areas. Diurnal effects result in sound levels that are typically quieter during the night than during the daytime, except during periods when evening and nighttime insect noise may dominate in warmer seasons.

7.0 NOISE AND VIBRATION IMPACT ANALYSIS

Sound generated by the Project will consist of: (1) short duration sounds resulting from construction activities, and (2) sound during normal facility operations. Vibration from the Project would only occur during construction. Construction activities would take place only during

daytime hours. An evaluation was performed of expected noise and vibration levels in conjunction with review of applicable agency policies and regulatory requirements.

Airborne noise dissipates with increasing distance from the noise source. The distances involved depend primarily on the intensity of the noise generated by the source, terrain, and ground cover between the source and the receiver, and partly on weather conditions such as wind speed and direction, the height and strength of temperature inversions, and the height of cloud cover. Temperature inversions and cloud cover can reflect or refract sound that is radiated upwards; this effect can increase noise levels at locations that receive the reflected or refracted sound. Such reflection and refraction effects are important primarily for high intensity sounds and for the calculation of sound propagation over large distances. For noise sources such as construction activity and vehicle traffic, the region of influence is typically less than 0.5 mile from the noise source. Temperature inversions and cloud cover are not accounted for in this analysis.

The region of interest for noise and vibration issues is typically localized. Ground-born vibrations generally attenuate rapidly with increasing distance from the vibration source. The distances involved depend primarily on the intensity of the vibrations generated by the source, and partly on soil and geologic conditions. Detectable vibrations will travel the greatest distance through solid rock and the least distance through loose, unconsolidated soils or saturated soils. For vibration sources such as construction activity and vehicle traffic, the region of influence is typically less than 1,000 ft from the vibration source. Table 6 compares the distances of the closest existing residences to the SGF components.

Table 6. Comparison of Distances (ft) of the Closest Residence to SGF Component

	Project Component	Direction
Solar Farm	525	NW
Gen-Tie Transmission Line (underground)	1,700	N

7.1 Construction

7.1.1 Construction Noise

Construction noise, although temporary, can be a source of concern for sensitive receptors such as nearby residences. Construction is anticipated to take place between the third and fourth quarter of 2013. Construction of the Project will require the use of heavy equipment that may be periodically audible at offsite locations. Received sound levels will fluctuate, depending on the construction activity, equipment type, and distance between the noise source and the receiver. Sound from construction equipment will vary dependent on the construction phase and the number and class of equipment at a location at any given time. The first phase of construction will be mass grading over an expected duration of 2 months. Fine grading and onsite road construction will last 1 month, followed by trenching and infrastructure development, which will also be 1 month in duration. PV module installation is the final construction phase with a duration to complete of 1 month.

The variation in power and usage imposes additional complexity in characterizing construction noise levels. Expected equipment types for each phase of construction are presented in Table 7. Each construction phase identified will require different types of construction equipment. The estimated composite site noise level is based on the assumption that all equipment would operate at a given usage load factor, over a standard 8-hour workday, to calculate the composite average daytime L_{eq}. The load factor accounts for the fraction of time that the equipment is in use over the specified time period. The composite noise level from several pieces of equipment operating during the same phase is obtained from decibel addition of the L_{eq} of each individual unit.

In addition to the above listed construction equipment, pile driving is the method planned for installation of the foundations for the solar PV modules. Pile driving can generate high noise levels. Noise is generated from both the ram striking the pile as well as the operating air or diesel exhaust as it is exhausted from the cylinder (this is not present with hydraulic impact hammers). The current plan for construction of the Project is to use a GAYK 2L41C ram pile driver, which produces a sound pressure level of 111 dBA at 20 ft assuming an impact rate of 1,400 blows per minute. This is the pile driver used for this acoustic analysis, but the Project may choose to use a different pile driver that produces equal or lesser sound pressure depending upon Project need. Actual pile driving averages 30-45 seconds per pile at a 6-foot embedment depth and the engine would typically run close to 3,000 revolutions per minute (rpm) for use with this ram. Pile drivers are classified as impact devices in the Los Angeles County Noise Ordinance; therefore, the applicable standard is 55 dBA. Assuming a load or usage factor of 20 percent (FHWA 2006), it is expected that sound from pile driving would attenuate to 76 dBA at the nearest residence, 68 dBA at the Project centroid approximately 1,300 ft from the nearest residence, and would attenuate to below 60 dBA within 1 linear mile of this construction activity, depending on meteorological and topographical effects. A variance to the noise ordinance in the County of Los Angeles will be required for construction involving pile driving since the pile driving is expected to last more than 10 days.

Construction sound will attenuate with increased distance from the sound sources. Other factors, such as vegetation, terrain, and obstacles such as buildings, will act to limit the impact of construction noise levels, but were not considered in the evaluation. Because an active orchard is located between the Project site and the nearest residence, some screening of construction noise may occur, depending on the amount of foliage on the trees in the orchard. Trees free of foliage, such as deciduous trees in the late fall to early spring, provide little screening. According to the Federal Highway Administration (FHWA), “Vegetation must be a minimum of 100 ft thick, a minimum of 20 ft high, and sufficiently dense so that it cannot be seen through in order to provide a 5-dBA noise reduction. Anything less than that thickness will not result in any significant noise reduction” (FHWA 2012). Actual received sound levels will fluctuate, depending on the construction activity, equipment type, and separation distances between the source and the receiver. As a general construction practice, functional mufflers will be maintained on all equipment to maintain noise levels as low as reasonably achievable.

Table 7. Summary of Solar Farm Construction Noise by Phase at Nearest Residence

Phase No.	Construction Phase	Construction Equipment	Load Factor %	Maximum L_{max} Equipment Noise Level at 50 ft (15 m) dBA	Composite L_{eq} Noise Level at 525 ft (160 m) Average Daytime dBA	Composite Noise Level at Acoustic Centroid 1300 ft (396 m) Average Daytime dBA
1	Mass Grading	(1) Graders (174 hp) (1) Rubber Tired Dozers (357 hp) (1) Scrapers (313 hp) (1) Tractors/Loaders/Backhoes (108 hp) (1) Water Trucks (189 hp)	61 59 72 55 50	85 85 89 85 80	70	62
2	Fine Grading - Road Construction	(1) Other Equipment (190 hp) (1) Rough Terrain Forklifts (93 hp) (1) Water Trucks (189 hp)	62 60 50	80 85 80	64	57
3	Trenching / Infrastructure Construction	(2) Tractors/Loaders/Backhoes (108 hp) (1) Trenchers (63 hp) (1) Water Trucks (189 hp)	55 75 50	85 83 80	65	57
4	Building Construction / PV Installation	(1) Cranes (399 hp) (1) Forklifts (145 hp) (1) Other Equipment (190 hp) (1) Water Trucks (189 hp)	43 30 62 50	83 85 80 80	64	56
Sub Phase	**Construction Phase**	**Construction Equipment**	**Load Factor %**	**Maximum L_{max} Spec. Sound Pressure Level at 20 ft**	**Composite L_{eq} Noise Level at 525 ft (160 m) Average Daytime dBA**	**Composite Noise Level at Acoustic Centroid 1,300 ft (396 m) Average Daytime dBA**
4a	PV Installation	GAYK 2L41C ram pile driver (impact device)	20*	111	76	68

Data compiled and methodologies developed in part from:

Federal Highway Administration, “Construction Noise Handbook”, Report FHWA-HEP-06-015, 2006.

Communication with equipment manufacturers of comparable equipment.

*Usage factor is based on FHWA assumption of 20%.

hp – horsepower
m – meters

Construction noise is a temporary noise source that would only occur during daytime hours. Sound levels from construction are expected to be comparable to sound produced by farm machinery, such as equipment used in nearby agricultural fields. Worst case construction noise levels listed in Table 7 for the nearest residence would last no more than a few weeks as construction activities progress across the Project site. Therefore, no one residence will be exposed to significant noise levels for any extended period of time. Traffic noise generated during construction on and offsite will also temporarily add to overall sound levels. The Project will make reasonable efforts to minimize noise resulting from construction activities.

7.1.2 Construction Vibration

Vibration associated with construction of the Project has the potential to be an annoyance to nearby residences. Structural damage to nearby residences from construction activities is unlikely and not anticipated. Vibratory motion is typically described by identifying the PPV (Caltrans 2004) for damage to buildings. To assess the human response to vibration, the rms amplitude is typically used (Caltrans 2004).

The Caltrans Construction Induced Vibration Guidance Manual identifies two impact criteria for buildings and humans. Table 8 describes impact criteria for buildings and Table 9 describes impact criteria for humans. Although the rms is typically used to assess human response, Caltrans has provided threshold guidance for human response relative to PPV to maintain a consistent metric for both human response and structural impacts to buildings.

Table 8. Caltrans Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2004

Table 9. Caltrans Guideline Vibration Annoyance Potential

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2004

Installation of the PV solar module foundations requires pile driving and has the potential for vibration impacts to structures and humans. The Project is planning to use a pneumatic pile driver (GAYK 2L41C ram pile driver) which is a type of impact pile driver. Because pile drivers are an impact device, they are considered continuous/frequent sources of vibration. Other construction activities are assumed to be less intensive than pile driving and therefore would have lower PPV than pile driving. Therefore, vibration levels from pile driving are considered worst case for solar facility construction. Caltrans vibration guidance provides the following equation to calculate PPV at sensitive receptors, such as residences:

$$PPV_{Impact\ Pile\ Driver} = PPV_{Ref} (25/D)^{n} \times (E_{equip}/E_{Ref}) \text{ (in/sec)}$$

Where:

PPVRef = 0.65 in/sec for a reference pile driver at 25 ft
D = distance from pile driver to the receiver in ft
n = 1.1 is a value related to the vibration attenuation rate through ground
ERef = 36,000 ft-lb (rated energy of reference pile driver)
Eequip = rated energy of impact pile driver in ft-lbs

Using the referenced formula and an assumed 80,000 ft-lb rated energy for the impact pile driver, the calculated PPV at the nearest residence (525 ft), the Project site centroid (1,300 ft), and at the residence when construction is occurring on the Project site furthest away are listed in Table 10.

Table 10. Pile Driving Vibration Analysis

Pile Driving Location compared to nearest residence	Estimated Pile Driving PPV
Project site boundary minimum distance to residence (525 ft)	0.03
Project site centroid distance to residence (1,300 ft)	0.01
Project site boundary maximum distance to residence (2,200 ft)	0.01

The worst case pile driving has been calculated as 0.03 PPV when pile driving is at the minimum distance from the nearest residence. The value of 0.01 PPV at the Project site centroid could be considered an “average” vibration level from pile driving. At the furthest distance from the Project site relative to the residence closest to the Project site, vibration from pile driving is predicted to be 0.01 PPV. According to Caltrans guidance, a PPV of 0.03 would not damage the nearest residential structure and is predicted to be approaching what Caltrans considers distinctly perceptible to humans at 0.04 PPV. Like noise from pile driving, vibration from pile driving will only last for a few weeks at most. The value of 0.01 PPV at the centroid is representative of the vibration that can be expected for most of the pile driving phase of construction. A value of 0.01 PPV is considered barely perceptible to humans, according to Caltrans.

7.2 Operation

The Project would generate power using PV modules mounted in rows of parallel racks. The SGF is anticipated to be unmanned during normal operation. Systems monitoring will be

completed remotely. Maintenance staff will visit periodically to clean the PV modules, clear vegetation, and other general maintenance activities of the PV modules.

Sound sources considered in the Project operational noise evaluation include the inverters, ventilation fans, and transformers associated with the PV modules. The principal sources of noise are the electrical components of the inverters. Each PV module would have two inverters and a ventilation fan housed inside a pre-fabricated enclosure and one transformer mounted on a concrete pad. Each inverter generates a noise level of about 75 dBA at a distance of 10 ft. It is expected that the enclosure would provide 15 to 20 dBA of noise reduction, reducing the inverter noise to approximately 63-65 dBA at a distance of 10 ft from the enclosure. The transformers generate a noise level of about 58 dBA at a distance of 6 ft. The transformers and inverters would be centrally located within each 1 MW array of solar panels. No solar arrays would be within 100 ft of the property line and would be expected to generate low noise levels beyond the solar farm extents.

PV station transformers and power inverters are generally considered a low level source of noise, limited to daytime hours when the solar arrays are generating electricity. Transformers are designed and catalogued by megavolt ampere rating. The American National Standards Institute and the International Electrotechnical Commission have established methodologies for measurement of noise from transformers and other electrical devices. Measurements involve taking reference sound level measurements using microphones positioned 0.3 m (1 ft) from a tautly drawn string that encircles the device at a height above grade set at one-half the overall height of the device. The transformer noise output is the average of all measurements taken around the perimeter, incorporating contributions from both cooling fans and auxiliary equipment. The National Electrical Manufacturers Association (NEMA) published standards TR1-1993 (R2000) also establishes the maximum noise level allowed for transformers, voltage regulators, and shunt reactors based on the equipment's method of cooling its dielectric fluid (air-cooled versus oil-cooled) and the electric power rating.

There is no substation, or addition to existing substations, proposed for this Project.

8.0 ANALYSIS RESULTS

Based on CEQA guidance, an incremental increase of 5 dBA over the existing L_{eq} is identified as the threshold when adverse noise impacts may begin to occur. Receptors below the 5 dBA cumulative increase threshold have a lower likelihood of disturbance dependent in part on individual sensitivities. For areas where potential exceedances of the 5 dBA threshold might be expected, a second level noise mitigation evaluation may be necessary towards evaluating potential exceedance condition(s). For example, if a background sound level of 35 dBA is assumed, the total cumulative sound level of 40 dBA, or 5 dBA above the estimated background sound level, would become the onset threshold of potential adverse noise impact per CEQA guidelines. Sound levels from the inverters, ventilation fans, and transformers associated with the Project's PV modules are anticipated to be low level at the property line and nearest residences.

9.0 MITIGATION MEASURES

The following noise mitigation measures will be considered and incorporated into the Project contract specifications as necessary to minimize noise levels associated with Project construction to the extent practicable:

- Construction operations will not occur between 7:00 p.m. and 7:00 a.m. on weekdays or Saturday, or at any time on Sunday within 500 ft of an occupied residence;
- Construction site and access road speed limits will be established and enforced during the construction period;
- Electrically-powered equipment will be used instead of pneumatic or internal combustion powered equipment, where feasible;
- Material stockpiles and mobile equipment staging, parking, and maintenance areas will be located as far as practicable from noise-sensitive receptors;
- The use of noise-producing signals, including horns, whistles, alarms, and bells, will be for safety warning purposes only;
- No Project-related public address or music system will be audible at any adjacent receptor; and
- All noise-producing construction equipment and vehicles using internal combustion engines will be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed “package” equipment (e.g., arc-welders, air compressors) will be equipped with shrouds and noise control features that are readily available for that type of equipment.

10.0 CONCLUSION AND RECOMMENDATION

Sound levels associated with the Project are anticipated to be low level at the property line and nearest residence. Construction will be relatively short term, with all construction activity, including pile driving, limited to daytime periods. PV station transformers and power inverters are generally considered a low level source of noise, limited to daytime hours when the solar arrays are generating electricity. There will be no substation or addition to existing substations necessary, as a result of this Project.

Acoustic analysis results may change as a result of adjustments to equipment components, including the use of noise mitigation measures during final Project design, in modeling and other assumptions including receptor status, or based on assumptions or measurement data used to estimate background sound levels within the acoustic study area. The information available during the initial engineering phases is only at a conceptual level and does not allow design details to be finalized for specific mitigation measures. Based on the preliminary design data, the results of this acoustic assessment demonstrate the feasibility of the Project to operate in compliance with County of Los Angeles Codes and Exterior Noise Standards, Antelope Valley Areawide General Plan, and CEQA guidelines assuming a typical background sound level of 35 dBA.

11.0 REFERENCES

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APPENDIX B-9

TRANSPORTATION IMPACT STUDY

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APPENDIX B-9.1

PROJECT 1 NORTH LANCASTER RANCH TRANSPORTATION IMPACT STUDY

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

Project 1
NORTH LANCASTER RANCH
TRANSPORTATION IMPACT STUDY

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1.0 INTRODUCTION

This Transportation Impact Study (TIS) has been prepared for the North Lancaster Ranch (Project) Solar Generating Facility (SGF) proposed by Silverado Power, LLC (Silverado Power) to evaluate the potential transportation impacts resulting from the construction and operation of the Project. The TIS focuses on the impacts and mitigations required for the construction phase of the Project. The post-construction operational phase traffic generation is expected to be minimal and the resulting impacts are considered negligible as explained in Section 5.2.

The following approach was used to complete this TIS:

- Determine the traffic routes for two options that water trucks will take to the Project site (Homer Option and City of Lancaster Option);
- Determine the existing AM peak hour (7:00 AM) traffic for the determined routes water trucks will take to the site;
- Estimate the projected existing traffic for the expected year of construction using a growth rate of 2 percent per year;
- Determine the AM peak hour water truck trips during construction assuming 30 percent of the water trucks travel to the Project site during the AM peak hour;
- Calculate the percent increase in volume by comparing projected existing peak hour trips (without the Project) with the peak hour traffic trips during construction (with the Project);
- Evaluate the Project impact on traffic conditions;
- Determine the applicable laws, ordinances, regulations, and standards (LORs);
- Recommend measures to mitigate the potential Project impacts to the existing transportation infrastructure, as needed; and
- Provide conclusions of the traffic study.

2.0 PROJECT DESCRIPTION

The Project will have a generating capacity of 20 megawatts (MW) and will be located on 240 acres of primarily unproductive agricultural land in Los Angeles County. The Project will employ a series of photovoltaic (PV) module arrays to convert sunlight directly into electrical energy without the use of heat transfer fluid or cooling water. In addition to the PV modules, the Project will include the following associated facilities:

- Module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical collection system, including switchgear
- Data Monitoring Equipment
- Access roads and chain link perimeter security fencing

The SGF will operate year-round, producing renewable electric power during daytime hours. The power generated by the Project would be connected to Southern California Edison Antelope Substation (SCEAS) existing transmission network with the voltage transformation equipment and system safety equipment constructed on the site. The project will ultimately interconnect at 34.805275, -118.324064 and 34.812, -118.326. Electricity will be delivered to the existing Southern California Edison 66 kV transmission line via an underground 0.5-mile and .01 mile respectively generation-tie (gen-tie) line originating at the DC collection system within the SGF. The 66 kV transmission lines are due west of the facility.

The Project is to be constructed in 2 phases. Phase 1 is to begin site preparation and construction in the third quarter of 2014, complete construction in approximately 6 months, and be commercially operational by the fourth quarter of 2014. Phase 2 is to begin site preparation and construction in the first quarter of 2015, complete construction in approximately 6 months, and be commercially operational by the second quarter of 2015. Refer to Figures 1 and 2 for the Project Vicinity Map and Site Plan, respectively.

3.0 EXISTING CONDITIONS

The Project is located in unincorporated northern section of Los Angeles County, approximately 12.19 miles northwest of Lancaster and approximately 8.29 miles northwest of the intersection of SR-138/W Avenue D and SR-14. The Project site is surrounded by agricultural fields intermixed with non-native grasslands.

The closest regional roadways to the Project site are State Route 14 (SR-14)/Antelope Valley Freeway, SR-138/Lancaster Road, also identified locally as W Avenue D, and Interstate 5 (I-5). SR-14 runs north-south approximately 8 miles east of the Project site. SR-14 is an important regional transportation link to and from the Antelope Valley. It provides connection between the Cities of Lancaster, Rosamond, Palmdale, and Los Angeles. I-5 is a major north-south route of the Interstate Highway System providing connection between the Cities of San Diego, Los Angeles, Bakersfield, and Sacramento. The intersection of I-5 and SR-138 is located approximately 27.51 miles west of the Project site. SR-138 extends east from I-5 to the junction of SR-138 and SR-14 where SR-138 south is combined with SR-14 south.

There are two airports located within the general vicinity of the Project site. General William J. Fox Airfield is located approximately 7 miles southeast and Edwards Air Force Base is located approximately 23.87 miles northeast of the Project site.

For details regarding transportation routes to the Project site and the associated existing and projected traffic volumes for the Project see Section 5.1 – Construction Phase.

4.0 PROJECT TRIP GENERATION

4.1 Construction Phase

Traffic generated during the construction phase will include construction worker commuter trips, water truck trips, and delivery truck trips. Construction worker commuter trips and delivery truck trips are anticipated to arrive to the Project site outside of peak hours. It is anticipated that 30 percent of water trucks will arrive to the Project site during the AM peak hour. The Project will have an average of 75 workers per day and a peak of 100 workers per day over a 20-day period

during construction. For equipment and materials, the Project will have an average of 4 delivery truck trips per day with an expected peak of 26 delivery truck trips. It is anticipated that construction workers and delivery trucks will arrive to the Project site outside of peak hours.

Dependent upon climatic conditions during construction, the maximum estimated water use for the site is 50 acre-feet for Phase 1 and 50 acre-feet for Phase 2, which would be obtained from an off-site provider. Potable water would be brought in to the Project site for drinking and domestic needs. During the site preparation and grading activities, water will mainly be used for soil compaction and control of fugitive dust generation. Smaller quantities of water will also be required on an as-needed basis for preparation of the concrete required for foundations and other minor uses. Subsequent to these construction activities, water usage will primarily be used for on-going dust suppression associated with the remaining construction of the Project. The Project will require a total of 10 daily water truck trips arriving on-site. Assuming that 30 percent of the water trucks will arrive on-site during the AM peak hour (7:00 A.M.), 3 water trucks will be used in this analysis.

4.2 Operational Phase

The Project facility will operate year-round, producing renewable electric power during daytime hours. PV facilities have very few moving parts and have limited ongoing maintenance requirements. Maintenance activities will consist of checking electrical performance parameters via remote monitoring, performing periodic inspections and maintenance of transformers and inverters, responding to any problems detected by remote monitoring, conducting weed abatement and dust control activities, cleaning PV modules, and maintaining driveways. Water trucks will be used for cleaning the PV modules, but are anticipated to arrive during non-peak hours. No major equipment is anticipated to be required for maintenance of the facility.

The Project facility will primarily be managed, monitored, and controlled remotely. The solar energy generating facilities are anticipated to be unmanned during normal operation. The SGF is expected to be monitored remotely and only have an average of 2 workers onsite for security, maintenance, repairs, and inspections on a quarterly or as-needed basis. An additional 8 workers will be needed during cleaning of the PV modules. Cleaning of the PV modules is anticipated to take up to one week to complete and be conducted two times a year. The operational workers are expected to commute to and from the Project site individually and will arrive and depart within the peak AM and PM hours, generating a peak of 10 round trip trips during module washing.

5.0 ANTICIPATED TRAFFIC IMPACTS

5.1 Construction Phase

Construction worker traffic traveling from the north (Rosamond) and south (Los Angeles) via SR 14 will access the Project site from exit 49 to CA HWY 138/W Avenue D, a paved 2 lane road. The W Avenue D interchange will provide traffic from the south with an individual left turn lane, and traffic from the north with an individual right turn lane. Using this exit will provide efficient access to the Project site while also avoiding the urban (more densely populated) residential and commercial areas of Lancaster. From W Avenue D traffic will flow west to 90th Street W and then north on 90th Street W to W Avenue B. Construction worker traffic traveling from

Bakersfield or Los Angeles (I-5) can take SR-138/ W Avenue D east for approximately 31 miles and then north on 90th Street W approximately two miles. Then travel west approximately one and quarter miles on West Avenue B to the ingress/egress of the Project site.

Water used on-site during construction and operation will be delivered via trucks and originate from one of the following two separate locations defined as the Homer Option or the City of Lancaster Option.

Water trucks traveling from the Homer Option will originate from 100th Street W and W Avenue A in Rosamond, CA and take the following route:

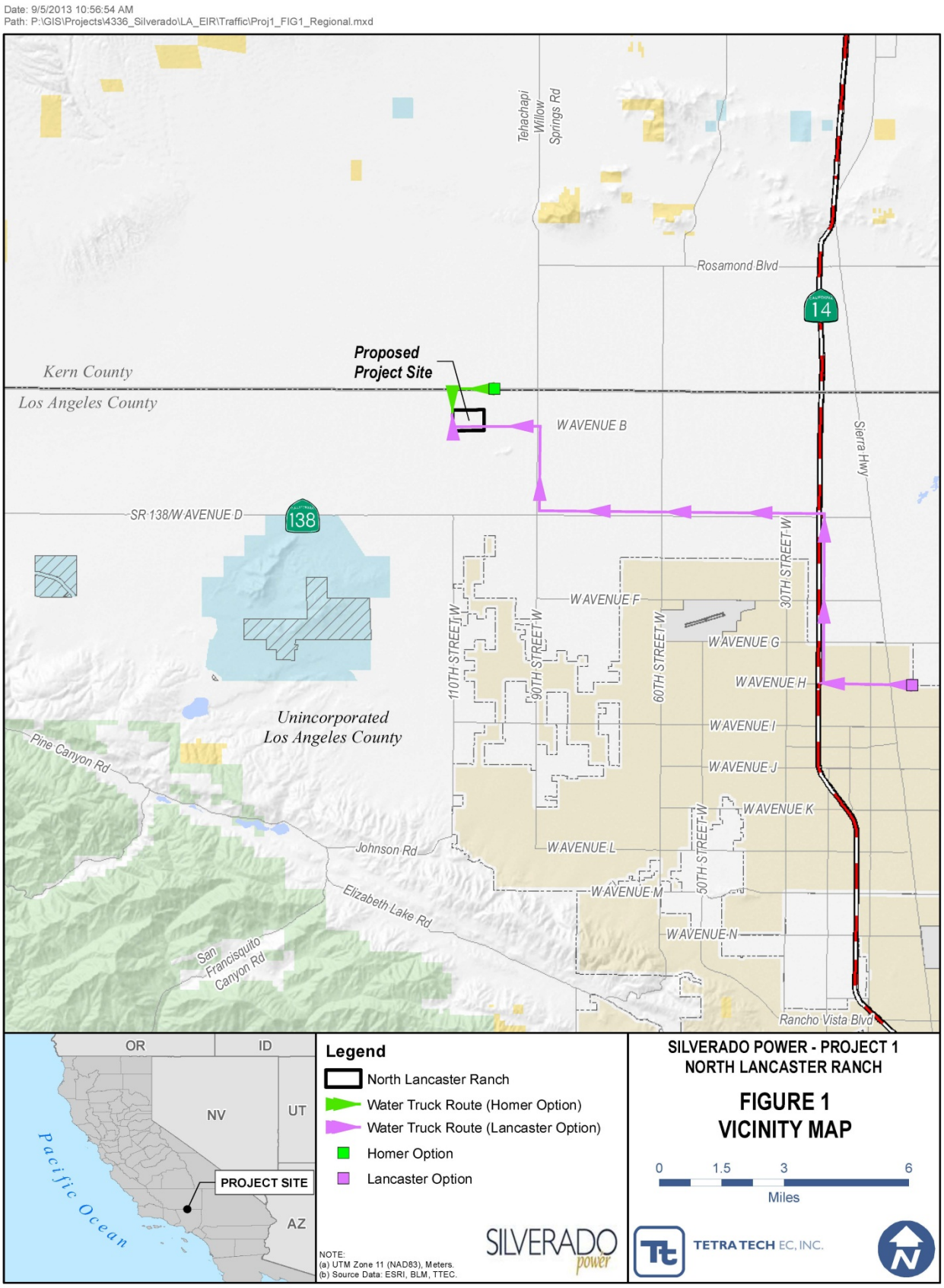
- Travel west along West Avenue A for approximately 1 mile;
- Head south (turn left) along 110th Street West for approximately 1 mile;
- Head East along (turn left) on West Avenue B for approximately ½ mile to the Project site ingress/egress.

Water trucks traveling from the City of Lancaster Option will originate from W Avenue H and Division Street in Lancaster, CA and take the following route:

- Travel West along West Avenue H for approximately 2 ¼ miles;
- Head North on SR-14 for approximately 4 miles;
- Head East on West Avenue D (SR 138) for approximately 7 miles;
- Head North (right turn) along 90th Street West for approximately 2 miles;
- Head west (left turn) along West Avenue B for approximately 2 miles;
- Head north (right turn) along 110th street West for approximately ½ mile to the Project site ingress/egress.

See Figure 1 for a Vicinity Map showing the 2 possible routes for water trucks and Figure 2 for a detailed Site Plan below.

Traffic data was obtained from Los Angeles County Department of Public Works Machine Count Traffic Volumes for the above listed routes water trucks will take for the two options. The most recent AM peak hour data available, for each water truck route, was obtained and projected to the year 2014 (year of Phase 1 construction) and 2015 (year of Phase 2 construction) by using a 2 percent growth rate per year. The analysis looks at 30 percent of the water trucks (3 water trucks) traveling to the site during the AM peak hour. Construction worker commuter trips and delivery truck trips are anticipated to arrive to the Project site outside of peak hours and have not been included this analysis. The resulting totals for the projected 2014 and 2015 traffic with the additional water truck trips are shown in Table 1 (Homer Option) and Table 2 (City of Lancaster Option) below.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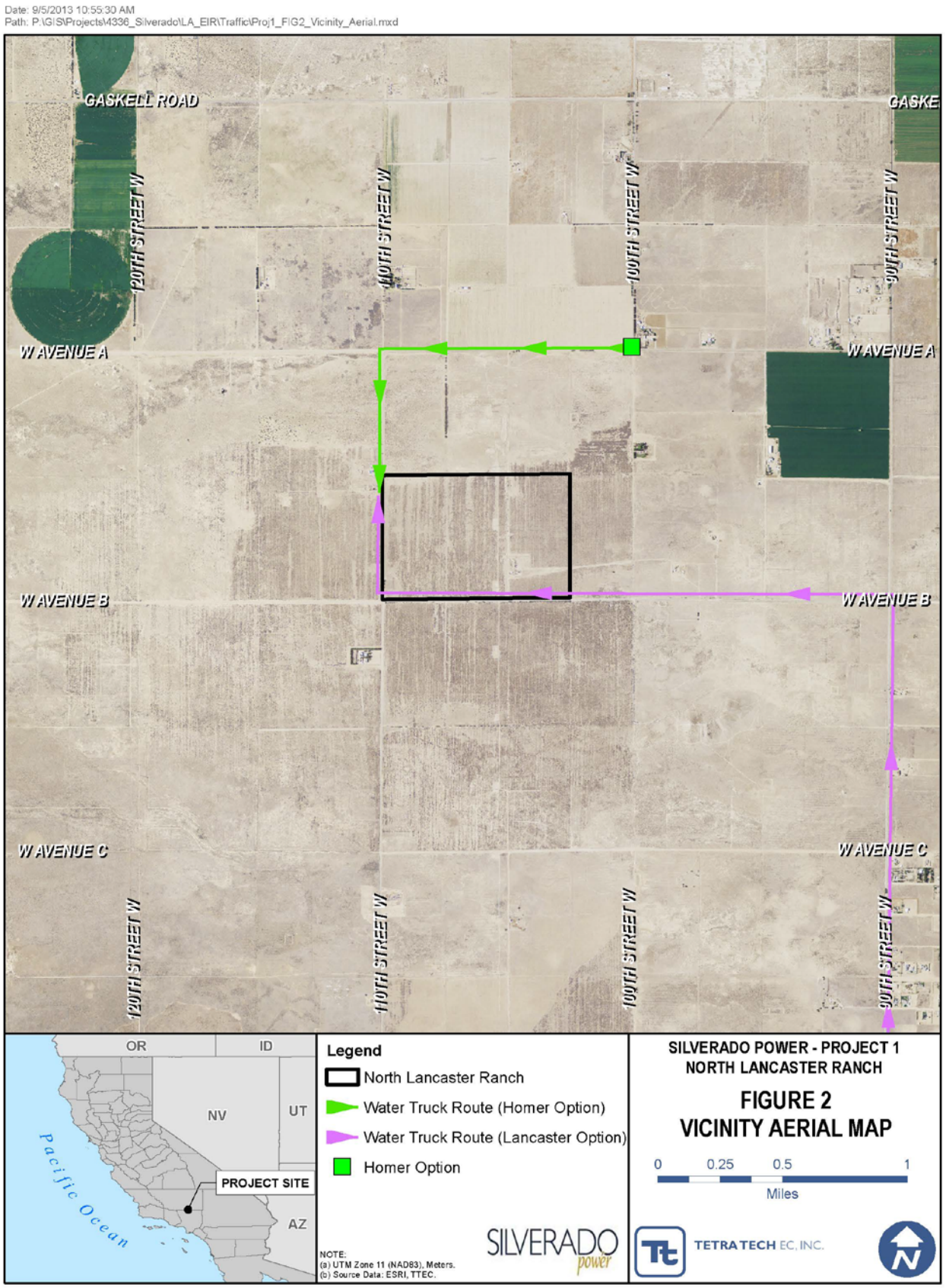
Tehachapi Willow Springs Rd
Rosamond Blvd
14
Proposed Project Site
Kern County
Los Angeles County
W AVENUE B
Sierra Hwy
SR 138/W AVENUE D
138
30TH STREET W
W AVENUE F
110TH STREET W
90TH STREET W
60TH STREET W
W AVENUE G
W AVENUE H
Unincorporated Los Angeles County
W AVENUE I
W AVENUE J
Pine Canyon Rd
W AVENUE K
Johnson Rd
W AVENUE L
50TH STREET W
W AVENUE M
Elizabeth Lake Rd
W AVENUE N
San Francisquito Canyon Rd
Rancho Vista Blvd
OR
ID
NV
UT
AZ
Pacific Ocean
PROJECT SITE
Legend
North Lancaster Ranch
Water Truck Route (Homer Option)
Water Truck Route (Lancaster Option)
Homer Option
Lancaster Option
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 1
NORTH LANCASTER RANCH
FIGURE 1
VICINITY MAP
0 1.5 3 6
Miles
TETRA TECH EC, INC.


Date: 9/5/2013 10:55:30 AM
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GASKELL ROAD
GASKE
120TH STREET W
110TH STREET W
100TH STREET W
90TH STREET W
W AVENUE A
W AVENUE B
W AVENUE C
OR
ID
NV
UT
AZ
Pacific Ocean
PROJECT SITE
Legend
North Lancaster Ranch
Water Truck Route (Homer Option)
Water Truck Route (Lancaster Option)
Homer Option
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 1
NORTH LANCASTER RANCH
FIGURE 2
VICINITY AERIAL MAP
0 0.25 0.5 1
Miles
TETRA TECH EC, INC.

Table 1 Existing and Projected Conditions for the Homer Option in 2014 and 2015

Road Segment	AM Peak Hour (2012)[1]	Projected AM Peak Hour (2014)[2]	Projected AM Peak Hour (2015)[2]	Daily Water Truck Trips	30% of Daily Water Truck Trips Arriving during AM Peak Hour	2014 Conditions with Construction Traffic	2014 Percent Increase in Traffic	2015 Conditions with Construction Traffic	2015 Percent Increase in Traffic
Traffic traveling West on W Avenue A W/O 90th Street W	26	27	28	10	3	30	11.11	31	10.71
[1] Traffic data obtained from LA County DPW Machine Count Traffic Volumes									
[2] Traffic projected using a 2% increase in traffic per year									

Table 2 Existing and Projected Conditions for the City of Lancaster Option in 2014 and 2015

Road Segment	AM Peak Hour (2010)[1]	AM Peak Hour (2011)[1]	Projected AM Peak Hour (2014)[2]	Projected AM Peak Hour (2015)[2]	Daily Water Truck Trips	30% of Daily Water Truck Trips Arriving during AM Peak Hour	2014 Conditions with Construction Traffic	2014 Percent Increase in Traffic	2015 Conditions with Construction Traffic	2015 Percent Increase in Traffic
Traffic traveling North on SR-14 S/O W Avenue D	1,725	N/A	1868	1905	10	3	1871	0.16	1908	0.16
Traffic traveling East on W Avenue D W/O SR-14	320	N/A	347	354	10	3	350	0.86	357	0.85
Traffic traveling North on 90th Street W N/O W Avenue D	N/A	58	62	63	10	3	65	4.84	66	4.76
Traffic traveling North on 110th Street W N/O W Avenue D	14	N/A	16	16	10	3	19	18.75	19	18.75
[1] Traffic data obtained from LA County DPW Machine Count Traffic Volumes and CALTRANS										
[2] Traffic projected using a 2% increase in traffic per year										

As shown in Tables 1 and 2, during the AM peak hour the local roads will experience a maximum increase in traffic volume of 18.75 percent. This is mainly due to the existing low volume and low peak traffic conditions for these roads, which are located in rural areas and operate well below the existing capacity of 1,600 vehicles per lane per hour for a 2-lane road. Therefore, it is concluded that these roads have adequate capacity to safely accommodate the increase from water truck traffic and will have an insignificant impact on the existing traffic conditions.

During construction of gen-tie lines associated with the Project, it is anticipated that temporary one-lane road closures will be necessary. A Project Traffic Plan will be prepared to address the temporary one-lane road closures and submitted to the County for approval prior to issuance/approval of the County Grading Permit. Parking, temporary office trailers, and construction and PV equipment lay-down areas will be located entirely within the Project site boundary.

The Project will not include any buildings, structures, or other operations that will require a change in the existing air traffic patterns. The SGF will be connecting to the existing SCEAS via a 0.5 mile, 66 kV gen-tie line.. PV modules that will be used at the Project site are non-reflective and will not pose a hazard to general aviation pilots. Transmission line-related radio frequency interference (RFI) is one of the indirect effects of transmission line operation. RFI is produced by the physical interactions of the electric fields generated by transmission lines. The level of RFI that occurs usually depends on the magnitude of the electric fields involved and the distance from the transmission line. It is usually associated with transmission lines of 345 kilovolts (kV) or greater. The Project transmission lines will connect to the SCEAS with a 66 kV gen-tie line (less than 345 kV) and will not adversely impact RFI effects.

5.2 Operational Phase

As previously stated, the operational phase of the Project is anticipated to only generate an average of 2 additional vehicle trips during the AM and PM peak hours on a quarterly or as-needed basis with a maximum of 10 additional vehicle trips, which will only occur when panel

washing operations are being conducted. Based on the traffic analysis for the water truck trips described above, the operational phase vehicle trips are considered negligible. Therefore, no additional post-construction operational analysis was conducted for this TIS. It is concluded that the operational phase of the Project will have no impact on the traffic and/or transportation infrastructure.

6.0 MITIGATION MEASURES

As described in the previous sections of this report, it is anticipated that the construction and operational phase traffic for the Project will not degrade the normal flow of traffic on the access roads for the Project site. The following measures will be implemented during construction to reduce or mitigate peak hour traffic volume and to maintain/repair the roads (as needed) during the project construction phase.

- **TT-1** Stagger construction work shifts to start before or after peak traffic hours;
- **TT-2** Schedule truck deliveries during off peak hours;
- **TT-3** Limit water truck deliveries during the AM peak hour to 30 percent of the daily water truck trips; and
- **TT-4** Visually document road conditions before and after construction phase and repair road to conditions before construction started or as directed by Los Angeles Department of Public Works.

Additionally, the following measures are recommended to further reduce construction traffic volume:

- **TT-5** Encourage carpooling between construction workers;
- **TT-6** Encourage potential use of vanpool or commuter bus for construction workers to access the Project site; and
- **TT-7** Establish flexible working hours outside of peak hours.

7.0 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

7.1 Federal LORS

- Title 49 CFR, Subtitle B, Chapter I, Parts 171-173, and 177-178 contain national safety standards for the transport of goods, materials, and substances over public highways; and proper handling and storage of hazardous materials during transportation.
- Title 49 CFR, Subtitle B, Chapter III, Parts 350–399 Motor Carrier Safety Regulations address safety considerations for the transport of goods, materials, and substances over public highways.
- Hazardous Materials Transportation Act of 1974, Title 49 CFR Subtitle B, Chapter III, Part 397.9 directs the Federal Department of Transportation to establish criteria and regulations for the safe interstate transportation of hazardous materials.

7.2 State LORS

- California Vehicle Code, Section 2500-2505 Authorizes the Commissioner of Highway Patrol to issue licenses for the transportation of hazardous materials
- California Vehicle Code, Sections 31303-31309 requires that the transportation of hazardous materials be on the state or interstate highway that offers the shortest overall transit time possible. The administering agency for the above statutes is the California Highway Patrol (CHP).
- California Vehicle Code, Section 35550 imposes weight guidelines and restrictions upon vehicles traveling upon freeways and highways. The section holds that "a single axle load shall not exceed 20,000 pounds. The load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds. The front steering axle load is limited to 12,500 pounds." Furthermore, CVC Section 35551 defines the maximum overall gross weight as 80,000 pounds and adds that "the gross weight of each set of tandem axles shall not exceed 34,000 pounds." The administering agency for the above statute is the California Department of Transportation (Caltrans).
- California Vehicle Code, Section 35780 requires a Single-Tip Transportation Permit to transport oversized or excessive loads over state highways. The permit can be acquired through Caltrans.
- California Street and Highways Code, Sections 117, 660-711 require an encroachment permit from Caltrans for facilities that require construction, maintenance, or repairs on or across State highways.
- California Streets and Highways Code Sections 660, 670, 1450, and 1460 *et seq.* regulate right-of-way encroachment and the granting of permits for encroachment on State and county roads.

The Project site is located within Caltrans District 7 which can be contacted at:

100 S. Main Street
Los Angeles, CA 90012
(213) 897-3631

7.3 Local LORS

Los Angeles County issues Road Use Permits for oversized/overweight loads. This permit is also required for construction, excavation, and encroachment on public highways. The permit is issued by the Department of Public Works located at:

900 S. Fremont Avenue
Alhambra, CA 91803-1331
(626) 458-3129.

8.0 HAZARDOUS MATERIALS AND WASTES

There will be no hazardous materials stored at the Project site. In the unlikely event that hazardous materials are used at the site, all handling and use of hazardous materials will be in accordance with applicable LORS. Hazardous materials could include fuels and oils for construction equipment. Construction equipment will use biodegradable oils when possible and as necessary. All construction equipment will be fueled directly from service trucks only in

specifically identified areas and no maintenance will be performed onsite. Electrical equipment will be filled with non-PCB containing oils.

The Project will not produce hazardous wastes.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The Project does not anticipate significantly impacting any mode of transportation or congestive management plan during the construction and operation of the SGF. During gen-tie construction one-lane road closures are expected and will be addressed/mitigated in the Project Traffic Plan prior to issuance of the County Grading Permit as described in Section 5.1. The Project construction will not impede any emergency access to the Project site. Emergency access within the individual SGF will be addressed in the detailed design phase of the Project. Since no existing roads will be altered, the Project will not substantially increase any hazards or incompatible uses and will not have an adverse effect on the emergency evacuation route as discussed in the Lancaster 2030 GPMEA. The Project is located in a rural area of LA County so no public transit, bicycle, or pedestrian facilities will have a decrease in performance or safety. The analysis presented in this study demonstrates that the Project construction and operational activities will have a less than significant impact on the existing traffic conditions or transportation systems in the area.

10.0 REFERENCES

1. Caltrans. 2010. Traffic Volumes on California State Highways. Riverside Country, 2010.
2. Los Angeles County Department of Public Works Machine Count Traffic Volumes
3. CEQA. 2012. Environmental Checklist. August 15, 2012.

APPENDIX B-9.2

PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH TRANSPORTATION IMPACT STUDY

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SILVERADO POWER CALIFORNIA PERMITING CAMPAIGN

Project 2
WESTERN ANTELOPE BLUE SKY RANCH TRANSPORTATION IMPACT STUDY

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September 2013

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1.0 INTRODUCTION

This Transportation Impact Study (TIS) has been prepared for the Western Antelope Blue Sky Ranch (Project) Solar Generating Facility (SGF) proposed by Silverado Power, LLC (Silverado Power) to evaluate the potential transportation impacts resulting from the construction and operation of the Project. The TIS focuses on the impacts and mitigations required for the construction phase of the Project. The post-construction operational phase traffic generation is expected to be minimal and the resulting impacts are considered negligible as explained in Section 5.2.

The following approach was used to complete this TIS:

- Determine the traffic routes for two options that water trucks will take to the Project site (Homer Option and City of Lancaster Option);
- Determine the existing AM peak hour (7:00 AM) traffic for the determined routes water trucks will take to the site;
- Estimate the projected existing traffic for the expected year of construction using a growth rate of 2 percent per year;
- Determine the AM peak hour water truck trips during construction assuming 30 percent of the water trucks travel to the Project site during the AM peak hour;
- Calculate the percent increase in volume by comparing projected existing peak hour trips (without the Project) with the peak hour traffic trips during construction (with the Project);
- Evaluate the Project impact on traffic conditions;
- Determine the applicable laws, ordinances, regulations, and standards **(**LORs);
- Recommend measures to mitigate the potential Project impacts to the existing transportation infrastructure, as needed; and
- Provide conclusions of the traffic study.

2.0 PROJECT DESCRIPTION

The Project will have a generating capacity of up to 40 megawatts (MW) and be located on 157 acres of primarily unproductive agricultural land in Los Angeles County. The Project will employ a series of photovoltaic (PV) module arrays to convert sunlight directly into electrical energy without the use of heat transfer fluid or cooling water. In addition to the PV modules, the Project will include the following associated facilities:

- Module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical collection system, including switchgear
- Generation-Tie transmission line
- Data Monitoring Equipment
- Access roads and chain link perimeter security fencing

The Project will not require the construction of an on-site operations and maintenance (O&M) facility. The Project will connect to the existing Southern California Edison Antelope Substation (SCEAS) via a 66 kilovolt (kV) generation-tie (gen-tie) line approximately 2 miles long originating at the collection system within the SGF. SCEAS is located approximately 1.5 miles north east of the Project. Refer to Figures 1 and 2 for the Project Vicinity Map and Site plan, respectively.

The facility will operate year-round, producing renewable electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete the construction and be commercially operational by the third quarter of 2013. The Project construction activities are anticipated to take approximately 8 months to complete. Refer to Figures 1 and 2 for the Project Vicinity Map and Site Plan, respectively.

3.0 EXISTING CONDITIONS

The Project is located in unincorporated northern section of Los Angeles County, approximately 11 miles west of Lancaster on the northwest corner of 110th street and W Avenue K as shown on Figure 2 Site Plan. The Project site is surrounded by agricultural fields intermixed with non-native grasslands.

The closest regional roadways to the Project site are State Route 14 (SR 14)/Antelope Valley Freeway, SR-138 also identified locally as W Avenue D (SR-138), and Interstate 5 (I-5). SR-14 runs north-south approximately 9.5 miles east of the Project site. SR-14 is an important regional transportation link to and from the Antelope Valley. It provides connection between the Cities of Lancaster, Rosamond, Palmdale, and Los Angeles. SR-138 runs east-west approximately 6.4 miles north of the Project site. I-5 is a major north-south route of the Interstate Highway System providing connection between the Cities of San Diego, Los Angeles, Bakersfield, and Sacramento. The intersection of I-5 and SR-138 is located approximately 26.8 miles north west of the Project site. SR-138 extends east from I-5 to the junction of SR-138 and SR-14 where SR-138 south is combined with SR-14 south.

There are two airports located within the general vicinity of the Project site. General William J. Fox Airfield is located approximately 7.3 miles northeast and Palmdale Regional Airport is located approximately 14 miles south east of the Project site.

For details regarding transportation routes to the Project site and the associated existing and projected traffic volumes for the Project see Section 5.1 – Construction Phase.

4.0 PROJECT TRIP GENERATION

4.1 Construction Phase

Traffic generated during the construction phase will include construction worker commuter trips, water truck trips, and delivery truck trips. Construction worker commuter trips and delivery truck trips are anticipated to arrive to the Project site outside of peak hours. It is anticipated that 30 percent of water trucks will arrive to the Project site during the AM peak hour. The Project will have an average of 75 workers per day throughout construction with a peak of 140 workers per day over a 20-day period during construction. For equipment and materials, the Project will have an average of 6 delivery truck trips per day and an expected peak of 26 delivery truck trips. It is

anticipated that construction workers and delivery trucks will arrive to the Project site outside of peak hours. Dependent upon climatic conditions during construction, the maximum estimated water use for the site is 94 acre-feet, which would be obtained from an off-site provider. Potable water would be brought in to the Project site for drinking and domestic needs. During the site preparation and grading activities, water will mainly be used for soil compaction and control of fugitive dust generation. Smaller quantities of water will also be required on an as-needed basis for preparation of the concrete required for foundations and other minor uses. Subsequent to these construction activities, water usage will primarily be used for on-going dust suppression associated with the remaining construction of the Project. The Project will require a total of 29 daily water truck trips arriving on-site. Assuming that 30 percent of the water trucks will arrive on-site during the AM peak hour (7:00 A.M.), 9 water trucks will be used in this analysis.

4.2 Operation Phase

The Project facility will operate year-round, producing renewable electric power during daytime hours. PV facilities have very few moving parts and have limited ongoing maintenance requirements. Maintenance activities will consist of checking electrical performance parameters via remote monitoring, performing periodic inspections and maintenance of transformers and inverters, responding to any problems detected by remote monitoring, conducting weed abatement and dust control activities, cleaning PV panels, and maintaining driveways. Water trucks will be used for cleaning the PV panels, but are anticipated to arrive during non-peak hours. No major equipment is anticipated to be required for maintenance of the facility, except as necessary for periodic re-grading of internal roads.

The Project facility will primarily be managed, monitored, and controlled remotely. The SGFs are anticipated to be unmanned during normal operation. The SGFs are expected to be monitored remotely and only have an average of 4 workers onsite for security, maintenance, repairs, and inspections on a quarterly or as-needed basis. An additional 8 workers will be needed during cleaning of the PV modules. Cleaning of the PV modules is anticipated to take up to 2 weeks to complete and be conducted twice a year. The operational workers are expected to commute to and from the Project site individually and will arrive and depart within the peak AM and PM hours, generating a peak of 12 one-way trips during panel washing.

5.0 ANTICIPATED TRAFFIC IMPACTS

5.1 Construction Phase

Construction worker traffic traveling from the north (Rosamond) and south (Los Angeles) via SR 14 will access the Project site from exit 44 to W Avenue I, a paved road with between 2 and 8 lanes (lanes reduce as traffic travels west on W Avenue I). The W Avenue I interchange will provide traffic from the south with an individual left turn lane, and traffic from the north with an individual right turn lane. Although the Project is located off of W Avenue K, it is recommended that construction traffic use W Avenue I. Utilizing W Avenue I will safely and efficiently convey construction traffic to the Project site while avoiding the more densely populated residential and commercial areas of Lancaster; including the Bethel Christian School and Antelope Valley College. Construction worker traffic traveling from Bakersfield (I-5) can take SR-138 to 110th Street W south to the Project site. The Project site ingress/egress will be off 110th Street W at

the northeastern and southeastern corners of the Project site. SR-14, W Avenue I, and 90th Street W are listed as evacuation routes in the Lancaster 2030 General Plan Master Environmental Assessment (GPMEA).

Water used on-site during construction and operation will be delivered via trucks and originate from one of the following two separate locations defined as the Homer Option or the City of Lancaster Option.

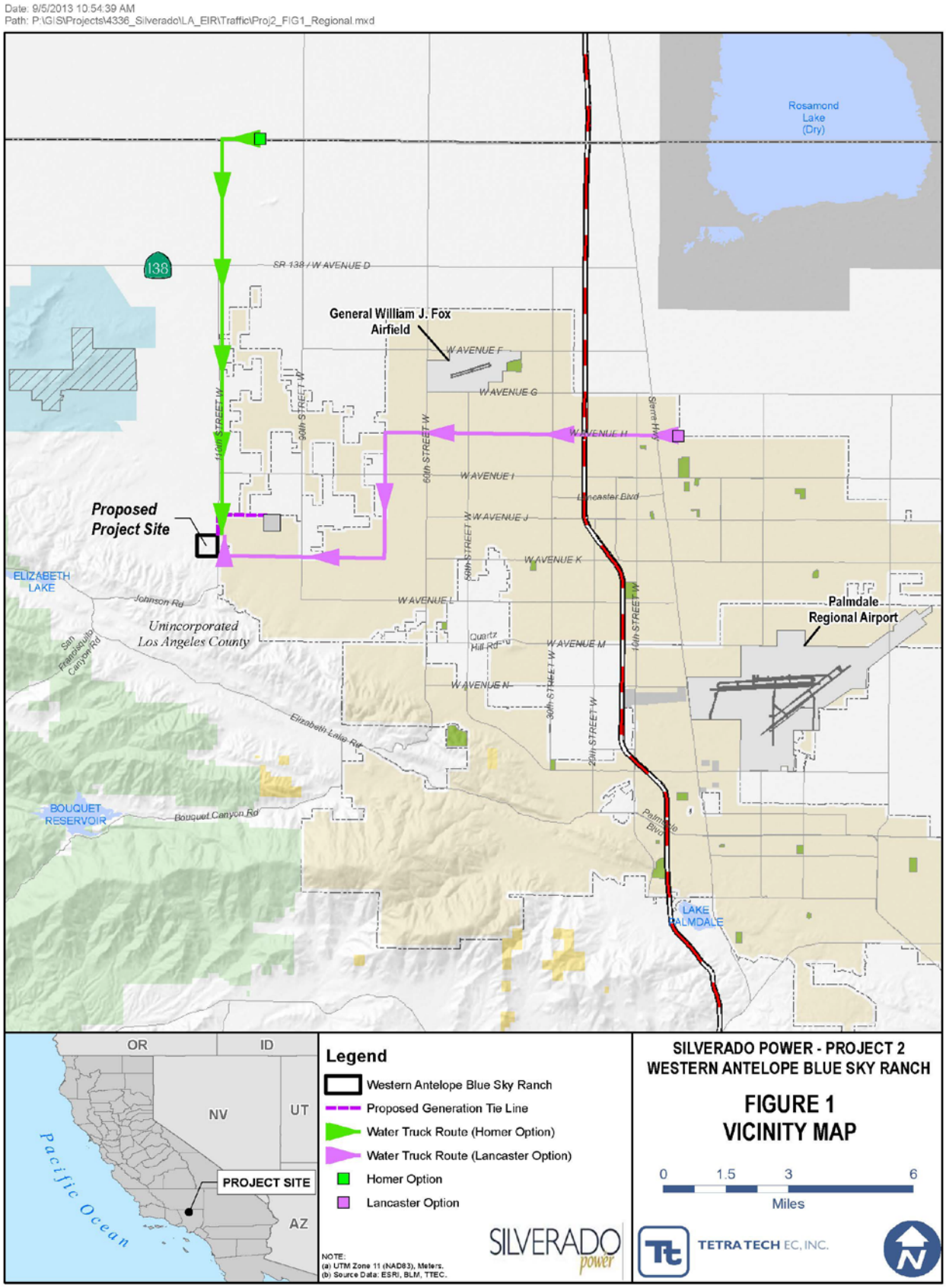
Water trucks traveling from the Homer Option will originate from 100th Street W and W Avenue A in Rosamond, CA and take the following route:

- Travel west along W Avenue A for approximately one mile;
- Head south (turn left) along 110th Street W for approximately ten miles to the Project site ingress/egress.

Water trucks traveling from the City of Lancaster Option will originate from W Avenue H and Division Street in Lancaster, CA and take the following route:

- Travel west along W Avenue H for approximately seven miles;
- Head south (turn left) on 70th Street W for approximately 3 miles;
- Head west (turn right) on W Avenue K for approximately 4 miles;
- Head north (turn right) on 110th Street W for ½ mile to the Project site ingress/egress.

See Figure 1 for a Vicinity Map showing the 2 possible routes for water trucks and Figure 2 for a detailed Site Plan below.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SR-138 / W AVENUE D
General William J. Fox Airfield
W AVENUE F
W AVENUE G
W AVENUE H
W AVENUE I
W AVENUE J
W AVENUE K
W AVENUE L
W AVENUE M
W AVENUE N
Lancaster Blvd
Palmdale Blvd
Proposed Project Site
ELIZABETH LAKE
Johnson Rd
Unincorporated Los Angeles County
San Francisquito Canyon Rd
Quartz Hill Rd
Palmdale Regional Airport
Elizabeth Lake Rd
BOUQUET RESERVOIR
Bouquet Canyon Rd
LAKE PALMDALE
Legend
Western Antelope Blue Sky Ranch
Proposed Generation Tie Line
Water Truck Route (Homer Option)
Water Truck Route (Lancaster Option)
Homer Option
Lancaster Option
OR
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PROJECT SITE
Pacific Ocean
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 2
WESTERN ANTELOPE BLUE SKY RANCH
FIGURE 1
VICINITY MAP
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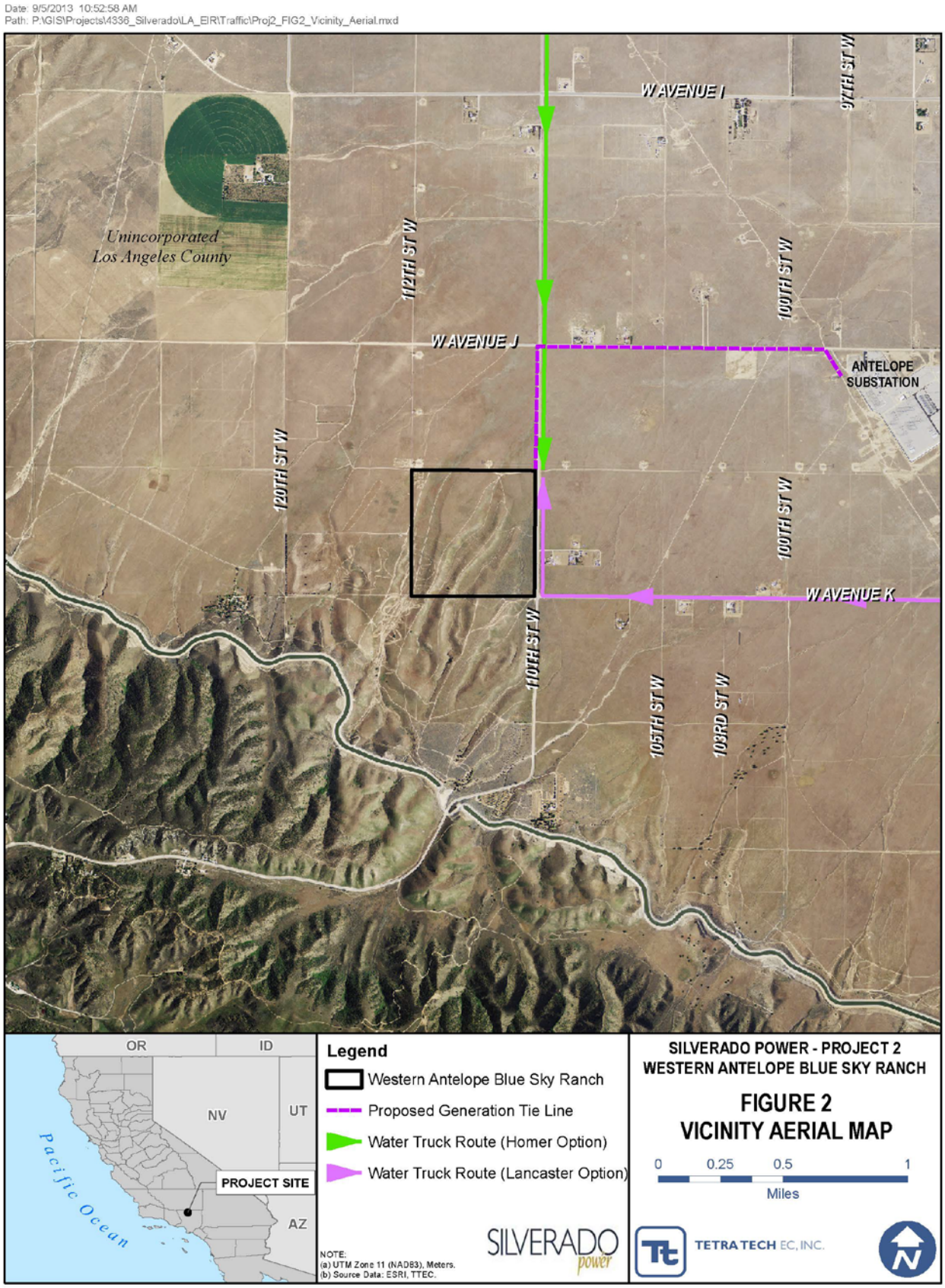
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PROJECT SITE
Pacific Ocean
Legend
Western Antelope Blue Sky Ranch
Proposed Generation Tie Line
Water Truck Route (Homer Option)
Water Truck Route (Lancaster Option)
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 2
WESTERN ANTELOPE BLUE SKY RANCH
FIGURE 2
VICINITY AERIAL MAP
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Miles
TETRA TECH EC, INC.
N

Traffic data was obtained from Los Angeles County Department of Public Works Machine Count Traffic Volumes for the above listed routes water trucks will take for the two options. The most recent AM peak hour data available, for each water truck route, was obtained and projected to the year 2014 (year of construction) by using a 2 percent growth rate per year. The analysis looks at 30 percent of the water trucks (9 water trucks) traveling to the site during the AM peak hour. Construction worker commuter trips and delivery truck trips are anticipated to arrive to the Project site outside of peak hours and have not been included this analysis. The resulting totals for the projected 2014 traffic with the additional water truck trips are shown in Table 1 (Homer Option) and Table 2 (City of Lancaster Option) below.

Table 1 Existing and Projected Conditions for the Homer Option in 2014

Road Segment	AM Peak Hour (2012)[1]	Projected AM Peak Hour (2014)[2]	Daily Water Truck Trips	30% of Daily Water Truck Trips Arriving during AM Peak Hour	2014 Conditions with Construction Traffic	2014 Percent Increase in Traffic
Traffic traveling West on W Avenue A W/O 90th Street W	26	28	29	9	37	32.14
Traffic traveling South on 110th Street W N/O W Avenue K	64	67	29	9	76	13.43

[1] Traffic data obtained from LA County DPW Machine Count Traffic Volumes

[2] Traffic projected using a 2% increase in traffic per year

Table 2 Existing and Projected Conditions for the City of Lancaster Option in 2014

Road Segment	AM Peak Hour (2010)[1]	AM Peak Hour (2012)[1]	Projected AM Peak Hour (2014)[2]	Daily Water Truck Trips	30% of Daily Water Truck Trips Arriving during AM Peak Hour	2014 Conditions with Construction Traffic	2014 Percent Increase in Traffic
Traffic traveling West on Avenue H E/O 70th Street W	57	N/A	62	29	9	71	14.52
Traffic traveling South on 70th Street W S/O W Avenue H	31	N/A	34	29	9	43	26.47
Traffic traveling West on Avenue K E/O 110th Street W	114	N/A	124	29	9	133	7.26
Traffic traveling North on 110th Street W N/O W Avenue K	N/A	83	87	29	9	96	10.34

[1] Traffic data obtained from LA County DPW Machine Count Traffic Volumes

[2] Traffic projected using a 2% increase in traffic per year

As shown in Tables 1 and 2, during the AM peak hour the local roads will experience a maximum increase in traffic volume of 32.14 percent. This is mainly due to the existing low volume and low peak traffic conditions for these roads, which are located in rural areas and operate well below the existing capacity of 1,600 vehicles per lane per hour for a 2-lane road. Therefore, it is concluded that these roads have adequate capacity to safely accommodate the increase from water truck traffic and will have an insignificant impact on the existing traffic conditions..

During construction of gen-tie lines associated with the Project, it is anticipated that temporary one-lane road closures will be necessary. A Project Traffic Plan will be prepared to address the temporary one-lane road closures and submitted to the County for approval prior to issuance/approval of the County Grading Permit. Parking, temporary office trailers, and construction and PV equipment lay-down areas will be located entirely within the Project site boundary.

The Project will not include any buildings, structures, or other operations that will require a change in the existing air traffic patterns. The SGF will be connecting to the existing SCEAS via a gen-tie line approximately 2 miles long. The PV modules that will be used at the Project site are non-reflective and will not pose a hazard to general aviation pilots. Transmission line-related radio frequency interference (RFI) is one of the indirect effects of transmission line operation. RFI is produced by the physical interactions of the electric fields generated by the transmission line. The level of RFI that occurs usually depends on the magnitude of the electric fields involved and the distance from the transmission line. It is usually associated with transmission lines of 345 kV or greater. The Project transmission lines will connect to the SCEAS with a 66 kV gen-tie line (less than 345 kV) and will not adversely impact RFI effects.

5.2 Operational Phase

As previously stated, the operational phase of the Project is anticipated to only generate an average of 4 additional vehicle trips during the AM and PM peak hours on a quarterly or as-needed basis with a maximum of 12 additional vehicle trips, which will only occur when panel washing operations are being conducted. Based on the traffic analysis for the water truck trips described above, the operational phase vehicle trips are considered negligible. Therefore, no additional post-construction operational analysis was conducted for this TIS. It is concluded that the operational phase of the Project will have no impact on the traffic and/or transportation infrastructure.

6.0 MITIGATION MEASURES

As described in the previous sections of this report, it is anticipated that the construction and operational phase traffic for the Project will not degrade the normal flow of traffic on the access roads for the Project site. The following measures will be implemented during construction to reduce or mitigate peak hour traffic volume and to maintain/repair the roads (as needed) during the project construction phase.

- **TT-1** Stagger construction work shifts to start before or after peak traffic hours;
- TT-2 Schedule truck deliveries during off peak hours;
- TT-3 Limit water truck deliveries during the AM peak hour to 30 percent of the daily water truck trips; and
- TT-4 Visually document road conditions before and after construction phase and repair road to conditions before construction started or as directed by Los Angeles Department of Public Works.

Additionally, the following measures are recommended to further reduce construction traffic volume:

- **TT-5** Encourage carpooling between construction workers;
- **TT-6** Encourage potential use of vanpool or commuter bus for construction workers to access the Project site; and
- **TT-7** Establish flexible working hours outside of peak hours.

7.0 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

7.1 Federal LORS

- Title 49 CFR, Subtitle B, Chapter I, Parts 171-173, and 177-178 contain national safety standards for the transport of goods, materials, and substances over public highways; and proper handling and storage of hazardous materials during transportation.
- Title 49 CFR, Subtitle B, Chapter III, Parts 350–399 Motor Carrier Safety Regulations address safety considerations for the transport of goods, materials, and substances over public highways.
- Hazardous Materials Transportation Act of 1974, Title 49 CFR Subtitle B, Chapter III, Part 397.9 directs the Federal Department of Transportation to establish criteria and regulations for the safe interstate transportation of hazardous materials.

7.2 State LORS

- California Vehicle Code, Section 2500-2505 Authorizes the Commissioner of Highway Patrol to issue licenses for the transportation of hazardous materials
- California Vehicle Code, Sections 31303-31309 requires that the transportation of hazardous materials be on the state or interstate highway that offers the shortest overall transit time possible. The administering agency for the above statutes is the California Highway Patrol (CHP).
- California Vehicle Code, Section 35550 imposes weight guidelines and restrictions upon vehicles traveling upon freeways and highways. The section holds that “a single axle load shall not exceed 20,000 pounds. The load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds. The front steering axle load is limited to 12,500 pounds.” Furthermore, CVC Section 35551 defines the maximum overall gross weight as 80,000 pounds and adds that “the gross weight of each set of tandem axles shall not exceed 34,000 pounds.” The administering agency for the above statute is the California Department of Transportation (Caltrans).
- California Vehicle Code, Section 35780 requires a Single-Tip Transportation Permit to transport oversized or excessive loads over state highways. The permit can be acquired through Caltrans.
- California Street and Highways Code, Sections 117, 660-711 require an encroachment permit from Caltrans for facilities that require construction, maintenance, or repairs on or across State highways.
- California Streets and Highways Code Sections 660, 670, 1450, and 1460 *et seq.* regulate right-of-way encroachment and the granting of permits for encroachment on State and county roads.

The Project site is located within Caltrans District 7, which can be contacted at:

100 S. Main Street
Los Angeles, CA 90012
(213) 897-3631

7.3 Local LORS

Los Angeles County issues Road Use Permits for oversized/overweight loads. This permit is also required for construction, excavation, and encroachment on public highways. The permit is issued by the Department of Public Works located at:

900 S. Fremont Avenue
Alhambra, CA 91803-1331
(626) 458-3129.

8.0 HAZARDOUS MATERIALS AND WASTES

There will be no hazardous materials stored at the Project site. In the unlikely event that hazardous materials are used at the site, all handling and use of hazardous materials will be in accordance with applicable LORS. Hazardous materials could include fuels and oils for construction equipment. Construction equipment will use biodegradable oils when possible and as necessary. All construction equipment will be fueled directly from service trucks only in specifically identified areas and no maintenance will be performed onsite. Electrical equipment will be filled with non-PCB containing oils.

The Project will not produce hazardous wastes.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The Project does not anticipate impacting any mode of transportation or congestive management plan during the construction and operation of the SGF. During gen-tie construction one-lane road closures are expected and will be addressed/mitigated in the Project Traffic Plan prior to issuance of the County Grading Permit as described in Section 5.1. The Project construction will not impede any emergency access to the Project site. Emergency access within the individual SGFs will be addressed in the detailed design phase of the Project. Since no existing roads will be altered, the Project will not substantially increase any hazards or incompatible uses and will not have an adverse effect on the emergency evacuation route as discussed in the Lancaster 2030 GPMEA. The Project is located in a rural area of LA County so no public transit, bicycle, or pedestrian facilities will have a decrease in performance or safety. The analysis presented in this study demonstrates that the construction and operational activities will have no impacts on the existing traffic conditions.

10.0 REFERENCES

1. CEQA, March 18, 2010. Environmental Checklist

2. Los Angeles County Department of Public Works Machine Count Traffic Volumes

APPENDIX B-9.3

PROJECT 3 AMERICAN SOLAR GREENWORKS TRANSPORTATION IMPACT STUDY

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

Project 3
AMERICAN SOLAR GREENWORKS
TRANSPORTATION IMPACT STUDY

Prepared by:

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17885 Von Karman Avenue, Suite 500
Irvine, CA 92614-5227

Prepared for:

Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111

September 2013

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1.0 INTRODUCTION

This Transportation Impact Study (TIS) has been prepared for the American Solar Greenworks (Project) Solar Generating Facility (SGF) proposed by Silverado Power, LLC (Silverado Power) to evaluate the potential transportation impacts resulting from the construction and operation of the Project. The TIS focuses on the impacts and mitigations required for the construction phase of the Project. The operational phase traffic generation is expected to be minimal and the resulting impacts are considered negligible as explained in Section 5.2.

The following approach was used to complete this TIS:

- Determine the traffic routes for the two options that water trucks will take to the Project site (Homer Option and City of Lancaster Option);
- Determine the existing AM peak hour (7:00 AM) traffic for the determined routes water trucks will take to the site;
- Estimate the projected existing traffic for the expected year of construction using a growth rate of 2 percent per year;
- Determine the AM peak hour water truck trips during construction assuming 20 percent of the water trucks travel to the Project site during the AM peak hour;
- Calculate the percent increase in volume by comparing projected existing peak hour trips (without the Project) with the peak hour traffic trips during construction (with the Project);
- Evaluate the Project impact on traffic conditions;
- Determine the applicable laws, ordinances, regulations, and standards **(**LORs);
- Evaluate the Project potential for generating, storing, and handling of hazardous materials and waste;
- Recommend measures to mitigate the potential Project impacts to the existing transportation infrastructure, as needed; and
- Provide conclusions of the traffic study.

2.0 PROJECT DESCRIPTION

The Project will have a generating capacity of up to 35 megawatts (MW) and be located on 140 acres of primarily unproductive agricultural land in Los Angeles County. The Project will employ a series of photovoltaic (PV) module arrays to convert sunlight directly into electrical energy without the use of heat transfer fluid or cooling water. In addition to the PV modules, the Project will include the following associated facilities:

- Module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical collection system, including switchgear
- Data Monitoring Equipment
- Access roads and chain link perimeter security fencing

The Project will not require the construction of an on-site operations and maintenance (O&M) facility. The Project will connect to the existing Southern California Edison (SCE) network via a 66 kilovolt (kV) generation-tie (gen-tie) line adjacent to the northern border of the facility. Locations of the Project, State Highways, and local roads can be found on Figure 1 Vicinity Map and Figure 2 Site Plan.

The facility will operate year-round, producing renewable electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the second quarter of 2014 and complete the construction and be commercially operational by the fourth quarter of 2014. The Project construction activities are anticipated to take 7 months to complete. Refer to Figures 1 and 2 for the Project Vicinity Map and Site Plan, respectively.

3.0 EXISTING CONDITIONS

The Project is located in unincorporated northern section of Los Angeles County, approximately 6.73 miles northwest of Lancaster. The Project site is surrounded by agricultural fields and a few small areas of development to the northwest and southeast intermixed with non-native grasslands.

The closest regional roadways to the Project site are State Route 14 (SR 14)/Antelope Valley Freeway, SR-138/Lancaster Road, also identified locally as W Avenue D, and Interstate 5 (I-5). SR-14 runs north-south approximately 5 miles east of the Project site. SR-14 is an important regional transportation link to and from the Antelope Valley. It provides connection between the Cities of Lancaster, Rosamond, Palmdale, and Los Angeles. SR-138/W Avenue D runs east-west approximately 3 miles north of W Avenue G. I-5 is a major north-south route of the Interstate Highway System providing connection between the Cities of San Diego, Los Angeles, Bakersfield, and Sacramento. The intersection of I-5 and SR-138 is located approximately 35 miles north west of the Project site. SR-138 extends east from I-5 to the junction of SR-138 and SR-14 where SR-138 south is combined with SR-14 south. General William J. Fox Airfield and Edwards Air Force Base are located approximately 2.5 and 9.5 miles northeast of the Project site, respectively.

For details regarding transportation routes to the Project site and the associated existing and projected traffic volumes for the Project see Section 5.1 - Construction Phase.

4.0 PROJECT TRIP GENERATION

4.1 Construction Phase

Traffic generated during the construction phase will include construction worker commuter trips, water truck trips, and delivery truck trips. Construction worker commuter trips and delivery truck trips are anticipated to arrive to the Project site outside of peak hours. It is anticipated that 30 percent of the water trucks will arrive to the Project site during the AM peak hour. The Project will have an average of 130 workers per day and a peak of 88 workers per day over a 20-day period during construction. For equipment and materials, the Project will have an average of 5 delivery truck trips per day with an expected peak of 23 delivery truck trips per day. It is anticipated that construction workers and deliveries will arrive to the Project site outside of peak hours.

Dependent upon climatic conditions during construction, the maximum estimated water use for the site is 82 acre-feet, which would be obtained from an off-site provider. Potable water would be brought in to the Project site for drinking and domestic needs. During the site preparation and grading activities, water will mainly be used for soil compaction and control of fugitive dust generation. Smaller quantities of water will also be required on an as-needed basis for preparation of the concrete required for foundations and other minor uses. Subsequent to these construction activities, water usage will primarily be used for on-going dust suppression associated with the remaining construction of the Project. The Project will require analysis total of 29 daily water trucks arriving on-site. Assuming that 30 percent of the water trucks will arrive on-site during the AM peak hour (7:00 A.M.), 9 water trucks will be used in the analysis.

4.2 Operation Phase

The Project facility will operate year-round, producing renewable electric power during daytime hours. PV facilities have very few moving parts and have limited ongoing maintenance requirements. Maintenance activities will consist of checking electrical performance parameters via remote monitoring, performing periodic inspections and maintenance of transformers and inverters, responding to any problems detected by remote monitoring, conducting weed abatement and dust control activities, cleaning PV panels, and maintaining driveways. Water trucks will be used for cleaning the PV panels, but are anticipated to arrive during non-peak hours. No major equipment is anticipated to be required for maintenance of the facility, except as necessary for periodic re-grading of internal roads.

The Project Facility will be primarily managed, monitored, and controlled remotely. Therefore, it is expected that the SGF will only have an average of 4 workers onsite on a daily basis for security, maintenance, repairs, and inspections on a quarterly or as-needed basis. An additional 8 workers will be needed to perform routine cleaning of the PV modules. Cleaning of the PV modules is anticipated to take up to 2 weeks to complete and will be conducted twice a year. The operational workers are expected to commute to and from the Project site individually during the peak AM and PM hours, generating a peak of 12 one-way trips during panel washing.

5.0 ANTICIPATED TRAFFIC IMPACTS

5.1 Construction Phase

Construction worker traffic traveling from the north (Rosamond) and south (Los Angeles) via SR 14 will access the Project site from exit 46 to W Avenue G, a paved road with between 2 and 6 lanes (lanes reduce as traffic travels west on W Avenue G). The W Avenue G interchange will provide traffic from the south with an individual left turn lane, and traffic from the north with an individual right turn lane. Using this exit will provide efficient access to the Project site while also avoiding the urban (more densely populated) residential and commercial areas of Lancaster. Construction worker traffic traveling from Bakersfield (I-5) can take SR-138 to 70th Street W. Project site ingress/egress will be at the intersection of W Avenue G and 70th Street W.

Water used on-site during construction and operation will be delivered via trucks and originate from one of the following two separate locations defined as the Homer Option or the City of Lancaster Option. Water trucks traveling from the Homer Option will originate from 100th Street W and W Avenue A in Rosamond, CA and take the following route:

- Travel east along W Avenue A for approximately 2 miles;
- Head south (turn right) on 90th Street W for approximately 6 miles;
- Head east (turn left) on W Avenue G for approximately 2 miles;
- Head south (turn right) on 70th Street W for approximately ¼ mile to the Project site ingress/egress.

Water trucks traveling from the City of Lancaster Option will originate from W Avenue H and Division Street in Lancaster, CA and take the following route:

- Travel west on W Avenue H for approximately 7 miles;
- Head north (turn right) on 70th Street W for approximately 1 mile to the Project site ingress/egress.

See Figure 1 for a Vicinity Map showing the 2 possible routes for water trucks and Figure 2 for a detailed Site Plan below.

Traffic data was obtained from Los Angeles County Department of Public Works Machine Count Traffic Volumes for the listed routes water trucks will take for the two options. The most recent AM peak hour data available for each water truck route was obtained and projected to the year 2014 (year of construction) by using a 2 percent growth rate per year. The analysis looks at 30 percent of the water trucks (9 water trucks) traveling to the site during the AM peak hour. Construction worker commuter trips and delivery truck trips are anticipated to arrive to the Project site outside of peak hours and have not been included this analysis. The resulting totals for the projected 2014 traffic with the additional water truck trips are shown in Table 1 (Homer Option) and Table 2 (City of Lancaster Option) below.

Table 1 Existing and Projected Conditions for the Homer Option in 2014

Road Segment	AM Peak Hour (2011)[1]	AM Peak Hour (2012)[1]	Projected AM Peak Hour (2014)[2]	Daily Water Truck Trips	30% of Daily Water Truck Trips Arriving during AM Peak Hour	2014 Conditions with Construction Traffic	2014 Percent Increase in Traffic
Traffic traveling East on W Avenue A W/O 90th Street W	N/A	25	27	29	9	36	33.33
Traffic traveling South on 90th Street W S/O W Avenue D	65	N/A	69	29	9	78	13.04
Traffic traveling South on 70th Street W N/O W Avenue H	N/A	25	27	29	9	36	33.33

[1] Traffic data obtained from LA County DPW Machine Count Traffic Volumes

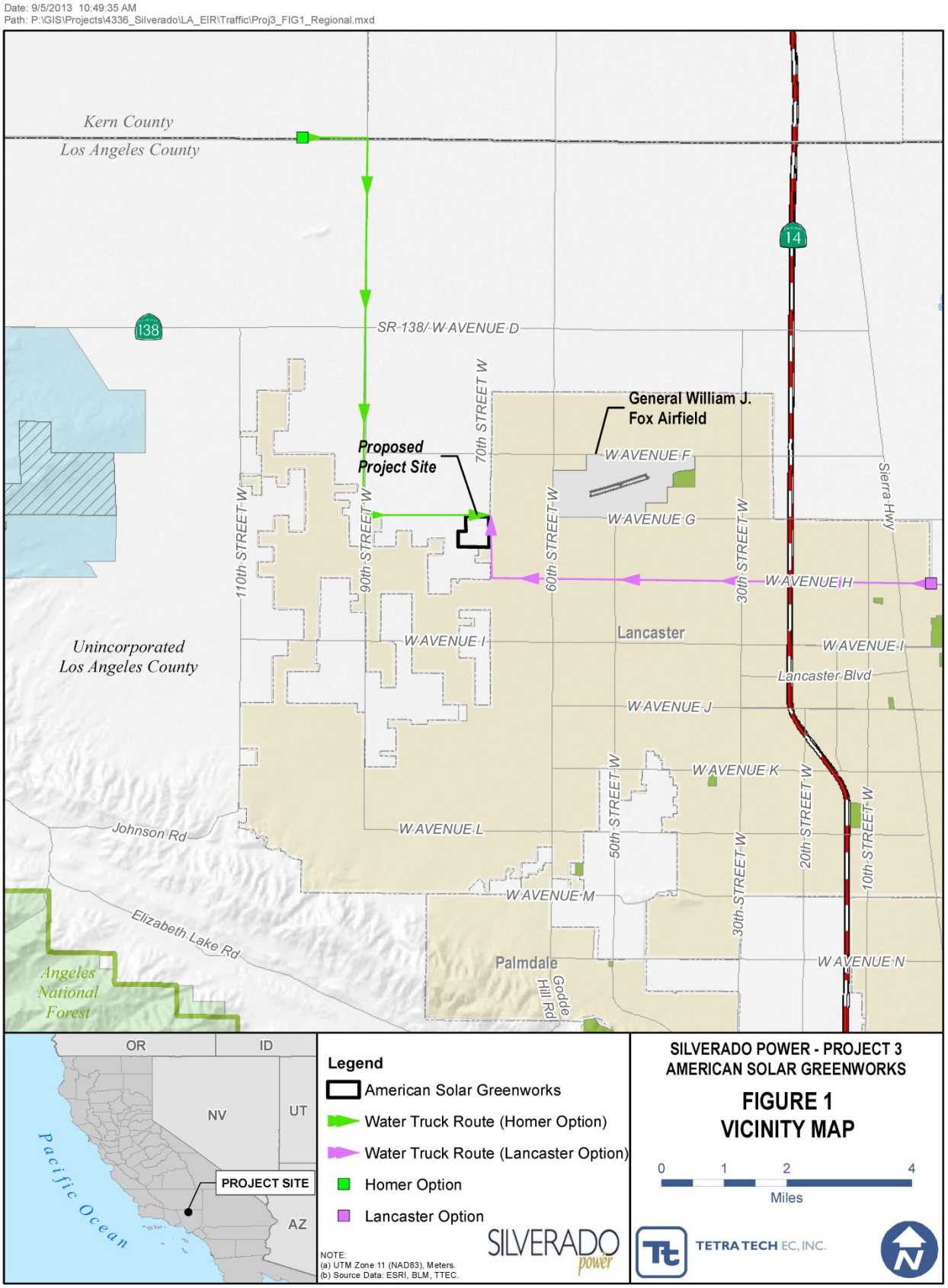
[2] Traffic projected using a 2% increase in traffic per year

Table 2 Existing and Projected Conditions for the City of Lancaster Option in 2014

Road Segment	AM Peak Hour (2010)[1]	AM Peak Hour (2012)[1]	Projected AM Peak Hour (2014)[2]	Daily Water Truck Trips	30% of Daily Water Truck Trips Arriving during AM Peak Hour	2014 Conditions with Construction Traffic	2014 Percent Increase in Traffic
Traffic traveling West on W Avenue H E/O 70th Street W	57	N/A	62	29	9	71	14.52
Traffic traveling North on 70th Street W N/O W Avenue H	38	N/A	42	29	9	51	21.43

[1] Traffic data obtained from LA County DPW Machine Count Traffic Volumes

[2] Traffic projected using a 2% increase in traffic per year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Forest
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Proposed
Project Site
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Fox Airfield
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110th STREET W
90th STREET W
60th STREET W
30th STREET W
Sierra Hwy
W AVENUE F
W AVENUE G
W AVENUE H
W AVENUE I
Lancaster
Lancaster Blvd
W AVENUE J
W AVENUE K
W AVENUE L
W AVENUE M
W AVENUE N
50th STREET W
20th STREET W
10th STREET W
Johnson Rd
Elizabeth Lake Rd
Palmdale
Goode
Hill Rd
OR
ID
NV
UT
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Pacific Ocean
PROJECT SITE
Legend
American Solar Greenworks
Water Truck Route (Homer Option)
Water Truck Route (Lancaster Option)
Homer Option
Lancaster Option
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 3
AMERICAN SOLAR GREENWORKS
FIGURE 1
VICINITY MAP
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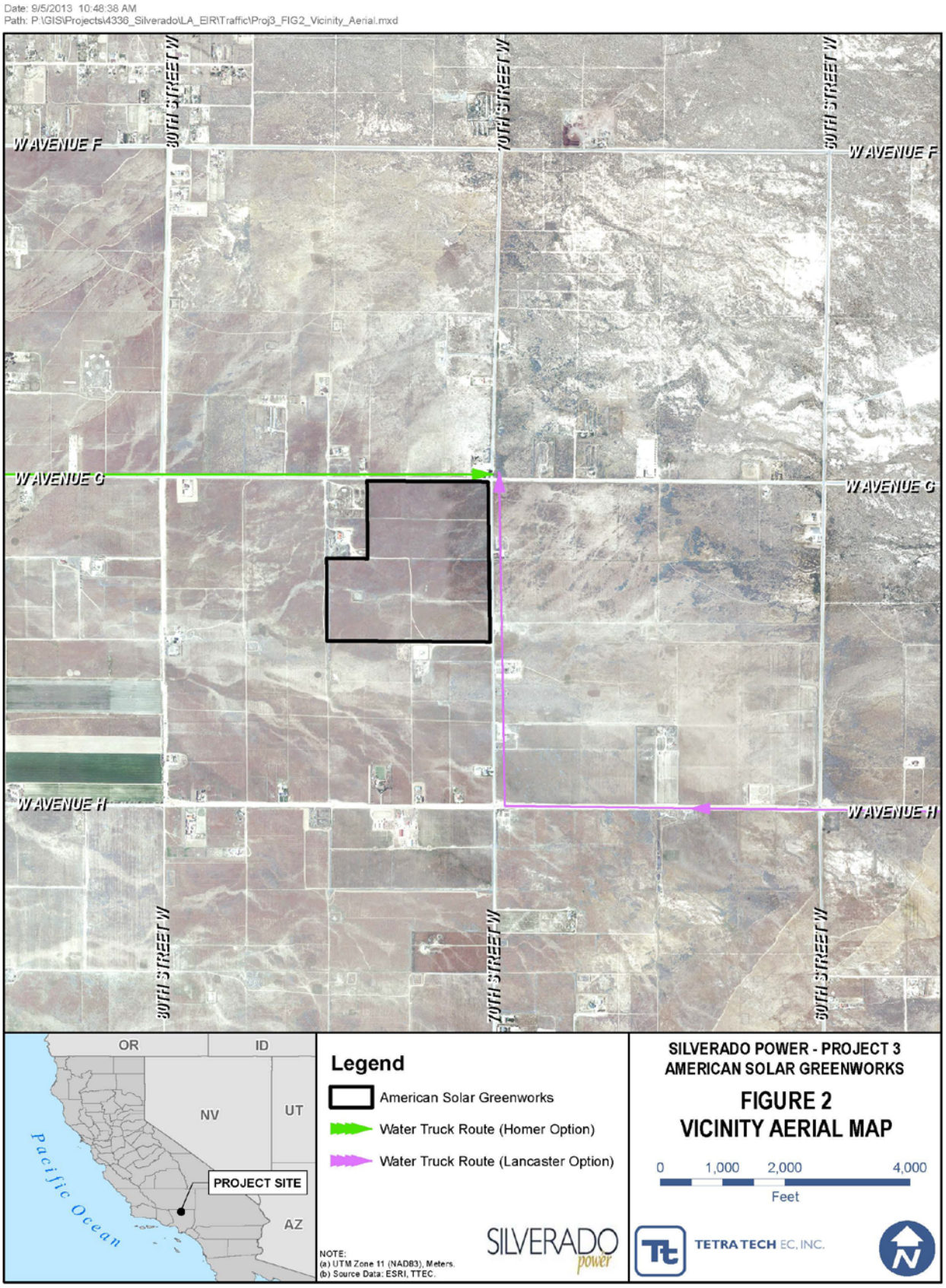
TETRA TECH EC, INC.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PROJECT SITE
Legend
American Solar Greenworks
Water Truck Route (Homer Option)
Water Truck Route (Lancaster Option)
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 3
AMERICAN SOLAR GREENWORKS
FIGURE 2
VICINITY AERIAL MAP
0 1,000 2,000 4,000
Feet
TETRA TECH EC, INC.

As shown in Tables 1 and 2, during the AM peak hour the local roads will experience a maximum increase in traffic volume of 34.62 percent. This is mainly due to the existing low volume and low peak traffic conditions for these roads, which are located in rural areas and operate well below the existing capacity of 1,600 vehicles per lane per hour for a 2-lane road. Therefore, it is concluded that these roads have adequate capacity to safely accommodate the increase from water truck traffic and will have an insignificant impact on the existing traffic conditions.

During construction of gen-tie lines associated with the Project, it is anticipated that temporary one-lane road closures will be necessary. A Project Traffic Plan will be prepared to address the temporary one-lane road closures and submitted to the County for approval prior to issuance/approval of the County Grading Permit. Parking, temporary office trailers, and construction and PV equipment lay-down areas will be located entirely within the Project site boundary.

The Project will not include any buildings, structures, or other operations that will require a change in the existing air traffic patterns. The SGF will be connecting to the existing SCEAS via a 66 kV gen-tie line. The PV modules that will be used at the Project site are non-reflective and will not pose a hazard to general aviation pilots. Transmission line-related radio frequency interference (RFI) is one of the indirect effects of transmission line operation. RFI is produced by the physical interactions of the electric fields generated by the transmission line. The level of RFI that occurs usually depends on the magnitude of the electric fields involved and the distance from the transmission line. It is usually associated with transmission lines of 345 kilovolts (kV) or greater. The Project transmission lines will connect to the existing SCE network with a 66 kV gen-tie line (less than 345 kV) and is not expected to adversely impact the surrounding areas with RFI effects.

5.2 Operational Phase

As previously stated, the operational phase of the Project is anticipated to only generate an average of 4 additional vehicle trips during the AM and PM peak hours on a quarterly or as-needed basis with a maximum of 12 additional vehicle trips, which will only occur when panel washing operations are being conducted. Based on the traffic analysis for the water truck trips described above, the operation phase vehicle trips are considered negligible. Therefore, no additional post-construction operational analysis was performed for this TIS. It is concluded that the operational phase of the Project will have no impact on the traffic and/or transportation infrastructure.

6.0 MITIGATION MEASURES

As described in the previous sections of this report, it is anticipated that the construction and operational phase traffic for the Project will not degrade the normal flow of traffic on the access roads for the Project site. The following measures will be implemented during construction to reduce or mitigate peak hour traffic volume and to maintain/repair the roads (as needed) during the project construction phase.

- **TT-1** Stagger construction work shifts to start before or after peak traffic hours;

- **TT-2** Schedule truck deliveries during off peak hours;
- TT-3 Limit water truck deliveries during the AM peak hour to 30 percent of the daily water truck trips; and
- **TT-4** Visually document road conditions before and after construction phase and repair road to conditions before construction started or as directed by Los Angeles Department of Public Works.

Additionally, the following measures are recommended to further reduce construction traffic volume:

- **TT-5** Encourage carpooling between construction workers;
- **TT-6** Encourage potential use of vanpool or commuter bus for construction workers to access the Project site; and
- **TT-7** Establish flexible working hours outside of peak hours.

7.0 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

7.1 Federal LORS

- Title 49 CFR, Subtitle B, Chapter I, Parts 171-173, and 177-178 contain national safety standards for the transport of goods, materials, and substances over public highways; and proper handling and storage of hazardous materials during transportation.
- Title 49 CFR, Subtitle B, Chapter III, Parts 350–399 Motor Carrier Safety Regulations address safety considerations for the transport of goods, materials, and substances over public highways.
- Hazardous Materials Transportation Act of 1974, Title 49 CFR Subtitle B, Chapter III, Part 397.9 directs the Federal Department of Transportation to establish criteria and regulations for the safe interstate transportation of hazardous materials.

7.2 State LORS

- California Vehicle Code, Section 2500-2505 Authorizes the Commissioner of Highway Patrol to issue licenses for the transportation of hazardous materials
- California Vehicle Code, Sections 31303-31309 requires that the transportation of hazardous materials be on the state or interstate highway that offers the shortest overall transit time possible. The administering agency for the above statutes is the California Highway Patrol (CHP).
- California Vehicle Code, Section 35550 imposes weight guidelines and restrictions upon vehicles traveling upon freeways and highways. The section holds that “a single axle load shall not exceed 20,000 pounds. The load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds. The front steering axle load is limited to 12,500 pounds.” Furthermore, CVC Section 35551 defines the maximum overall gross weight as 80,000 pounds and adds that “the gross weight of each set of tandem axles shall not exceed 34,000 pounds.” The administering agency for the above statute is the California Department of Transportation (Caltrans).

- California Vehicle Code, Section 35780 requires a Single-Tip Transportation Permit to transport oversized or excessive loads over state highways. The permit can be acquired through Caltrans.
- California Street and Highways Code, Sections 117, 660-711 require an encroachment permit from Caltrans for facilities that require construction, maintenance, or repairs on or across State highways.
- California Streets and Highways Code Sections 660, 670, 1450, and 1460 *et seq.* regulate right-of-way encroachment and the granting of permits for encroachment on State and county roads.

The Project site is located within Caltrans District 7, which can be contacted at:

100 S. Main Street
Los Angeles, CA 90012
(213) 897-3631

7.3 Local LORS

Los Angeles County issues Road Use Permits for oversized/overweight loads. This permit is also required for construction, excavation, and encroachment on public highways. The permit is issued by the Department of Public Works located at:

900 S. Fremont Avenue
Alhambra, CA 91803-1331
(626) 458-3129.

8.0 HAZARDOUS MATERIALS AND WASTES

There will be no of hazardous materials stored at the Project site. In the unlikely event that hazardous materials are used at the site, all handling and use of hazardous materials will be in accordance with applicable LORS. Hazardous materials could include fuels and oils for construction equipment. Construction equipment will use biodegradable oils when possible and as necessary. All construction equipment will be fueled directly from service trucks only in specifically identified areas and no maintenance will be performed onsite. Electrical equipment will be filled with non-PCB containing oils.

The Project will not produce hazardous wastes.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The Project does not anticipate impacting any mode of transportation or congestive management plan during the construction and operation of the SGFs. During gen-tie construction one-lane road closures are expected and will be addressed/mitigated in the Project Traffic Plan prior to issuance of the County Grading Permit as described in Section 5.1. The Project will not impede any emergency access to the Project site. Emergency access within the individual SGFs will be addressed in the detailed design phase of the Project. Since no existing roads will be altered, the Project will not substantially increase any hazards or incompatible uses and will not have an adverse effect on the emergency evacuation route as discussed in the Lancaster 2030 GPMEA. The Project is located in a rural area of LA County so no public transit,

bicycle, or pedestrian facilities will have a decrease in performance or safety. The analysis presented in this study demonstrates that the construction and operational activities will have no impacts on the existing traffic conditions.

10.0 REFERENCES

1. CEQA, March 18, 2010. Environmental Checklist

2. Los Angeles County Department of Public Works Machine Count Traffic Volumes

APPENDIX B-9.4

PROJECT 4 ANTELOPE SOLAR GREENWORKS TRANSPORTATION IMPACT STUDY

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

Project 4
ANTELOPE SOLAR GREENWORKS TRANSPORTATION IMPACT STUDY

Prepared by:

Tetra Tech, Inc.
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614-5227

Prepared for:

Silverado Power
2 Embarcadero Center, Suite 410
San Francisco, CA 94111

September 2013

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1.0 INTRODUCTION

This Transportation Impact Study (TIS) has been prepared for the Antelope Solar Greenworks (Project) Solar Generating Facility (SGF) proposed by Silverado Power, LLC (Silverado Power) to evaluate the potential transportation impacts resulting from the construction and operation of the Project. The TIS focuses on the impacts and mitigations required for the construction phase of the Project. The post-construction operational phase traffic generation is expected to be minimal and the resulting impacts are considered negligible as explained in Section 5.2.

The following approach was used to complete this TIS:

- Determine the traffic routes for the two options that water trucks will take to the Project site (Homer Option and City of Lancaster Option);
- Determine the existing AM peak hour (7:00 AM) traffic for the determined routes water trucks will take to the site;;Estimate the projected existing traffic for the expected year of construction using a growth rate of 2 percent per year;
- Determine the AM peak hour water truck trips during construction assuming 20 percent of the water trucks travel to the Project site during the AM peak hour;
- Calculate the percent increase in volume by comparing projected existing peak hour trips (without the Project) with the peak hour traffic trips during construction (with the Project);
- Evaluate the Project impact on traffic conditions;
- Determine the applicable laws, ordinances, regulations, and standards **(**LORs);
- Recommend measures to mitigate the potential Project impacts to the existing transportation infrastructure, as needed; and
- Provide conclusions of the traffic study.

2.0 PROJECT DESCRIPTION

The Project will consist of the following 5 separate SGFs encompassing approximately 256 acres with a generating capacity totaling up to 52-megawatts (MW). The Project will utilize photovoltaic (PV) modules to convert sunlight directly into electrical energy without the use of heat transfer fluid or cooling water.

- Antelope Solar Greenworks – 6 MW – 37.8 acres
- Apex Greenworks – 15 MW – 60 acres
- Central Antelope Dry Farm Ranch – 16 MW – 98.19 acres
- Halcyon Solar – 10 MW – 40 acres
- Lancaster Blue Sky Ranch Solar – 5 MW – 20 acres

In addition to the PV modules, the Project will include the following associated facilities:

- Module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)

- Electrical inverters and transformers
- Electrical collection system, including switchgear
- Data Monitoring Equipment
- Access roads and chain link perimeter security fencing

The Project will not require the construction of an on-site operations and maintenance (O&M) facility. The Project transmission lines will connect to the existing Southern California Edison Antelope Substation (SCEAS), located at the intersection of 95th St. W and W Avenue J, via a 69 kV generation-tie (gen-tie) line. Locations of all SGFs, State Highways, and local roads can be found on Figure 1 Vicinity Map and Figure 2 Site Plan.

The transportation impact study will address the Project as one site because the separate SGFs fall under one CUP and the sites close proximity with each other as shown on Figure 2 Site Plan. The facility will operate year-round, producing renewable electric power during daytime hours. The Project is to be constructed in 2 phases. Phase 1 is to begin site preparation and construction in the first quarter of 2014, complete construction in approximately 4 months, and be commercially operational by the second quarter of 2014. Phase 2 is to begin site preparation and construction in the second quarter of 2014, complete construction in approximately 8 months, and be commercially operational by the fourth quarter of 2014. Refer to Figures 1 and 2 for the Project Vicinity Map and Site Plan, respectively.

3.0 EXISTING CONDITIONS

The Project site encompasses previously disturbed, fallow agricultural land in northeastern Los Angeles County. The site is located within the Del Sur California USGS 7.5 minute quadrangle. The Project site is surrounded by agricultural fields and a few small areas of development to the north and southeast intermixed with non-native grasslands.

The closest regional roadways to the Project site are State Route 14 (SR 14)/Antelope Valley Freeway, SR-138/Lancaster Road, also identified locally as W Avenue D, and Interstate 5 (I-5). SR-14 runs north-south approximately 6.8 miles east of the Project site. SR-138/W Avenue D runs east-west approximately 5 miles north of W Avenue I. I-5 is a major north-south route of the Interstate Highway System providing connection between the Cities of San Diego, Los Angeles, Bakersfield, and Sacramento. The intersection of I-5 and SR-138 is located approximately 30 miles north west of the Project site. SR-14 is an important regional transportation link to and from the Antelope Valley. It provides connection between the Cities of Lancaster, Rosamond, Palmdale, and Los Angeles. SR-138 extends from I-5 on the west to the junction of SR-138 and SR-14 where SR-138 south is combined with SR-14 south. General William J. Fox Airfield and Edwards Air Force Base are located approximately 5 and 26 miles northeast of the Project site, respectively.

For details regarding transportation routes to the Project site and the associated existing and projected traffic volumes for the Project see Section 5.1 – Construction Phase.

4.0 PROJECT TRIP GENERATION

4.1 Construction Phase

Traffic generated during the construction phase will include construction worker commuter trips and delivery truck trips. Construction worker commuter trips and delivery truck trips are anticipated to arrive to the Project site outside of peak hours. It is anticipated that 30 percent of the water trucks will arrive to the Project site during the AM peak hour. The Project will have an average of 120 workers per day and a peak of 160 workers per day over a 30 day period during construction. For equipment and deliveries the Project will have an average of 3 delivery trucks per day with an expected peak of 26 delivery trips. It is anticipated that construction workers and deliveries will arrive to the Project site outside of peak hours.

Dependent upon climatic conditions during construction, the maximum estimated water use for the site during both Phase 1 and Phase 2 is 155 acre-feet, which would be obtained from an off-site provider. Potable water would be brought in to the Project site for drinking and domestic needs. During the site preparation and grading activities, water will mainly be used for soil compaction and control of fugitive dust generation. Smaller quantities of water will also be required on an as-needed basis for preparation of the concrete required for foundations and other minor uses. Subsequent to these construction activities, water usage will primarily be used for on-going dust suppression associated with the remaining construction of the Project. The Project will require analysis total of 32 daily water trucks arriving on-site. Assuming that 30 percent of the water trucks will arrive on-site during the AM peak hour (7:00 AM), 10 water trucks will be used in the analysis.

4.2 Operation Phase

The Project facility will operate year-round, producing renewable electric power during daytime hours. PV facilities have very few moving parts and have limited ongoing maintenance requirements. Maintenance activities will consist of checking electrical performance parameters via remote monitoring, performing periodic inspections and maintenance of transformers and inverters, responding to any problems detected by remote monitoring, conducting weed abatement and dust control activities, cleaning PV panels, and maintaining driveways. An onsite water well will be used to supply water for cleaning the PV panels. No major equipment is anticipated to be required for maintenance of the facility, except as necessary for periodic re-grading of internal roads.

The Project facility will primarily be managed, monitored, and controlled remotely. The solar energy generating facilities are anticipated to be unmanned during normal operation. They are expected to be monitored remotely and only have an average of 4 workers onsite for security, maintenance, repairs, and inspections on a quarterly or as-needed basis. An additional 8 workers will be needed during cleaning of the PV modules. Cleaning of the PV modules is anticipated to take up to 2½ weeks to complete and will be conducted two times a year. The operational workers are expected to commute to and from the Project site individually and will arrive and depart within the peak hour, generating a peak of 12 one-way trips during panel washing.

5.0 ANTICIPATED TRAFFIC IMPACTS

5.1 Construction Phase

Construction worker traffic traveling from the north (Rosamond) and south (Los Angeles) via SR 14 will access the Project site from exit 44 to W Avenue I, a paved road with between 2 and 8 lanes (lanes reduce as traffic travels west on W Avenue I). The W Avenue I interchange will provide traffic from the south with an individual left turn lane, and traffic from the north with an individual right turn lane. Using this exit will provide efficient access to the Project site while also avoiding the urban (more densely populated) residential and commercial areas of Lancaster. Construction worker traffic traveling from the Bakersfield Area (I-5) can take SR-138 East, then south on 110th Street W to access the Project site. The individual sites can then be accessed using the following roads:

- Antelope Solar Greenworks – ingress/egress via 90th Street W
- Apex Greenworks – ingress/egress via W Avenue J
- Central Antelope Dry Farm Ranch – ingress/egress via W Avenue I
- Halcyon Solar – ingress/egress via 90th Street W
- Lancaster Blue Sky Ranch Solar – ingress/egress via W Avenue I

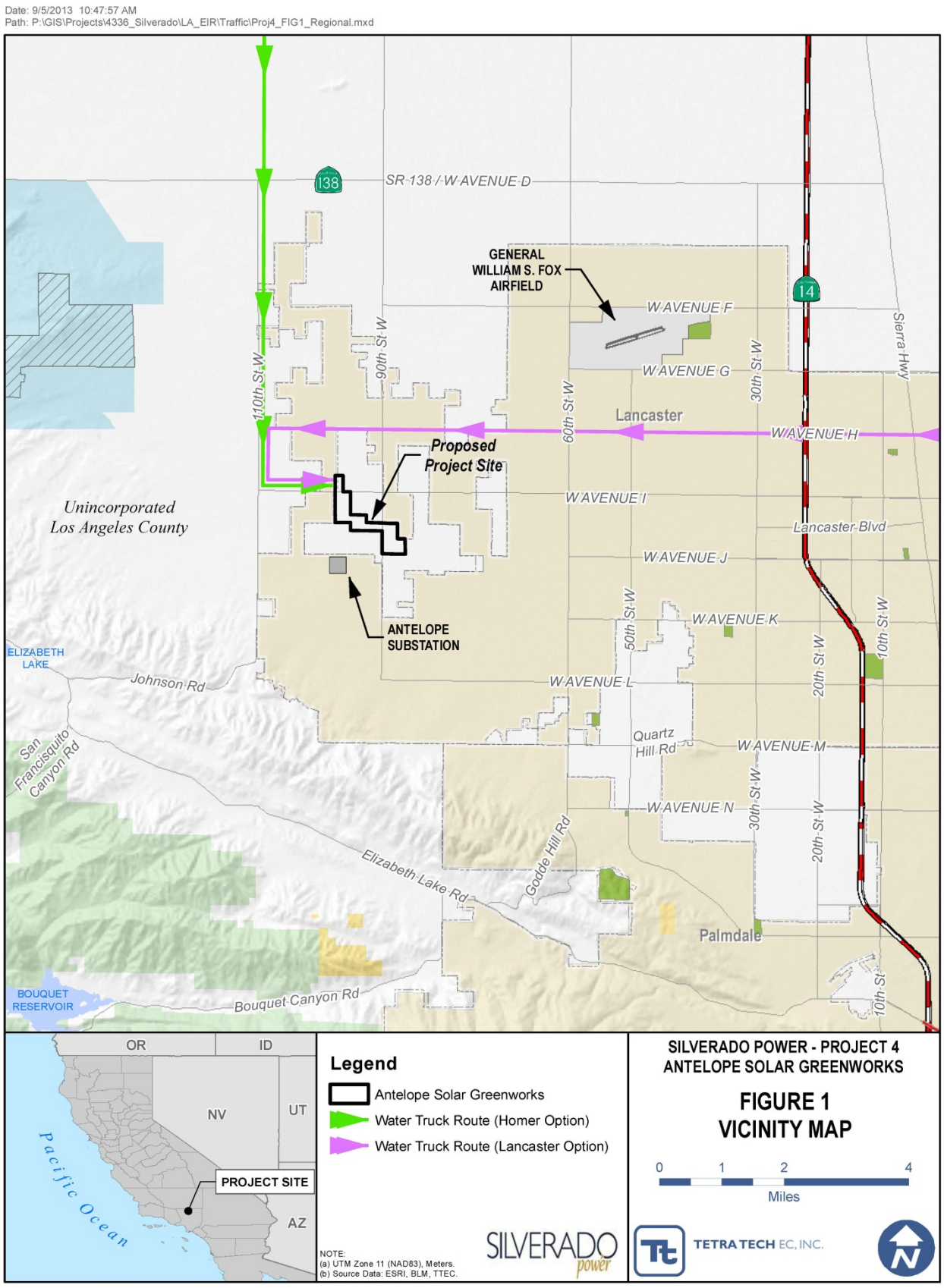
Water used on-site during construction and operation will be delivered via trucks and originate from one of the following two separate locations defined as the Homer Option or the City of Lancaster Option. Water trucks traveling from the Homer Option will originate from 100th Street W and W Avenue A in Rosamond, CA and take the following route:

- Travel west along W Avenue A for approximately 1 mile;
- Head south (turn left) along 110th Street W for approximately 8 miles;
- Head east (turn left) along W Avenue I for approximately 2 miles;
- Head south (turn right) along 90th Street W for approximately mile;
- Then head east (turn left) along W Avenue J for approximately ¼ mile to the Project site ingress/egress.

Water trucks traveling from the City of Lancaster Option will originate from W Avenue H and Division Street in Lancaster, CA and take the following route:

- Travel west on W Avenue H for approximately 7 miles;
- Head south (turn left) on 70th Street W for approximately 2 miles;
- Head west (turn right) on W Avenue J for approximately 2 miles;
- Head north (turn right) on 90th Street W for approximately 1 mile;
- Then head west (turn left) on W Avenue I for approximately 1 mile to the Project site ingress/egress.

See Figure 1 for a Vicinity Map showing the 2 possible routes for water trucks and Figure 2 for a detailed Site Plan below.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GENERAL WILLIAM S. FOX AIRFIELD
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20th St W
10th St W
Sierra Hwy
Lancaster
Lancaster Blvd
Proposed Project Site
ANTELOPE SUBSTATION
Unincorporated Los Angeles County
ELIZABETH LAKE
Johnson Rd
San Francisquito Canyon Rd
Quartz Hill Rd
Elizabeth Lake Rd
Godde Hill Rd
Palmdale
BOUQUET RESERVOIR
Bouquet Canyon Rd
OR
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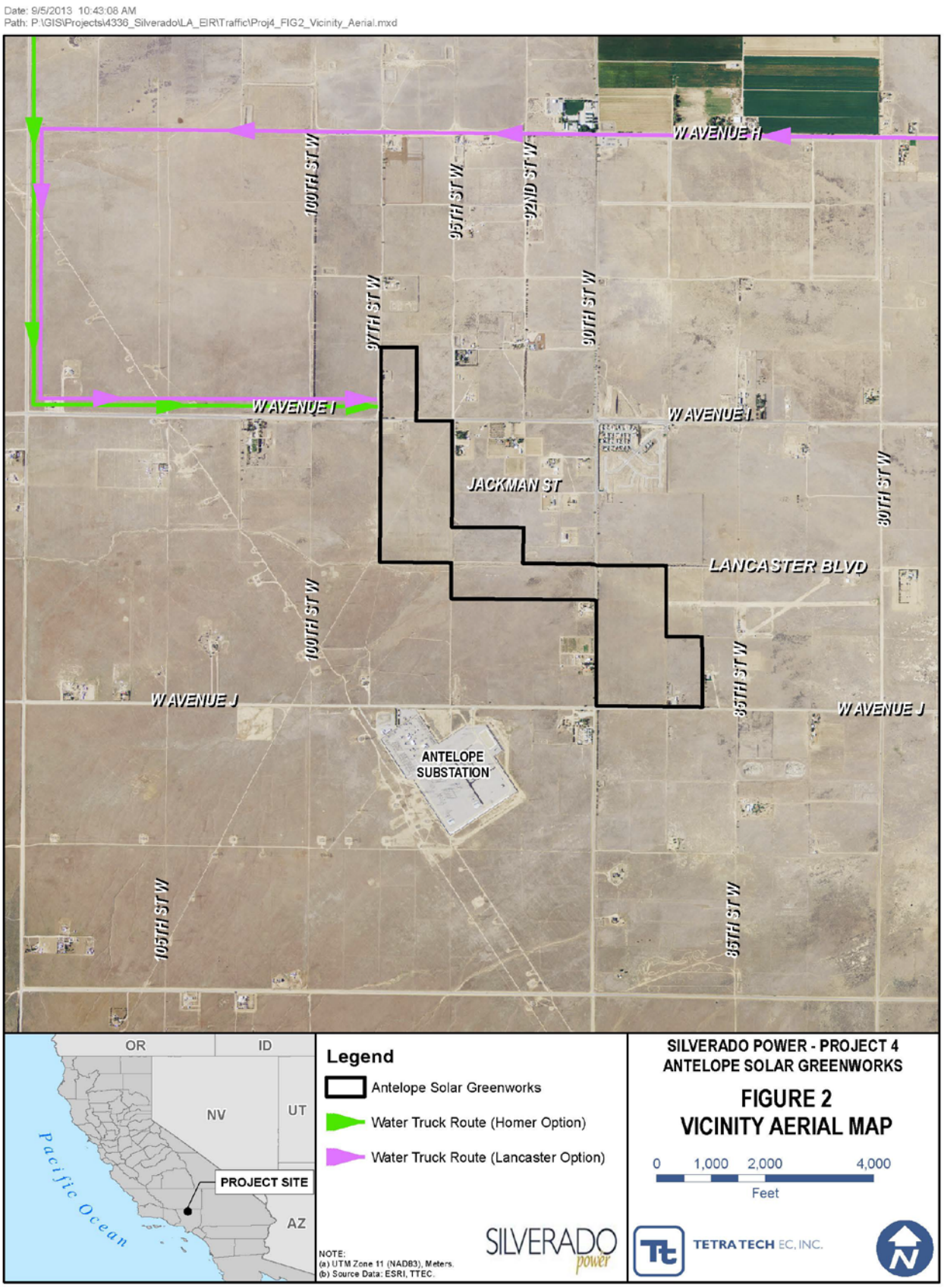
PROJECT SITE
Pacific Ocean
Legend
Antelope Solar Greenworks
Water Truck Route (Homer Option)
Water Truck Route (Lancaster Option)
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 4
ANTELOPE SOLAR GREENWORKS
FIGURE 1
VICINITY MAP
0 1 2 4
Miles
TETRA TECH EC, INC.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ANTELOPE SUBSTATION
105TH ST W
85TH ST W
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SILVERADO power
SILVERADO POWER - PROJECT 4
ANTELOPE SOLAR GREENWORKS
FIGURE 2
VICINITY AERIAL MAP
0 1,000 2,000 4,000
Feet
TETRA TECH EC, INC.

Traffic data was obtained from Los Angeles County Department of Public Works Machine count Traffic Volumes for the listed routes water trucks will take for the two options. The most recent AM peak hour data available for each water truck route was obtained and projected to the year 2014 (year of construction for both Phase 1 and Phase 2) by using a 2 percent growth rate per year. The analysis looks at 30 percent of the water trucks (9 water trucks) traveling to the site during the AM peak hour. Construction worker commuter trips and delivery truck trips are anticipated to arrive to the Project site outside of peak hours and have not been included this analysis. The resulting totals for the projected 2014 traffic with the additional water truck trips are shown in Table 1 (Homer Option) and Table 2 (City of Lancaster Option) below.

Table 1 Existing and Projected Conditions for the Homer Option 2014

Road Segment	AM Peak Hour (2010)[1]	AM Peak Hour (2012)[1]	Projected AM Peak Hour (2014)[2]	Daily Water Truck Trips	30% of Daily Water Truck Trips Arriving during AM Peak Hour	2014 Conditions with Construction Traffic	2014 Percent Increase in Traffic
Traffic traveling West on W Avenue A W/O 90th Street W	N/A	26	28	32	10	38	35.71
Traffic traveling South on 110th Street W N/O W Avenue I	23	N/A	25	32	10	35	40.00
Traffic traveling East W Avenue I E/O 110th Street W	58	N/A	63	32	10	73	15.87
Traffic traveling South on 90th Street W N/O Avenue J	31	N/A	34	32	10	44	29.41
Traffic traveling East on W Avenue J W/O 90th Street W	60	N/A	65	32	10	75	15.38

[1] Traffic data obtained from LA County DPW Machine Count Traffic Volumes

[2] Traffic projected using a 2% increase in traffic per year

Table 2 Existing and Projected Conditions for the City of Lancaster Option in 2014

Road Segment	AM Peak Hour (2010)[1]	AM Peak Hour (2012)[1]	Projected AM Peak Hour (2014)[2]	Daily Water Truck Trips	30% of Daily Water Truck Trips Arriving during AM Peak Hour	2014 Conditions with Construction Traffic	2014 Percent Increase in Traffic
Traffic traveling West on W Avenue H E/O 70th Street W	57	N/A	62	32	10	72	16.13
Traffic traveling South on 70th Street W N/O W Avenue H	25	N/A	28	32	10	38	35.71
Traffic traveling West on W Avenue J E/O 90th Street W	67	N/A	73	32	10	83	13.70
Traffic traveling North on 90th Street W N/O W Avenue J	31	N/A	34	32	10	44	29.41
Traffic traveling West on W Avenue I W/O 70th Street W	50	N/A	55	32	10	65	18.18

[1] Traffic data obtained from LA County DPW Machine Count Traffic Volumes

[2] Traffic projected using a 2% increase in traffic per year

As shown in Tables 1 and 2, during the AM peak hour, the local roads will experience a maximum increase in traffic volume of 40.0 percent. This is mainly due to the existing low volume and low peak traffic conditions for these roads, which are located in a rural area and operates well below the existing capacity of 1,600 vehicles per lane per hour for a 2-lane road. Therefore it is concluded that these roads have adequate capacity to safely accommodate the increase from water truck traffic and will have an insignificant impact on the existing traffic conditions.

During construction of gen-tie lines associated with the Project, it is anticipated that temporary one-lane road closures will be necessary. A Project Traffic Plan will be prepared to address the temporary one-lane road closures and submitted to the County for approval prior to issuance/approval of the County Grading Permit. Parking, temporary office trailers, and construction and PV equipment lay-down areas will be located entirely within the Project site boundary.

The Project will not include any buildings, structures, or other operations that will require a change in the existing air traffic patterns. The SGFs will be connecting to the existing SCEAS via a 69 kV gen-tie line. PV modules that will be used at the Project site are non-reflective and will not pose a hazard to general aviation pilots. Transmission line-related radio frequency interference (RFI) is one of the indirect effects of transmission line operation. RFI is produced by the physical interactions of the electric fields generated by the transmission line. The level of RFI that occurs usually depends on the magnitude of the electric fields involved and the distance from the transmission line. It is usually associated with transmission lines of 345 kilovolts (kV) or greater. The Project transmission lines will connect to the SCEAS through an existing 69 kV gen-tie line (less than 345 kV) and will not adversely impact RFI effects.

5.2 Operational Phase

As previously stated, the operational phase of the Project is anticipated to only generate an average of 4 additional vehicle trips during the AM and PM peak hours on a quarterly or as-needed basis with a maximum of 12 additional vehicle trips, which will only occur when panel washing operations are being conducted. Based on the traffic analysis for the water truck trips described above, the operational phase vehicle trips are considered negligible. Therefore, no additional post-construction operational analysis was conducted for this TIS. It is concluded that the operational phase of the Project will have no impact on the traffic and/or transportation infrastructure.

6.0 MITIGATION MEASURES

As described in the previous sections of this report, it is anticipated that the construction and operational phase traffic for the Project will not degrade the normal flow of traffic on the access roads for the Project site. The following measures will be implemented during construction to reduce or mitigate peak hour traffic volume and to maintain/repair the roads (as needed) during the project construction phase.

- **TT-1** Stagger construction work shifts to start before or after peak traffic hours;
- **TT-2** Schedule truck deliveries during off peak hours; and
- **TT-3** Limit water truck deliveries during the AM peak hour to 30 percent of the daily water truck trips;
- **TT-4** Visually document road conditions before and after construction phase and repair road to conditions before construction started or as directed by Los Angeles Department of Public Works.

Additionally, the following measures are recommended to further reduce construction traffic volume:

- **TT-5** Encourage carpooling between construction workers
- **TT-6** Encourage potential use of vanpool or commuter bus for construction workers to access the Project site; and
- **TT-7** Establish flexible working hours outside of peak hours.

7.0 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

7.1 Federal LORS

- Title 49 CFR, Subtitle B, Chapter I, Parts 171-173, and 177-178 contain national safety standards for the transport of goods, materials, and substances over public highways; and proper handling and storage of hazardous materials during transportation.
- Title 49 CFR, Subtitle B, Chapter III, Parts 350–399 Motor Carrier Safety Regulations address safety considerations for the transport of goods, materials, and substances over public highways.
- Hazardous Materials Transportation Act of 1974, Title 49 CFR Subtitle B, Chapter III, Part 397.9 directs the Federal Department of Transportation to establish criteria and regulations for the safe interstate transportation of hazardous materials.

7.2 State LORS

- California Vehicle Code, Section 2500-2505 Authorizes the Commissioner of Highway Patrol to issue licenses for the transportation of hazardous materials
- California Vehicle Code, Sections 31303-31309 requires that the transportation of hazardous materials be on the state or interstate highway that offers the shortest overall transit time possible. The administering agency for the above statutes is the California Highway Patrol (CHP).
- California Vehicle Code, Section 35550 imposes weight guidelines and restrictions upon vehicles traveling upon freeways and highways. The section holds that “a single axle load shall not exceed 20,000 pounds. The load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds. The front steering axle load is limited to 12,500 pounds.” Furthermore, CVC Section 35551 defines the maximum overall gross weight as 80,000 pounds and adds that “the gross weight of each set of tandem axles shall not exceed 34,000 pounds.” The administering agency for the above statute is the California Department of Transportation (Caltrans).
- California Vehicle Code, Section 35780 requires a Single-Tip Transportation Permit to transport oversized or excessive loads over state highways. The permit can be acquired through Caltrans.
- California Street and Highways Code, Sections 117, 660-711 require an encroachment permit from Caltrans for facilities that require construction, maintenance, or repairs on or across State highways.

- California Streets and Highways Code Sections 660, 670, 1450, and 1460 *et seq.* regulate right-of-way encroachment and the granting of permits for encroachment on State and county roads.

The Project site is located within Caltrans District 7 which can be contacted at:

100 S. Main Street
Los Angeles, CA 90012
(213) 897-3631

7.3 Local LORS

Los Angeles County issues Road Use Permits for oversized/overweight loads. This permit is also required for construction, excavation, and encroachment on public highways. The permit is issued by the Department of Public Works located at:

900 S. Fremont Avenue
Alhambra, CA 91803-1331
(626) 458-3129.

8.0 HAZARDOUS MATERIALS AND WASTES

There will be no hazardous materials stored at the Project site. In the unlikely event that hazardous materials are used at the site, all handling and use of hazardous materials will be in accordance with applicable LORS. Hazardous materials could include fuels and oils for construction equipment. Construction equipment will use biodegradable oils when possible and as necessary. All construction equipment will be fueled directly from service trucks only in specifically identified areas and no maintenance will be performed onsite. Electrical equipment will be filled with non-PCB containing oils.

The Project will not produce hazardous wastes.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The Project does not anticipate impacting any mode of transportation or congestive management plan during the construction and operation of the SGFs. During gen-tie construction one-lane road closures are expected and will be addressed/mitigated in the Project Traffic Plan prior to issuance of the County Grading permit as described in Section 5.1. The Project will not impede any emergency access to the Project site. Emergency access within the individual SGFs will be addressed in the detailed design phase of the Project. Since no existing roads will be altered, the Project will not substantially increase any hazards or incompatible uses and will not have an adverse effect on the emergency evacuation route as discussed in the Lancaster 2030 GPMEA. The Project is located in a rural area of LA County so no public transit, bicycle, or pedestrian facilities will have a decrease in performance or safety. The analysis presented in this study demonstrates that the construction and operational activities will have no impacts on the existing traffic conditions.

10.0 REFERENCES

1. CEQA. March 18, 2010. Environmental Checklist

2. Los Angeles County Department of Public Works Machine Count Traffic Volumes

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APPENDIX B-9.5

PROJECT 5 SILVER SUN GREENWORKS TRANSPORTATION IMPACT STUDY

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

Project 5
SILVER SUN GREENWORKS
TRANSPORTATION IMPACT STUDY

Prepared by:

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September 2013

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1.0 INTRODUCTION

This Transportation Impact Study (TIS) has been prepared for the Silver Sun Greenworks (Project) Solar Generating Facility (SGF) proposed by Silverado Power, LLC (Silverado Power) to evaluate the potential transportation impacts resulting from the construction and operation of the Project. The TIS focuses on the impacts and mitigations required for the construction phase of the Project. The post-construction operational phase traffic generation is expected to be minimal and the resulting impacts are considered negligible as explained in Section 5.2.

The following approach was used to complete this TIS:

- Determine the traffic routes for the two options that water trucks will take to the Project site (Homer Option and City of Lancaster Option);
- Determine the existing AM peak hour (7:00 AM) traffic for the determined routes water trucks will take to the site;
- Estimate the projected existing traffic for the expected year of construction using a growth rate of 2 percent per year;
- Determine the AM peak hour water truck trips during construction assuming 30 percent of the water trucks travel to the Project site during the AM peak hour;
- Calculate the percent increase in volume by comparing projected existing peak hour trips (without the Project) with the peak hour traffic trips during construction (with the Project);
- Evaluate the Project impact on traffic conditions;
- Determine the applicable laws, ordinances, regulations, and standards **(**LORs);
- Recommend measures to mitigate the potential Project impacts to the existing transportation infrastructure, as needed; and
- Provide conclusions of the traffic study.

2.0 PROJECT DESCRIPTION

The Project will have a generating capacity of up to 20 megawatts (MW) and be located on 160 acres of primarily unproductive agricultural land in Los Angeles County. The Project will employ a series of photovoltaic (PV) module arrays to convert sunlight directly into electrical energy without the use of heat transfer fluid or cooling water. In addition to the PV modules, the Project will include the following associated facilities:

- Module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical collection system, including switchgear
- Data Monitoring Equipment
- Access roads and chain link perimeter security fencing

The Project will not require the construction of an on-site operations and maintenance (O&M) facility. The Project will connect to the existing Southern California Edison Antelope Substation (SCEAS) via a three mile, 69 kV generation-tie (gen-tie) line originating at the collection system within the SGF. SCEAS is located approximately 2.5 miles southeast of the Project. Locations of the Project, SCEAS, State Highways, and local roads can be found on Figure 1 Vicinity Map and Figure 2 Site Plan.

The facility will operate year-round, producing renewable electric power during daytime hours. The proposed schedule is to begin site preparation and construction in the third quarter of 2014 and complete the construction and be commercially operational by the fourth quarter of 2014. The Project construction activities are anticipated to take approximately 6 months to complete. Refer to Figures 1 and 2 for the Project Vicinity Map and Site plan, respectively.

3.0 EXISTING CONDITIONS

The Project is located in unincorporated northern section of Los Angeles County, approximately 10.5 miles west of Lancaster. The Project site is surrounded by agricultural fields and a few small areas of development to the north and southeast intermixed with non-native grasslands.

The closest regional roadways to the Project site are State Route 14 (SR 14)/Antelope Valley Freeway, SR-138/Lancaster Road, also identified locally as W Avenue D, and Interstate 5 (I-5). SR-14 runs north-south approximately 9.6 miles east of the Project site. SR-14 is an important regional transportation link to and from the Antelope Valley. It provides connection between the Cities of Lancaster, Rosamond, Palmdale, and Los Angeles. SR-138/W Avenue D runs east-west approximately 5 miles north of W Avenue I. I-5 is a major north-south route of the Interstate Highway System providing connection between the Cities of San Diego, Los Angeles, Bakersfield, and Sacramento. The intersection of I-5 and SR-138 is located approximately 26 miles north west of the Project site. SR-138 extends east from I-5 to the junction of SR-138 and SR-14 where SR-138 south is combined with SR-14 south. General William J. Fox Airfield and Edwards Air Force Base are located approximately 7 and 29 miles northeast of the Project site, respectively.

For details regarding transportation routes to the Project site and the associated existing and projected traffic volumes for the Project see Section 5.1 - Construction Phase.

4.0 PROJECT TRIP GENERATION

4.1 Construction Phase

Traffic generated during the construction phase will include construction worker commuter trips, water truck trips, and delivery truck trips. Construction worker commuter trips and delivery truck trips are anticipated to arrive to the Project site outside of peak hours. It is anticipated that 30 percent of the water trucks will arrive to the Project site during the AM peak hour.

The Project will have an average of 75 workers per day and a peak of 100 workers per day over a 20-day period during construction. For equipment and deliveries, the Project will have an average of 4 delivery truck trips per day (for equipment and materials) with an expected peak of

26 delivery truck trips. It is anticipated that construction workers and deliveries will arrive to the Project site outside of peak hours.

Dependent upon climatic conditions during construction, the maximum estimated water use for the site is 97 acre-feet, which would be obtained from an off-site provider. Potable water would be brought in to the Project site for drinking and domestic needs. During the site preparation and grading activities, water will mainly be used for soil compaction and control of fugitive dust generation. Smaller quantities of water will also be required on an as-needed basis for preparation of the concrete required for foundations and other minor uses. Subsequent to these construction activities, water usage will primarily be used for on-going dust suppression associated with the remaining construction of the Project. The Project will require a total of 40 daily water truck trips arriving on-site. Assuming that 30 percent of the water trucks will arrive on-site during the AM peak hour (7:00 AM), 12 water trucks will be used in this analysis.

Parking, temporary office trailers, and construction and PV equipment lay-down areas will be located entirely within the Project site boundary. It is not expected that any road closures or restricted access along City/local roadways will be required for the Project.

4.2 Operation Phase

The Project facility will operate year-round, producing renewable electric power during daytime hours. PV facilities have very few moving parts and have limited ongoing maintenance requirements. Maintenance activities will consist of checking electrical performance parameters via remote monitoring, performing periodic inspections and maintenance of transformers and inverters, responding to any problems detected by remote monitoring, conducting weed abatement and dust control activities, cleaning PV panels, and maintaining driveways. Water trucks will be used for cleaning the PV panels, but are anticipated to arrive during non-peak hours. No major equipment is anticipated to be required for maintenance of the facility, except as necessary for periodic re-grading of internal roads.

The Project Facility will be primarily managed, monitored, and controlled remotely. Therefore, it is expected that the SGF will only have an average of 2 workers onsite for security, maintenance, repairs, and inspections on a quarterly or as-needed basis. An additional 8 workers will be needed to perform routine cleaning of the PV modules. Cleaning of the PV modules is anticipated to take up to one week and will be conducted two times a year. The operational workers are expected to commute to and from the Project site individually during the peak AM and PM hours, generating a peak of 10 one-way trips during panel washing.

5.0 ANTICIPATED TRAFFIC IMPACTS

5.1 Construction Phase

Construction worker traffic traveling from the north (Rosamond) and south (Los Angeles) via SR 14 will access the Project site from exit 44 to W Avenue I, a paved road with between 2 and 8 lanes (lanes reduce as traffic travels west on W Avenue I). The W Avenue I interchange will provide traffic from the south with an individual left turn lane, and traffic from the north with an individual right turn lane. Using this exit will provide efficient access to the Project site while also avoiding the urban (more densely populated) residential and commercial areas of Lancaster.

Construction worker traffic traveling from Bakersfield (I-5) can take SR-138 to 110th Street W then take a right on to W Avenue I to access the Project site. Project site ingress/egress will be on from W Avenue I. SR-14, W Avenue I, and 90th Street W are listed as evacuation routes in the Lancaster 2030 General Plan Master Environmental Assessment (GPMEA).

Water used on-site during construction and operation will be delivered via trucks and originate from one of the following two separate locations defined as the Homer Option or the City of Lancaster Option. Water trucks traveling from the Homer Option will originate from 100th Street W and W Avenue A in Rosamond, CA and take the following route:

- Travel west along W Avenue A for approximately 1 mile;
- Head south (turn left) along 110th Street W for approximately 8 miles;
- Then Head west (turn right) along W Avenue I for approximately 1 mile to the Project site ingress/egress.

Water trucks traveling from the City of Lancaster Option will originate from W Avenue H and Division Street in Lancaster, CA and take the following route:

- Travel west on W Avenue H for approximately 11 miles;
- Head south (turn left) on 110th Street W for approximately 1 mile;
- Head west (turn right) on W Avenue I for approximately 1 mile to the Project site ingress/egress.

See Figure 1 for a Vicinity Map showing the 2 possible routes for water trucks and Figure 2 for a detailed Site Plan below.

Traffic data was obtained from Los Angeles County Department of Public Works Machine Count Traffic Volumes for the above listed routes water trucks will take for the two options. The most recent AM peak hour data available, for each water truck route, was obtained and projected to the year 2014 (year of construction) by using a 2 percent growth rate per year. The analysis looks at 30 percent of the water trucks (12 water trucks) traveling to the site during the AM peak hour. Construction worker commuter trips and delivery truck trips are anticipated to arrive to the Project site outside of peak hours and have not been included this analysis. The resulting totals for the projected 2014 traffic with the additional water truck trips are shown in Table 1 (Homer Option) and Table 2 (City of Lancaster Option) below.

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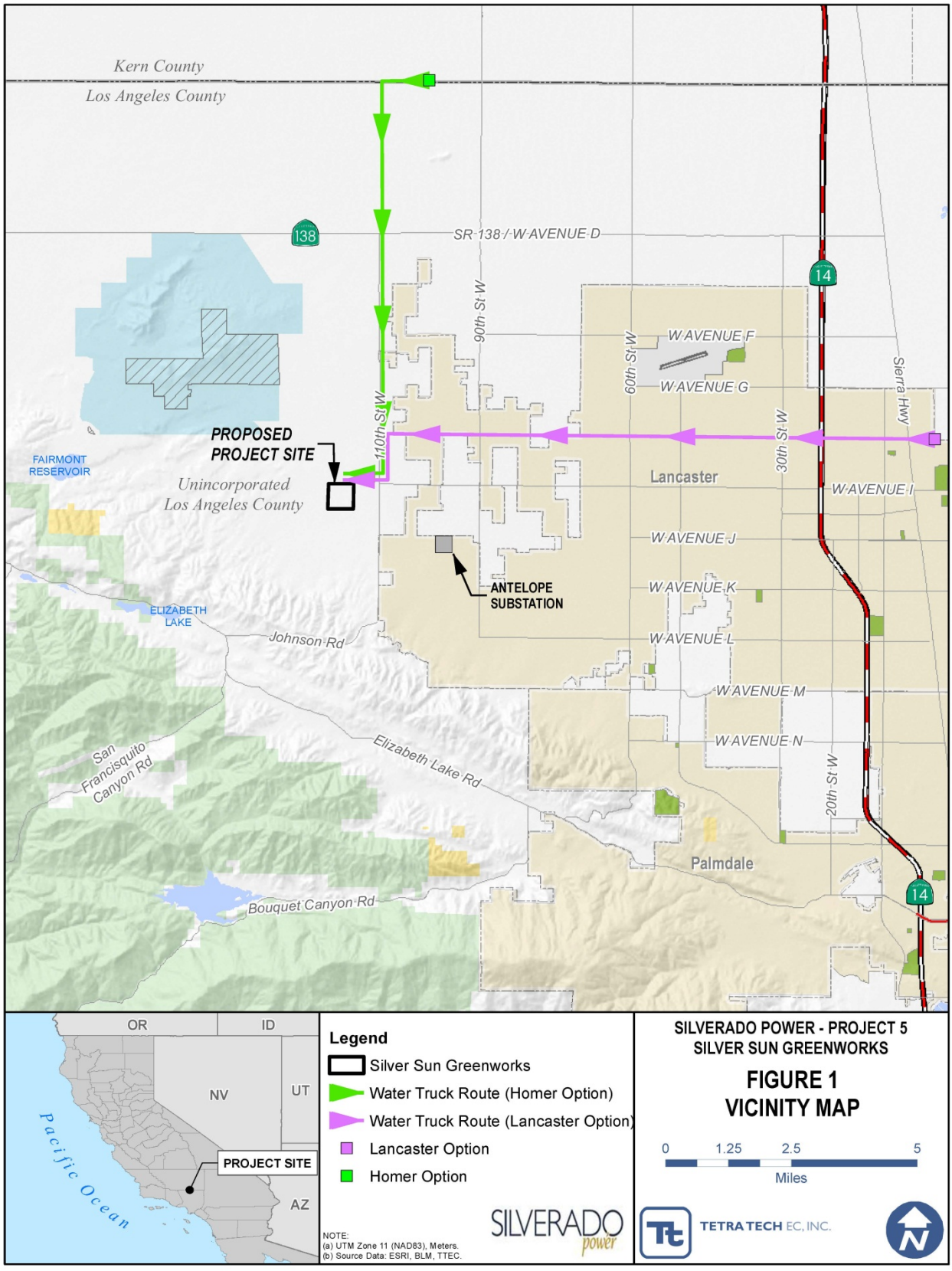

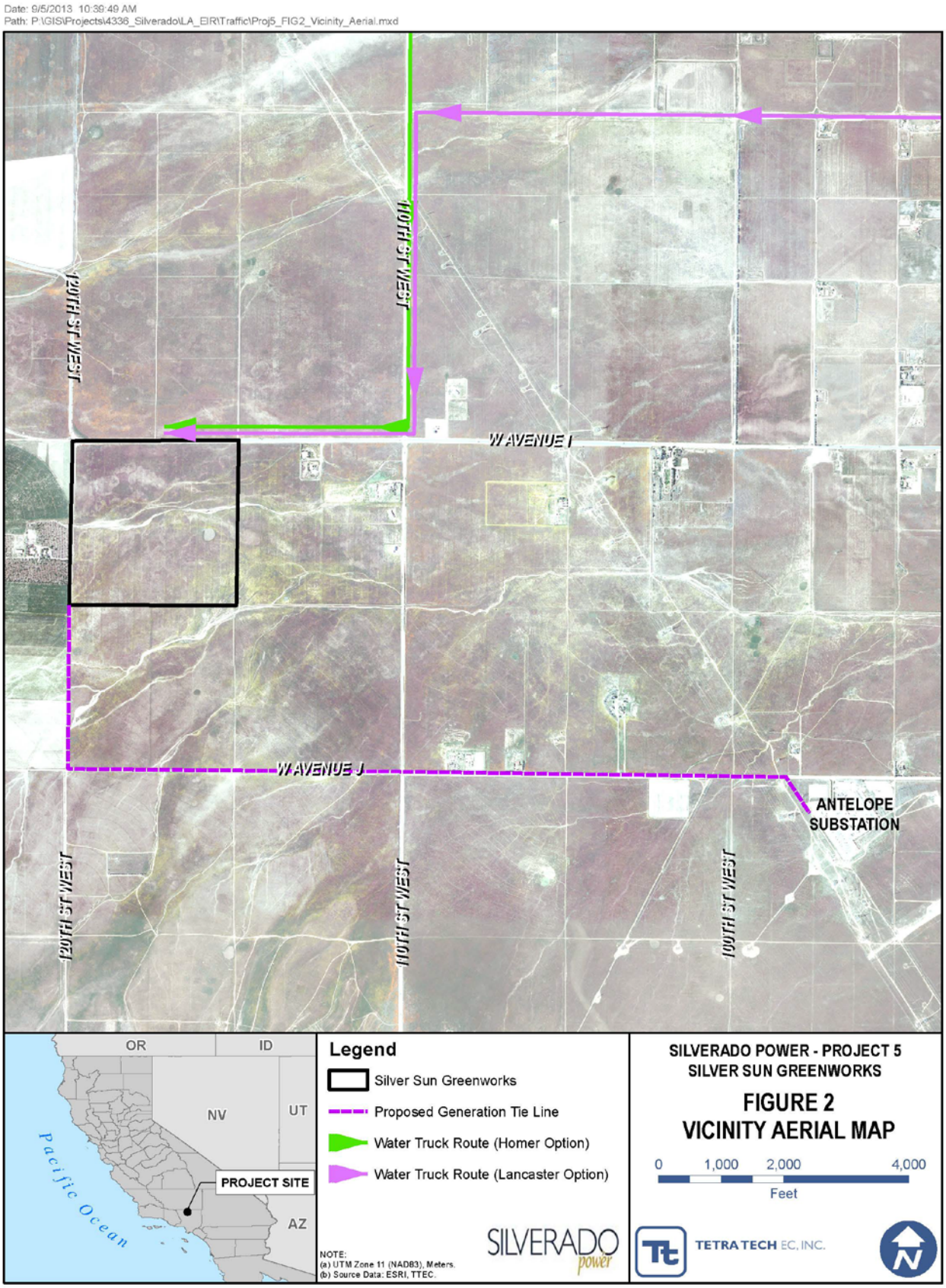
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110TH ST WEST
120TH ST WEST
W AVENUE I
W AVENUE J
ANTELOPE SUBSTATION
OR
ID
NV
UT
AZ
PROJECT SITE
Pacific Ocean
Legend
Silver Sun Greenworks
Proposed Generation Tie Line
Water Truck Route (Homer Option)
Water Truck Route (Lancaster Option)
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 5
SILVER SUN GREENWORKS
FIGURE 2
VICINITY AERIAL MAP
0 1,000 2,000 4,000
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TETRA TECH EC, INC.

Table 1 Existing and Projected Conditions for the Homer Option in 2014

Road Segment	AM Peak Hour (2010)[1]	AM Peak Hour (2012)[1]	Projected AM Peak Hour (2014)[2]	Daily Water Truck Trips	30% of Daily Water Truck Trips Arriving during AM Peak Hour	2014 Conditions with Construction Traffic	2014 Percent Increase in Traffic
Traffic traveling West on W Avenue A W/O 90th Street W	N/A	26	28	40	12	40	42.86
Traffic traveling South on 110th Street W N/O W Avenue I	23	N/A	25	40	12	37	48.00
Traffic traveling West on W Avenue I W/O 110th Street W	27	N/A	30	40	12	42	40.00

[1] Traffic data obtained from LA County DPW Machine Count Traffic Volumes

[2] Traffic projected using a 2% increase in traffic per year

Table 2 Existing and Projected Conditions for the City of Lancaster Option in 2014

Road Segment	AM Peak Hour (2010)[1]	Projected AM Peak Hour (2014)[2]	Daily Water Truck Trips	30% of Daily Water Truck Trips Arriving during AM Peak Hour	2014 Conditions with Construction Traffic	2014 Percent Increase in Traffic
Traffic traveling West on W Avenue H E/O 70th Street W	57	62	40	12	74	19.35
Traffic traveling South on 110th Street W N/O W Avenue I	23	25	40	12	37	48.00
Traffic traveling West on W Avenue I W/O 110th Street W	27	30	40	12	42	40.00

[1] Traffic data obtained from LA County DPW Machine Count Traffic Volumes

[2] Traffic projected using a 2% increase in traffic per year

As shown in Tables 1 and 2, during the AM peak hour the local roads will experience a maximum increase in traffic volume of 48.0 percent. This is mainly due to the existing low volume and low peak traffic conditions for these roads, which are located in a rural area and operates well below the existing capacity of 1,600 vehicles per lane per hour for a 2-lane road.. Therefore, it is concluded that these roads have adequate capacity to safely accommodate the increase from water truck traffic and will have an insignificant impact on the existing traffic conditions.

During construction of gen-tie lines associated with the Project, it is anticipated that temporary one-lane road closures will be necessary. A Project Traffic Plan will be prepared to address the temporary one-lane road closures and submitted to the County for approval prior to issuance/approval of the County Grading Permit. Parking, temporary office trailers, and construction and PV equipment lay-down areas will be located entirely within the Project site boundary.

The Project will not include any buildings, structures, or other operations that will require a change in the existing air traffic patterns. The SGF will be connecting to the existing SCEAS via a three mile gen-tie line. The PV modules that will be used at the Project site are non-reflective and will not pose a hazard to general aviation pilots. Transmission line-related radio frequency interference (RFI) is one of the indirect effects of transmission line operation. RFI is produced by the physical interactions of the electric fields generated by the transmission line. The level of RFI that occurs usually depends on the magnitude of the electric fields involved and the distance from the transmission line. It is usually associated with transmission lines of 345

kilovolts (kV) or greater. The Project transmission lines will connect to the SCEAS with a 69 kV gen-tie line (less than 345 kV) and will not adversely impact RFI effects.

5.2 Operational Phase

As previously stated, the operational phase of the Project is anticipated to only generate an average of 2 additional vehicle trips during the AM and PM peak hours on a quarterly or as-needed basis with a maximum of 10 additional vehicle trips, which will only occur when panel washing operations are being conducted. Based on the traffic analysis for the water truck trips described above, the operational phase vehicle trips are considered negligible. Therefore, no additional post-construction operational analysis was conducted for this TIS. It is concluded that the operational phase of the Project will have no impact on the traffic and/or transportation infrastructure.

6.0 MITIGATION MEASURES

As described in the previous sections of this report, it is anticipated that the construction and operational phase traffic for the Project will not degrade the normal flow of traffic on the access roads for the Project site. The following measures will be implemented during construction to reduce or mitigate peak hour traffic volume and to maintain/repair the roads (as needed) during the project construction phase.

- **TT-1** Stagger construction work shifts to start before or after peak traffic hours;
- TT-2 Schedule truck deliveries during off peak hours;
- TT-3 Limit water truck deliveries during the AM peak hour to 30 percent of the daily water truck trips; and
- **TT-4** Visually document road conditions before and after construction phase and repair road to conditions before construction started or as directed by Los Angeles Department of Public Works.

Additionally, the following measures are recommended to further reduce construction traffic volume:

- **TT-5** Encourage carpooling between construction workers;
- **TT-6** Encourage potential use of vanpool or commuter bus for construction workers to access the Project site; and
- **TT-7** Establish flexible working hours outside of peak hours.

7.0 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

7.1 Federal LORS

- Title 49 CFR, Subtitle B, Chapter I, Parts 171-173, and 177-178 contain national safety standards for the transport of goods, materials, and substances over public highways; and proper handling and storage of hazardous materials during transportation.

- Title 49 CFR, Subtitle B, Chapter III, Parts 350–399 Motor Carrier Safety Regulations address safety considerations for the transport of goods, materials, and substances over public highways.
- Hazardous Materials Transportation Act of 1974, Title 49 CFR Subtitle B, Chapter III, Part 397.9 directs the Federal Department of Transportation to establish criteria and regulations for the safe interstate transportation of hazardous materials.

7.2 State LORS

- California Vehicle Code, Section 2500-2505 Authorizes the Commissioner of Highway Patrol to issue licenses for the transportation of hazardous materials
- California Vehicle Code, Sections 31303-31309 requires that the transportation of hazardous materials be on the state or interstate highway that offers the shortest overall transit time possible. The administering agency for the above statutes is the California Highway Patrol (CHP).
- California Vehicle Code, Section 35550 imposes weight guidelines and restrictions upon vehicles traveling upon freeways and highways. The section holds that "a single axle load shall not exceed 20,000 pounds. The load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds. The front steering axle load is limited to 12,500 pounds." Furthermore, CVC Section 35551 defines the maximum overall gross weight as 80,000 pounds and adds that "the gross weight of each set of tandem axles shall not exceed 34,000 pounds." The administering agency for the above statute is the California Department of Transportation (Caltrans).
- California Vehicle Code, Section 35780 requires a Single-Tip Transportation Permit to transport oversized or excessive loads over state highways. The permit can be acquired through Caltrans.
- California Street and Highways Code, Sections 117, 660-711 require an encroachment permit from Caltrans for facilities that require construction, maintenance, or repairs on or across State highways.
- California Streets and Highways Code Sections 660, 670, 1450, and 1460 *et seq.* regulate right-of-way encroachment and the granting of permits for encroachment on State and county roads.

The Project site is located within Caltrans District 7, which can be contacted at:

100 S. Main Street
Los Angeles, CA 90012
(213) 897-3631

7.3 Local LORS

Los Angeles County issues Road Use Permits for oversized/overweight loads. This permit is also required for construction, excavation, and encroachment on public highways. The permit is issued by the Department of Public Works located at:

900 S. Fremont Avenue
Alhambra, CA 91803-1331
(626) 458-3129.

8.0 HAZARDOUS MATERIALS AND WASTES

There will be no of hazardous materials stored at the Project site. In the unlikely event that hazardous materials are used at the site, all handling and use of hazardous materials will be in accordance with applicable LORS. Hazardous materials could include fuels and oils for construction equipment. Construction equipment will use biodegradable oils when possible and as necessary. All construction equipment will be fueled directly from service trucks only in specifically identified areas and no maintenance will be performed onsite. Electrical equipment will be filled with non-PCB containing oils.

The Project will not produce hazardous wastes.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The Project does not anticipate impacting any mode of transportation or congestive management plan during the construction and operation of the SGFs. During gen-tie construction when one-lane road closures are expected and will be addressed/mitigated in the Project Traffic Plan prior to issuance of the County Grading Permit as described in Section 5.1. the Project construction will not impede any emergency access to the Project site. Emergency access within the individual SGFs will be addressed in the detailed design phase of the Project. Since no existing roads will be altered, the Project will not substantially increase any hazards or incompatible uses and will not have an adverse effect on the emergency evacuation route as discussed in the Lancaster 2030 GPMEA. The Project is located in a rural area of LA County so no public transit, bicycle, or pedestrian facilities will have a decrease in performance or safety. The analysis presented in this study demonstrates that the construction and operational activities will have no impacts on the existing traffic conditions.

10.0 REFERENCES

1. CEQA, March 18, 2010. Environmental Checklist

2. Los Angeles County Department of Public Works Machine Count Traffic Volumes

APPENDIX B-9.6

PROJECT 6 LANCASTER WAD
NOISE TRANSPORTATION IMPACT STUDY

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SILVERADO POWER CALIFORNIA PERMITTING CAMPAIGN

Project 6
LANCASTER WAD
TRANSPORTATION IMPACT STUDY

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September 2013

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Table 2 Existing and Projected Conditions for the City of Lancaster Option in 2014 6

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1.0 INTRODUCTION

This Transportation Impact Study (TIS) has been prepared for the Lancaster WAD (Project) Solar Generating Facility (SGF) proposed by Silverado Power, LLC (Silverado Power) to evaluate the potential transportation impacts resulting from the construction and operation of the Project. The TIS focuses on the impacts and mitigations required for the construction phase of the Project. The post-construction operational phase traffic generation is expected to be minimal and the resulting impacts are considered negligible as explained in Section 5.2.

The following approach was used to complete this TIS:

- Determine the traffic routes for the two options that water trucks will take to the Project site (Homer Option and City of Lancaster Option);
- Determine the existing AM peak hour (7:00 AM) traffic for the determined routes water trucks will take to the site;
- Estimate the projected existing traffic for the expected year of construction using a growth rate of 2 percent per year;
- Determine the AM peak hour water truck trips during construction assuming 30 percent of the water trucks travel to the Project site during the AM peak hour;
- Calculate the percent increase in volume by comparing projected existing peak hour trips (without the Project) with the peak hour traffic trips during construction (with the Project);
- Evaluate the Project impact on traffic conditions;
- Determine the applicable laws, ordinances, regulations, and standards **(**LORs);
- Recommend measures to mitigate the potential Project impacts to the existing transportation infrastructure, as needed; and
- Provide conclusions of the traffic study.

2.0 PROJECT DESCRIPTION

The Project will have a generating capacity of 5 megawatts (MW) and will be located on 39 acres of primarily unproductive agricultural land in Los Angeles County. The Project will employ a series of photovoltaic (PV) module arrays to convert sunlight directly into electrical energy without the use of heat transfer fluid or cooling water. In addition to the PV modules, the Project will include the following associated facilities:

- Module mounting system
- Balance of system and electrical boxes (e.g., combiner boxes, electrical disconnects)
- Electrical inverters and transformers
- Electrical collection system, including switchgear
- Data Monitoring Equipment
- Access roads and chain link perimeter security fencing

The SGF will operate year-round, producing renewable electric power during daytime hours. The Project will not require the construction of an on-site operations and maintenance (O&M) facility. A regional O&M facility to serve the SGF will be located in an existing office and/or warehouse space near the project vicinity. The Project transmission lines will connect to the existing Southern California Edison Antelope Substation (SCEAS), located approximately 9 miles southeast of the Project at the intersection of 95th St. W and W Avenue J, via a 12.47 kilovolt (kV) distribution line adjacent to the southern border of the property. Locations of all SGFs, State Highways, and local roads can be found on Figure 1 Vicinity Map and Figure 2 Site Plan.

The proposed schedule is to begin site preparation and construction in the first quarter of 2014 and complete construction and be commercially operational by the second quarter of 2014. The Project construction activities are anticipated to take approximately 3 months to complete. Refer to Figures 1 and 2 for the Project Vicinity Map and Site Plan, respectively.

3.0 EXISTING CONDITIONS

The Project is located on SR-138/W Avenue D in unincorporated northern section of Los Angeles County, approximately 6.4 miles north of Lancaster and approximately 1.2 miles west of the intersection of SR-138/W Avenue D and SR-14. The Project site is surrounded by agricultural fields intermixed with non-native grasslands.

The closest regional roadways to the Project site are State Route 14 (SR 14)/Antelope Valley Freeway, SR-138/Lancaster Road, also identified locally as W Avenue D, and Interstate 5 (I-5). SR-14 runs north-south approximately 1.2 miles east of the Project site. SR-14 is an important regional transportation link to and from the Antelope Valley. It provides connection between the Cities of Lancaster, Rosamond, Palmdale, and Los Angeles. I-5 is a major north-south route of the Interstate Highway System providing connection between the Cities of San Diego, Los Angeles, Bakersfield, and Sacramento. The intersection of I-5 and SR-138 is located approximately 34.4 miles west of the Project site. SR-138 extends east from I-5 to the junction of SR-138 and SR-14 where SR-138 south is combined with SR-14 south.

There are two airports located within the general vicinity of the Project site. General William J. Fox Airfield is located approximately 2.8 miles south west and Edwards Air Force Base is located approximately 17.8 miles north east of the Project site.

For details regarding transportation routes to the Project site and the associated existing and projected traffic volumes for the Project see Section 5.1 - Construction Phase.

4.0 PROJECT TRIP GENERATION

4.1 Construction Phase

Traffic generated during the construction phase will include construction worker commuter trips, water truck trips, and delivery truck trips. Construction worker commuter trips and delivery truck trips are anticipated to arrive to the Project site outside of peak hours. It is anticipated that 30 percent of water trucks will arrive to the Project site during the AM peak hour. The Project will have an average of 30 workers per day and a peak of 40 workers per day over a 12-day period during construction. For equipment and materials, the Project will have an average of 4 delivery

truck trips per day with an expected peak of 26 delivery truck trips. It is anticipated that construction workers and delivery trucks will arrive to the Project site outside of peak hours.

Dependent upon climatic conditions during construction, the maximum estimated water use for the site is 24 acre-feet, which would be obtained from an off-site provider. Potable water would be brought in to the Project site for drinking and domestic needs. During the site preparation and grading activities, water will mainly be used for soil compaction and control of fugitive dust generation. Smaller quantities of water will also be required on an as-needed basis for preparation of the concrete required for foundations and other minor uses. Subsequent to these construction activities, water usage will primarily be used for on-going dust suppression associated with the remaining construction of the Project. The Project will require a total of 20 daily water truck trips arriving on-site. Assuming that 30 percent of the water trucks will arrive on-site during the AM peak hour (7:00 AM), 6 water trucks will be used in the analysis.

Parking, temporary office trailers, and construction and PV equipment lay-down areas will be located entirely within the Project site boundary. It is not expected that any road closures or restricted access along City roadways will be required for the Project.

4.2 Operational Phase

The Project facility will operate year-round, producing renewable electric power during daytime hours. PV facilities have very few moving parts and have limited ongoing maintenance requirements. Maintenance activities will consist of checking electrical performance parameters via remote monitoring, performing periodic inspections and maintenance of transformers and inverters, responding to any problems detected by remote monitoring, conducting weed abatement and dust control activities, cleaning PV panels, and maintaining driveways. Water trucks will be used for cleaning the PV panels, but are anticipated to arrive during non-peak hours. No major equipment is anticipated to be required for maintenance of the facility, except as necessary for periodic re-grading of internal roads.

The Project facility will primarily be managed, monitored, and controlled remotely. The solar energy generating facilities are anticipated to be unmanned during normal operation. The SGF is expected to be monitored remotely and only have an average of 2 workers onsite for security, maintenance, repairs, and inspections on a quarterly or as-needed basis. An additional 8 workers will be needed during cleaning of the PV modules. Cleaning of the PV modules is anticipated to take up to a ½ week to complete and will be conducted two times a year. The operational workers are expected to commute to and from the Project site individually and will arrive and depart within the peak hour, generating a peak of 10 one-way trips during panel washing.

5.0 ANTICIPATED TRAFFIC IMPACTS

5.1 Construction Phase

Construction worker traffic traveling from the north (Rosamond) and south (Los Angeles) via SR 14 will access the Project site from exit 49 to W Avenue D, a paved 2 lane road. The W Avenue D interchange will provide traffic from the south with an individual left turn lane, and traffic from the north with an individual right turn lane. Using this exit will provide efficient access to the Project site while also avoiding the urban (more densely populated) residential and commercial

areas of Lancaster. Construction worker traffic traveling from Bakersfield (I-5) can take SR-138/ W Avenue D east for approximately 34.4 miles to the ingress/egress of the Project site.

Water used on-site during construction and operation will be delivered via trucks and originate form one of the following two separate locations defined as the Homer Option or the City of Lancaster Option. Water trucks traveling from the Homer Option will originate from 100th Street W and W Avenue A in Rosamond, CA and take the following route:

- Travel east along W Avenue A for approximately 4 miles;
- Head south (turn right) along 90th Street W for approximately 3 miles;
- Then head east (left turn) along W Avenue D for approximately 2.6 miles to the Project site ingress/egress.

Water trucks traveling from the City of Lancaster Option will originate from W Avenue H and Division Street in Lancaster, CA and take the following route:

- Travel west along W Avenue H for approximately 2 ¼ miles;
- Head north on SR 14 for approximately 4 miles;
- Then head east on W Avenue D for approximately 1 ¼ miles to the Project site ingress/egress.

See Figure 1 for a Vicinity Map showing the 2 possible routes for water trucks and Figure 2 for a detailed Site Plan below.

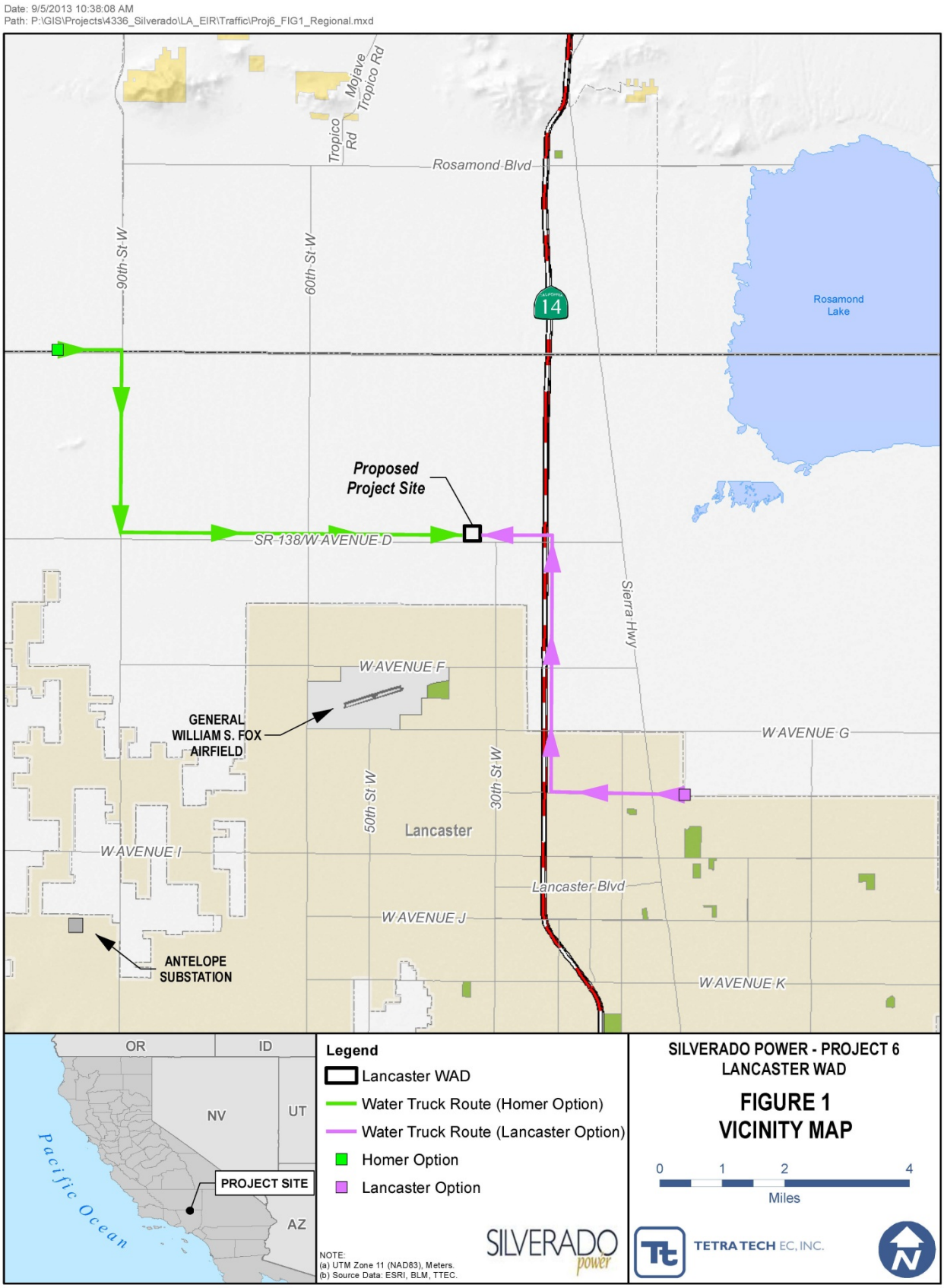
Traffic data was obtained from Los Angeles County Department of Public Works Machine Count Traffic Volumes for the above listed routes water trucks will take for the two options. The most recent AM peak hour data available, for each water truck route, was obtained and projected to the year 2014 (year of construction) by using a 2 percent growth rate per year. The analysis looks at 30 percent of the water trucks (9 water trucks) traveling to the site during the AM peak hour. Construction worker commuter trips and delivery truck trips are anticipated to arrive to the Project site outside of peak hours and have not been included this analysis. The resulting totals for the projected 2014 traffic with the additional water truck trips are shown in Table 1 (Homer Option) and Table 2 (City of Lancaster Option) below.

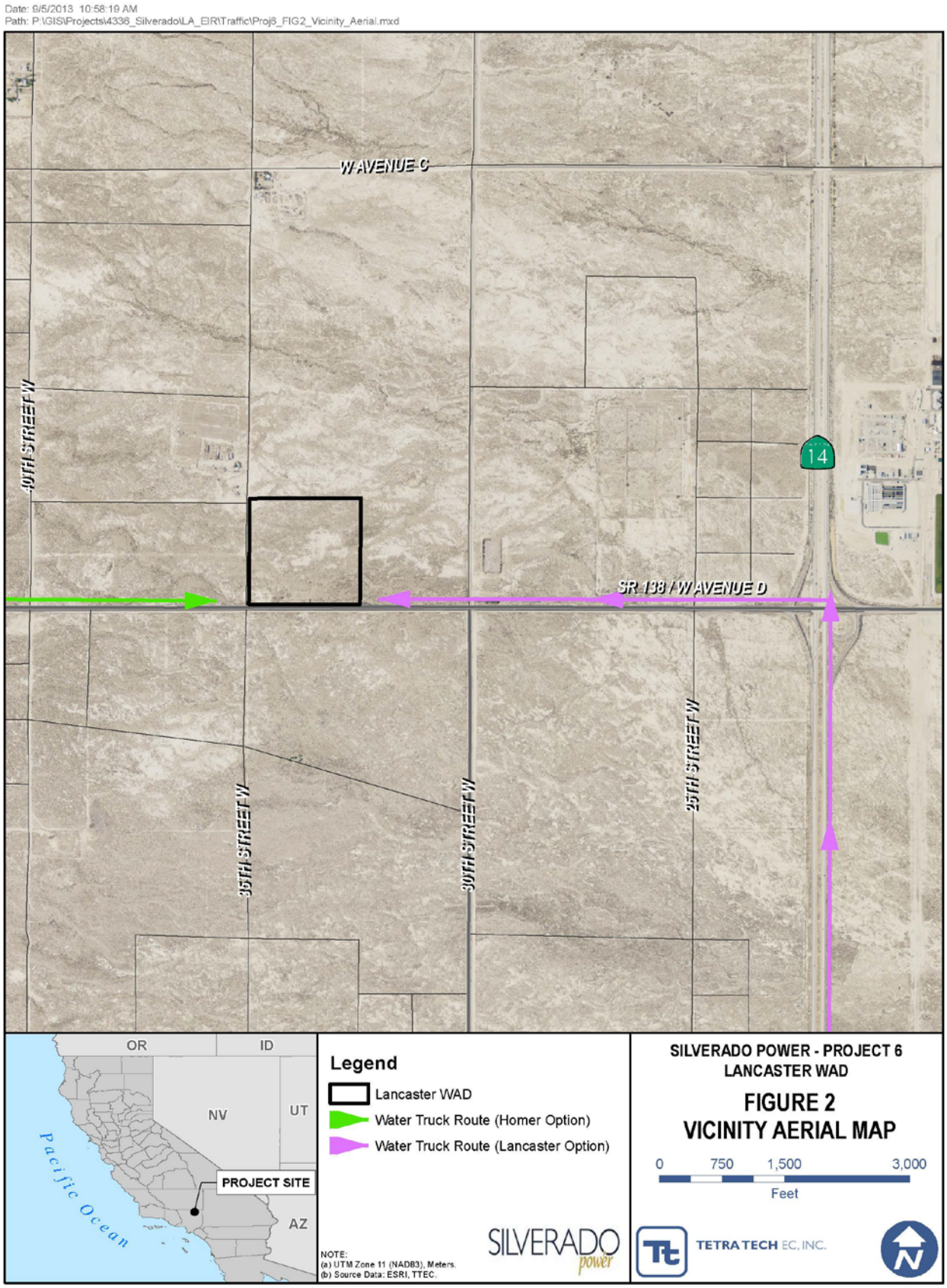
Table 1 Existing and Projected Conditions for the Homer Option in 2014

Road Segment	AM Peak Hour (2010)[1]	AM Peak Hour (2011)[1]	AM Peak Hour (2012)[1]	Projected AM Peak Hour (2014)[2]	Daily Water Truck Trips	30% of Daily Water Truck Trips Arriving during AM Peak Hour	2014 Conditions with Construction Traffic	2014 Percent Increase in Traffic
Traffic traveling East on W Avenue A W/O 90th Street W	N/A	N/A	25	27	40	12	39	44.44
Traffic traveling South on 90th Street W N/O W Avenue D	N/A	101	N/A	108	40	12	120	11.11
Traffic traveling East on W Avenue D E/O 90th Street W	93	N/A	N/A	101	40	12	113	11.88

[1] Traffic data obtained from LA County DPW Machine Count Traffic Volumes

[2] Traffic projected using a 2% increase in traffic per year


Date: 9/5/2013 10:38:08 AM
Path: P:\GIS\Projects\4336_Silverado\LA_EIR\Traffic\Proj6_FIG1_Regional.mxd
Mojave Tropico Rd
Tropico Rd
Rosamond Blvd
90th St W
60th St W
14
Rosamond Lake
Proposed Project Site
SR-138/W AVENUE D
Sierra Hwy
W AVENUE F
GENERAL WILLIAM S. FOX AIRFIELD
W AVENUE G
50th St W
30th St W
Lancaster
W AVENUE I
Lancaster Blvd
W AVENUE J
ANTELOPE SUBSTATION
W AVENUE K
OR
ID
NV
UT
AZ
Pacific Ocean
PROJECT SITE
Legend
Lancaster WAD
Water Truck Route (Homer Option)
Water Truck Route (Lancaster Option)
Homer Option
Lancaster Option
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, BLM, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 6
LANCASTER WAD
FIGURE 1
VICINITY MAP
0 1 2 4
Miles
TETRA TECH EC, INC.
N


Date: 9/5/2013 10:58:19 AM
Path: P:\GIS\Projects\4336_Silverado\LA_EIR\Traffic\Proj6_FIG2_Vicinity_Aerial.mxd
W AVENUE C
40TH STREET W
SR 138 / W AVENUE D
14
35TH STREET W
30TH STREET W
25TH STREET W
OR
ID
NV
UT
AZ
Pacific Ocean
PROJECT SITE
Legend
Lancaster WAD
Water Truck Route (Homer Option)
Water Truck Route (Lancaster Option)
NOTE:
(a) UTM Zone 11 (NAD83), Meters.
(b) Source Data: ESRI, TTEC.
SILVERADO power
SILVERADO POWER - PROJECT 6
LANCASTER WAD
FIGURE 2
VICINITY AERIAL MAP
0 750 1,500 3,000
Feet
TETRA TECH EC, INC.

the operational phase of the Project will have no impact on the traffic and/or transportation infrastructure.

6.0 MITIGATION MEASURES

As described in the previous sections of this report, it is anticipated that the construction and operational phase traffic for the Project will not degrade the normal flow of traffic on the access roads for the Project site. The following measures will be implemented during construction to reduce or mitigate peak hour traffic volume and to maintain/repair the roads (as needed) during the project construction phase.

- **TT-1** Stagger construction work shifts to start before or after peak traffic hours;
- TT-2 Schedule truck deliveries during off peak hours;
- TT-3 Limit water truck deliveries during the AM peak hour to 30 percent of the daily water truck trips;
- **TT-4** Visually document road conditions before and after construction phase and repair road to conditions before construction started or as directed by Los Angeles Department of Public Works.

Additionally, the following measures are recommended to further reduce construction traffic volume:

- **TT-5** Encourage carpooling between construction workers;
- **TT-6** Encourage potential use of vanpool or commuter bus for construction workers to access the Project site; and
- **TT-7** Establish flexible working hours outside of peak hours.

7.0 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

7.1 Federal LORS

- Title 49 CFR, Subtitle B, Chapter I, Parts 171-173, and 177-178 contain national safety standards for the transport of goods, materials, and substances over public highways; and proper handling and storage of hazardous materials during transportation.
- Title 49 CFR, Subtitle B, Chapter III, Parts 350–399 Motor Carrier Safety Regulations address safety considerations for the transport of goods, materials, and substances over public highways.
- Hazardous Materials Transportation Act of 1974, Title 49 CFR Subtitle B, Chapter III, Part 397.9 directs the Federal Department of Transportation to establish criteria and regulations for the safe interstate transportation of hazardous materials.

7.2 State LORS

- California Vehicle Code, Section 2500-2505 Authorizes the Commissioner of Highway Patrol to issue licenses for the transportation of hazardous materials
- California Vehicle Code, Sections 31303-31309 requires that the transportation of hazardous materials be on the state or interstate highway that offers the shortest overall

transit time possible. The administering agency for the above statutes is the California Highway Patrol (CHP).

- California Vehicle Code, Section 35550 imposes weight guidelines and restrictions upon vehicles traveling upon freeways and highways. The section holds that "a single axle load shall not exceed 20,000 pounds. The load on any one wheel or wheels supporting one end of an axle is limited to 10,500 pounds. The front steering axle load is limited to 12,500 pounds." Furthermore, CVC Section 35551 defines the maximum overall gross weight as 80,000 pounds and adds that "the gross weight of each set of tandem axles shall not exceed 34,000 pounds." The administering agency for the above statute is the California Department of Transportation (Caltrans).
- California Vehicle Code, Section 35780 requires a Single-Tip Transportation Permit to transport oversized or excessive loads over state highways. The permit can be acquired through Caltrans.
- California Street and Highways Code, Sections 117, 660-711 require an encroachment permit from Caltrans for facilities that require construction, maintenance, or repairs on or across State highways.
- California Streets and Highways Code Sections 660, 670, 1450, and 1460 *et seq.* regulate right-of-way encroachment and the granting of permits for encroachment on State and county roads.

The Project site is located within Caltrans District 7 which can be contacted at:

100 S. Main Street
Los Angeles, CA 90012
(213) 897-3631

7.3 Local LORS

Los Angeles County issues Road Use Permits for oversized/overweight loads. This permit is also required for construction, excavation, and encroachment on public highways. The permit is issued by the Department of Public Works located at:

900 S. Fremont Avenue
Alhambra, CA 91803-1331
(626) 458-3129.

8.0 HAZARDOUS MATERIALS AND WASTES

There will be no hazardous materials stored at the Project site. In the unlikely event that hazardous materials are used at the site, all handling and use of hazardous materials will be in accordance with applicable LORS. Hazardous materials could include fuels and oils for construction equipment. Construction equipment will use biodegradable oils when possible and as necessary. All construction equipment will be fueled directly from service trucks only in specifically identified areas and no maintenance will be performed onsite. Electrical equipment will be filled with non-PCB containing oils.

The Project will not produce hazardous wastes.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The Project does not anticipate impacting any mode of transportation or congestive management plan during the construction and operation of the SGF. During gen-tie construction when one-lane road closures are expected and will be addressed/mitigated in the Project Traffic Plan prior to issuance of the County Grading Permit as described in Section 5.1. The Project construction will not impede any emergency access to the Project site. Emergency access within the individual SGF will be addressed in the detailed design phase of the Project. Since no existing roads will be altered, the Project will not substantially increase any hazards or incompatible uses and will not have an adverse effect on the emergency evacuation route as discussed in the Lancaster 2030 GPMEA. The Project is located in a rural area of LA County so no public transit, bicycle, or pedestrian facilities will have a decrease in performance or safety. The analysis presented in this study demonstrates that the Project construction and operational activities will have no impacts on the existing traffic conditions or transportation systems in the area.

10.0 REFERENCES

1. Caltrans. 2010. Traffic Volumes on California State Highways. Riverside Country, 2010.
2. Los Angeles County Department of Public Works Machine Count Traffic Volumes
3. CEQA. March 18, 2010. Environmental Checklist.

APPENDIX B-10

APPENDIX F. SUSTAINABLE GROUNDWATER BASIN YIELD, ANTELOPE VALLEY AREA OF ADJUDICATION, IN: SUMMARY EXPERT REPORT PHASE 3 – BASIN YIELD AND OVERDRAFT, ANTELOPE VALLEY AREA OF ADJUDICATION

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Appendix F

Sustainable Groundwater Basin Yield

Antelope Valley Area of Adjudication

Appendix F

Sustainable Groundwater Basin Yield

F.1 Introduction

Part of the overall description of water resource and water supply conditions in the Antelope Valley Area of Adjudication (AVAA) includes derivation of the yield of the groundwater basin. For purposes of the overall Problem Statement, the amount of available groundwater supply is considered to be the sustainable yield of the basin which, as described in more detail in the rest of this appendix, is the rate of pumping that will result in no long-term depletion of groundwater storage. In other words, in this setting, the estimates of sustainable yield are based on the concept that groundwater levels, which are indicative of groundwater storage, are acceptable at some point in time; pumping rates are then estimated to maintain those groundwater levels, thus avoiding any chronic depletion of groundwater in basin storage (declining groundwater levels), but also not providing for any purposeful increase in storage (rising groundwater levels) that could occur if pumping were somehow controlled to a lower than sustainable rate.

This appendix describes the approach undertaken to estimate the sustainable yield of the AVAA. It also recognizes that the yield of any groundwater basin is dependent on land uses and other prevailing cultural conditions in the basin, including the use of multiple sources of water supply, which can change with time. In recognizing that cultural conditions have significantly changed in the AVAA over time, this appendix includes the derivation of estimated sustainable yield values under both native conditions (no supplemental water supplies) and supplemental conditions (utilization of imported and local surface waters to augment native water supply).

The sustainable yield of a groundwater basin is considered to be the amount of pumping that, for given land use conditions, produces return flows which, in combination with other recharge, result in no long-term depletion of groundwater storage. Fundamentally, for all cases where groundwater is used on lands overlying a basin and where such uses produce return flows that ultimately reach the underlying aquifer system, those return flows result in the aquifer's ability to sustainably support pumping at a rate that is higher than the rates of natural or other recharge to the aquifer. In a simple form, sustainable yield is conceptually illustrated as shown in Figure F.1-1. In that illustration, groundwater pumping is used to meet a combination of agricultural and municipal and industrial (M&I) water requirements. Each of those uses of groundwater produces a different amount of return flow to the basin. Collectively, those return flows add to natural recharge to produce a total quantity of water that can be pumped on a sustainable basis (no long-term depletion of groundwater storage).

In a more complex form, as is the currently prevailing case in the AVAA, sustainable yield is conceptually illustrated as shown in Figure F.1-2. In that illustration, sustainable yield is segregated into two components, a "native" component that derives solely from natural groundwater recharge in the basin, and a "supplemental" component that derives from recharge which results from the use of supplemental waters such as imported water from the State Water

Project (SWP). The native sustainable yield component is the same as the simple conceptual form of sustainable yield described and illustrated above (Figure F.1-1) where recharge is only natural recharge. The supplemental sustainable yield component, on the other hand, derives from the additional recharge to the groundwater basin as a result of utilizing supplemental waters. The subsequent pumping of that additional recharge produces the same kinds of return flows from the agricultural and M&I uses of that pumping. Collectively, those return flows add to the supplemental recharge to produce a quantity of water that can be pumped on a sustainable basis (no long-term depletion of groundwater storage).

Under both "native" and "supplemental" conditions, natural recharge is considered to be a constant average annual value that is representative of long-term average hydrologic conditions in the basin. Based on interpretation of historical hydrologic conditions, it can be expected that natural recharge will not actually be a constant average value every year; rather, there will be fluctuations in yearly hydrologic conditions, and fluctuations in resultant yearly amounts of natural recharge. Ultimately, however, the basin can be expected to receive average natural recharge over a long-term period; and that recharge, in combination with return flows deriving from sustainable pumping (plus recharge from use of supplemental water), will result in fluctuating but long-term stable groundwater storage. Thus, under sustainable pumping conditions, groundwater levels and storage can logically be expected to fluctuate through wet and dry hydrologic cycles, but to be generally stable and not tend toward depletion of the resource of a long-term basis.

F.2 Approach

To estimate sustainable yield under both native and supplemental conditions in the AVAA, each is expressed in equation form as follows.

$$\mathbf{NSY} = \mathbf{NR} + \mathbf{RF_{nag}} + \mathbf{RF_{nmi}} + \mathbf{RF_{mi}} \qquad \textbf{(F1)}$$

where:
- **NSY** = native sustainable yield
- **NR** = natural groundwater recharge
- $\mathbf{RF_{nag}}$ = return flows from agricultural use of natural groundwater recharge
- $\mathbf{RF_{nmi}}$ = return flow from municipal-type uses of natural groundwater recharge
- $\mathbf{RF_{mi}}$ = return flows of recycled water

and

$$\mathbf{SSY} = \mathbf{R_{sag}} + \mathbf{R_{smi}} + \mathbf{RF_{sag}} + \mathbf{RF_{smi}} \qquad \textbf{(F2)}$$

where:
- **SSY** = supplemental sustainable yield
- $\mathbf{R_{sag}}$ = recharge from agricultural use of supplemental water
- $\mathbf{R_{smi}}$ = recharge from municipal-type use of supplemental water
- $\mathbf{RF_{sag}}$ = return flows from agricultural use of supplemental water
- $\mathbf{RF_{smi}}$ = return flows from municipal-type use of supplemental recharge

For both of preceding expressions, sustainable conditions are governed by generally constant groundwater conditions, meaning that groundwater storage fluctuates with varying hydrologic or other conditions but remains within a generally constant long-term range, i.e. trending neither up or down.

To solve the preceding equations, water requirements and sources, as well as the source, location, and rates of return flow, in the basin were first identified. Mathematical relationships were then developed between water requirements and return flows in order to substitute terms in and simplify solution of the equations for yield. Four assumptions were made in order to facilitate calculations of yield: 1) there are no delays between utilization of water and its recharge; 2) an average return flow rate was developed and utilized herein for agricultural irrigation; 3) return flow rates were developed and utilized for M&I water usage from the detailed analysis of M&I water requirements and supplies as described in Appendix D; and 4) recycled water was considered to be discharged via evaporation, irrigation at or below agronomic rates, or other means.

The long-term average annual natural recharge used for estimation of sustainable groundwater basin yield was derived from the results of the two independent analyses of natural groundwater recharge as described in Appendices C and E. Those analyses reached independent estimates of long-term natural recharge of about 56,000 afy and about 55,000-57,000 afy, respectively. In light of the nature of the respective methods, those results were interpreted to reflect an average long-term natural recharge of about 60,000 afy. Sustainable groundwater basin yield was then estimated by adding components of recharge and return flow that derive from the various uses of water in the AVAA, and thus contribute to sustainable groundwater yield.

Land uses in the basin include agricultural and several municipal-type uses, and the rates of return flow from municipal areas differ depending on the form and location of water use. The land use and associated return flow locations and rates are summarized and then individually discussed below, with return flow rates expressed as percentages of the agricultural and municipal water requirements, Q_{ag} and Q_{mi}, respectively, where Q_{ag} and Q_{mi} are in units of acre-feet per year.

Land Use	**Return Flow Location**	**Return Flow Rate***
Agricultural	agricultural lands	25% $\mathbf{Q_{ag}}$
M&I (urban, sewered)	on property	6.8% $\mathbf{Q_{mi}}$
	Lancaster WRP - Paiute Ponds	C_1 = 20 afy
	Lancaster WRP - treatment ponds	C_2 = 200 afy
	Lancaster WRP area - agric. irrigation	25% applied
	Palmdale WRP - treatment ponds	C_3 = 235 afy
	Palmdale WRP - land application	80% applied
	Palmdale WRP area – agric. irrigation	25% applied
M&I (unsewered**)	on property	21.3% $\mathbf{Q_{mi}}$

* *C is a constant recharge.*

** *includes portions of urban areas, and all mutual and small water company and rural residential areas on septic tanks.*

Agricultural Return Flow - The average agricultural return flow rate used for estimating native and supplemental sustainable yield was 25% of $\mathbf{Q_{ag}}$. That fraction was based on: 1) average and median rates for the historical period 1929-2005 (27% and 25%, respectively) and 2) average rate for the recent period 1986-2005 (23%).

Municipal Return Flow - The municipal return flow rates described as percentages of the total M&I water requirement in the basin were developed as follows.

$$\mathbf{Q_{mi} = Q_{urb} + Q_{mwc} + Q_{rr}}$$

where: $\mathbf{Q_{mi}}$ = total M&I water requirement
$\mathbf{Q_{urb}}$ = water requirement for the urban areas
$\mathbf{Q_{mwc}}$ = water requirement for the mutual and small water company areas = 5% $\mathbf{Q_{urb}}$
$\mathbf{Q_{rr}}$ = water requirement for the rural residential areas = 8% $\mathbf{Q_{urb}}$

then: $\mathbf{Q_{mi}} = 100\%\mathbf{Q_{urb}} + 5\%\mathbf{Q_{urb}} + 8\%\mathbf{Q_{urb}}$
or: $\mathbf{Q_{mi}} = 113\%\mathbf{Q_{urb}}$

and: $\mathbf{Q_{urb}} = 100/113\ \mathbf{Q_{mi}} = 88.5\%\ \mathbf{Q_{mi}}$
$\mathbf{Q_{mwc}} = 5/113\ \mathbf{Q_{mi}} = 4.4\%\ \mathbf{Q_{mi}}$
$\mathbf{Q_{rr}} = 8/113\ \mathbf{Q_{mi}} = 7.1\%\ \mathbf{Q_{mi}}$

The $\mathbf{Q_{urb}}$ term was further refined to accommodate different return flow rates from sewered and unsewered portions of the urban areas. It is estimated that, of the water utilized in sewered areas, 44% is consumptively used and 11% becomes return flow through outside irrigation, while the remaining 45% is utilized indoors and ultimately conveyed to WRPs. For water utilized in unsewered areas (urban, MWC, and RR), consumptive use is estimated to remain the same but the fraction that would be routed to WRPs in sewered areas is assumed to become return flow through on-site waste disposal; thus 44% is estimated to be consumptively used and 56% is estimated to be return flow in unsewered areas.

In order to estimate the respective fractions of sewered and unsewered municipal-type land uses, influent volumes at WRPs were compared to urban water requirements, and the service areas of sanitation districts were compared to the service areas of municipal water purveyors. Based on those comparisons, approximately 70% of the urban area is estimated to be currently sewered and the remainder is estimated to be served by individual on-site waste disposal systems (septic tanks and leach fields).

then: $\mathbf{Q_{urb}}$ **(sewered)** = 70% x 88.5% $\mathbf{Q_{mi}}$ = 62% $\mathbf{Q_{mi}}$
$\mathbf{Q_{urb}}$ **(unsewered)** = 30% x 88.5% $\mathbf{Q_{mi}}$ = 26.5% $\mathbf{Q_{mi}}$

All municipal-type water use in the basin can then be grouped in categories of sewered or unsewered areas, with the corresponding rates of return flow, consumptive use, and conveyance to the WRPs expressed as percentages of the total M&I water requirement $\mathbf{Q_{mi}}$ as follows:

Municipal-type water use in sewered areas		**Municipal-type water use in unsewered areas***	
11% as return flow	= 6.8% $\mathbf{Q_{mi}}$	56% as return flow	= 21.3% $\mathbf{Q_{mi}}$
44% consumpt. use	= 27.3% $\mathbf{Q_{mi}}$	44% consumpt. use	= 16.7% $\mathbf{Q_{mi}}$
45% to WRP	= 27.9% $\mathbf{Q_{mi}}$	**Total**	**= 38%** $\mathbf{Q_{mi}}$
Total	**= 62%** $\mathbf{Q_{mi}}$		

* sum of 26.5% urban + 4.4% MWC + 7.1% RR from above

As a result, for all urban, MWC, and RR areas, the disposition of water utilized is at the following rates:

Return Flow: (6.8% + 21.3%)$\mathbf{Q_{mi}}$ = 28.1% $\mathbf{Q_{mi}}$
Consumptive Use: (27.3% + 16.7%)$\mathbf{Q_{mi}}$ = 44% $\mathbf{Q_{mi}}$
Conveyance to WRP: 27.9% $\mathbf{Q_{mi}}$

WRP Return Flows - Of the water conveyed to the WRPs, approximately 25% of the influent is lost during treatment at both the Lancaster and Palmdale plants with the remaining 75% available for reuse. Of the 25% lost, return flows to the basin result from treatment pond percolation, estimated previously as 200 afy from Lancaster WRP, 235 afy from Palmdale WRP, and minimal amounts from the Rosamond Community Services District and Edwards AFB WRPs (Appendix G) for a combined estimated return flow of approximately 500 afy.

Then, of the total water estimated to be conveyed to the WRPs (27.9% $\mathbf{Q_{mi}}$):

Losses (including 500 afy return flow) = 27.9% $\mathbf{Q_{mi}}$ x 25% = 7% $\mathbf{Q_{mi}}$
Recycled water available for reuse = 27.9% $\mathbf{Q_{mi}}$ x 75% = 20.9% $\mathbf{Q_{mi}}$

Return Flow Summary - In summary, the municipal and agricultural return flows can be expressed as the following percentages of municipal and agricultural water requirements $\mathbf{Q_{mi}}$ and $\mathbf{Q_{ag}}$:

Agricultural return flow rate, $\mathbf{RF_{ag}}$ = 25% $\mathbf{Q_{ag}}$

Municipal return flow rate, $\mathbf{RF_{mi}}$ = 28.1% $\mathbf{Q_{mi}}$ **+ 500 afy**
(with 20.9% $\mathbf{Q_{mi}}$ available for reuse)

F.3 Scenarios

Recognizing that agricultural and municipal-type land uses contribute different return flow fractions that, in turn, contribute to the sustainable yield of the groundwater basin, it is evident that sustainable yield is not a constant and is, on the other hand, a variable that is dependent on prevailing land use in the basin. Recognizing also that groundwater recharge primarily derives from both natural supplies (i.e. local precipitation and runoff) and supplemental supplies (e.g. local surface water and imported water), it is further evident that sustainable yield is not a constant and is, on the other hand, a variable that is also dependent on prevailing water supplies and utilization of water supplies to meet water requirements and/or to otherwise manage water resources.

To capture the variations in the preceding factors, which are commonly described as part of cultural conditions in a given basin, two sets of sustainable yields were prepared for the AVAA: one set for different mixes of land use under "native" conditions, where only natural recharge is the primary source of sustainable groundwater supply in the basin; and a second set, also for different mixes of land use but under "supplemental" conditions, where natural recharge is augmented by recharge from the use of supplemental water supplies such as has occurred with the importation of SWP water since the 1970's. In both sets of estimated sustainable yield, land use mixes were based on actual conditions as have occurred in recent times: an average for the five year period (1995-1999) immediately preceding the filing of the current adjudication; an average for the last ten years (1996-2005); and in a single recent year (2005). The two sets of sustainable yield estimates are comprised of seven scenarios, four for native conditions and three for supplemental conditions, each of which is described and detailed as follows.

F.3.1 Native Sustainable Yield

As introduced above, native sustainable groundwater yield is the amount of pumping which, under a given set of cultural conditions (e.g. land use), generates return flows that, when combined with only natural recharge, result in no change in groundwater storage. As also introduced above, native sustainable yield is not a constant in that it can vary as a function of differing mixes of land use. Recognizing the evolution of land use practices in the basin over the last several decades, estimates of native sustainable yield are derived as follows for four sets of land use conditions: Scenario 1 - early historical conditions when essentially all land use devoted to agriculture; Scenario 2a - mixed agricultural and municipal-type land use as existed, on average, over the five-year period immediately prior to the filing of the present adjudication, 1995-1999; Scenario 2b - mixed agricultural and municipal-type land use as existed, on average, over the ten-year period 1996-2005; and Scenario 2c - mixed agricultural and municipal-type land use as was present in 2005.

Scenario 1 – Estimated Native Sustainable Yield for Historical (primarily agricultural) Cultural Conditions

For this scenario, prepared to illustrate the approximate sustainable yield when the AVAA was developing and dominated by agricultural land use, the basic equation (F1) can be simplified to

$$\mathbf{NSY_{ag} = NR + RF_{ag}}$$

where: $\mathbf{NSY_{ag}}$ = native sustainable yield for ag-only land use
$\mathbf{NR}$ = natural recharge, as above
$\mathbf{RF_{ag}}$ = return flows from agricultural irrigation

Substituting terms from the Approach above and recognizing that, in this scenario $\mathbf{NSY_{ag}}$ would be just agricultural pumping ($\mathbf{Q_{ag}}$) that would be sustainable,

$$\mathbf{NSY_{ag}} = \mathbf{Q_{ag}} = \mathbf{NR + RF_{ag}}$$

or: $\mathbf{NSY_{ag}} = \mathbf{Q_{ag}} = 60{,}000 + 25\% \mathbf{Q_{ag}}$

then: $\mathbf{NSY_{ag}} = \mathbf{Q_{ag}} = 60{,}000/0.75 =$ **80,000 afy**

Scenario 2 – Estimated Native Sustainable Yield for Mixed Agricultural and M&I Cultural Conditions

For this scenario, prepared to illustrate the approximate sustainable yield when the Valley had developed into land-use mixes that were present in the periods described above, the basic equation (F1) can be expressed as

$$\mathbf{NSY_{mix} = NR + RF_{ag} + RF_{mi}}$$

where: $\mathbf{NSY_{mix}}$ = native sustainable yield for mixed ag and municipal land uses
$\mathbf{NR}$ = natural recharge, as above
$\mathbf{RF_{ag}}$ = return flows from agricultural irrigation
$\mathbf{RF_{mi}}$ = return flows from municipal-type land uses

Substituting terms from the Approach above and recognizing that, in this scenario, $\mathbf{NSY_{mix}}$ would be a combination of agricultural pumping ($\mathbf{Q_{ag}}$) and municipal-type pumping ($\mathbf{Q_{mi}}$) that would be sustainable,

$$\mathbf{NSY_{mix} = Q_{ag} + Q_{mi} = NR + RF_{ag} + RF_{mi}}$$

or: $\mathbf{NSY_{mix} = Q_{ag} + Q_{mi}} = 60{,}000 + 25\% \mathbf{Q_{ag}} + (28.1\% \mathbf{Q_{mi}} + 500)$

simplifying: $75\% \mathbf{Q_{ag}} + 71.9\% \mathbf{Q_{mi}} = 60{,}500$ afy

In order to solve the preceding equation, the agricultural and municipal water requirement percentages were combined into a "weighted" total pumping, denoted as the simplified term **Q** below. The weighting was necessary because the fractions of agricultural and municipal land use vary annually, and the return flow rates associated with each use vary as outlined above. Scenarios 2a, 2b, and 2c were then developed to reflect the prevailing land use (cultural) conditions in the three periods described above: 1995-1999 (Scenario 2a), 1996-2005 (Scenario 2b), and 2005 (Scenario 2c). Each is summarized as follows.

Scenario 2a -1995 - 1999 (land use = 51.9% Ag and 48.1% M&I)

from above, 75% $\mathbf{Q_{ag}}$ + 71.9% $\mathbf{Q_{mi}}$ = 60,500

for this scenario, $\mathbf{Q_{ag}}$ = 51.9% **Q**
$\mathbf{Q_{mi}}$ = 48.1% **Q**

so: (75% x 51.9%) **Q** + (71.9% x 48.1%) **Q** = 60,500 afy

then: 38.9% **Q** + 34.6 **Q** = 60,500 afy

or: 73.5% **Q** = 60,500 afy

then: **Q** = 60,500/0.735 = **82,300 afy**

Scenario 2b -1996 - 2005 (land use = 53.2% Ag and 46.8% M&I)

from above, 75% $\mathbf{Q_{ag}}$ + 71.9% $\mathbf{Q_{mi}}$ = 60,500

for this scenario, $\mathbf{Q_{ag}}$ = 53.2% **Q**
$\mathbf{Q_{mi}}$ = 46.8% **Q**

so: (75% x 53.2%) **Q** + (71.9% x 46.8%) **Q** = 60,500 afy

then: 39.9% **Q** + 33.6% **Q** = 60,500 afy

or: 73.5% **Q** = 60,500 afy

then: **Q** = 60,500/0.735 = **82,300 afy**

Scenario 2c -Year 2005 (land use = 51.5% Ag and 48.5% M&I)

from above, 75% $\mathbf{Q_{ag}}$ + 71.9% $\mathbf{Q_{mi}}$ = 60,500

for this scenario, $\mathbf{Q_{ag}}$ = 51.5% **Q**
$\mathbf{Q_{mi}}$ = 48.5% **Q**

so: (75% x 51.5%) **Q** + (71.9% x 48.5%) **Q** = 60,500 af

then: 38.6% **Q** + 34.9% **Q** = 60,500 af

or: 73.5% **Q** = 60,500 af

then: **Q** = 60,500/0.735 = **82,300 afy**

F.3.2 Sustainable Yield with Native and Supplemental Waters

As introduced above, total sustainable groundwater yield is the amount of pumping which, under a given set of cultural conditions (e.g. land use, water supply, etc.) generates return flows that, when combined with natural recharge plus other recharge that derives from the use of supplemental water, result in no change in groundwater storage. As with the estimates of native sustainable yield above, estimates of sustainable yield for a combination of native and supplemental conditions need to recognize that they are similarly dependent on land and water use practices, including prevailing practices related to how supplemental waters are used in the AVAA and how they thus add groundwater recharge to that which occurs naturally. In this case, of course, sustainable yield estimates are also dependent on the amounts of supplemental water that are used to produce additional groundwater recharge that, in turn, supports additional sustainable yield. Recognizing those factors, estimates of total sustainable yield, and the supplemental sustainable yield attributable to utilization of supplemental waters, were derived for three sets of land use conditions that coincide with those used for native yield estimates above, but when supplemental water was also being used: Scenario 3a - mixed agricultural and municipal-type land use as existed, on average, over the five-year period immediately prior to the filing of the present adjudication, 1995-1999; Scenario 3b - mixed agricultural and municipal-type land use as existed, on average, over the ten-year period 1996-2005; and Scenario 3c - mixed agricultural and municipal-type land use as was present in 2005.

Scenario 3 – Estimated Supplemental Sustainable Yield for Mixed Agriculture and M&I Cultural Conditions

For this scenario, prepared to illustrate the approximate sustainable yield that resulted from the augmentation of native water supplies with supplemental water in the AVAA, and also prepared to illustrate the respective contributions to increased yield by agricultural and municipal-type importations of supplemental water, the basic equations (F1 and F2) can be combined as

$$\mathbf{TSY_{mix} = NSY_{mix} + SSY_{mix}}$$

where:
- $\mathbf{TSY_{mix}}$ = total sustainable yield from native plus supplemental waters for mixed ag. and municipal-type land uses
- $\mathbf{NSY_{mix}}$ = native sustainable yield as derived in Scenario 2 above
- $\mathbf{SSY_{mix}}$ = supplemental sustainable yield derived from use of imported and other supplemental waters for mixed ag and municipal-type land uses

Then inserting components of supplemental sustainable yield into Equation F2 above,

$$\mathbf{SSY_{mix} = R_{sag} + R_{smi} + RF_{sag} + RF_{smi}}$$

where:
- $\mathbf{R_{sag}}$ = recharge from agricultural use of supplemental water (25% of agricultural supplemental water use, $\mathbf{SW_{ag}}$)
- $\mathbf{R_{smi}}$ = recharge from municipal-type uses of supplemental water (28.1% of municipal-type supplemental water use; $\mathbf{SW_{mi}}$)
- $\mathbf{RF_{sag}}$ = return flows from agricultural irrigation using recharge from ag use of supplemental water (25% of $\mathbf{Q_{sag}}$)
- $\mathbf{RF_{smi}}$ = return flows from municipal-type uses of recharge from M&I-type use of supplemental water (28.1% of $\mathbf{Q_{smi}}$)

Recognizing that $\mathbf{SSY_{mix}}$ would be a combination of agricultural pumping ($\mathbf{Q_{sag}}$) and municipal-type pumping ($\mathbf{Q_{mi}}$) that would both derive from the use of supplemental water and be sustainable, and further recognizing that supplemental yield is allocated to the user-types who utilized the imported or other supplemental water,

$$\mathbf{SSY_{mix} = Q_{sag} + Q_{smi} = R_{sag} + R_{smi} + RF_{sag} + RF_{smi}}$$

where:
- $\mathbf{Q_{sag}}$ = agricultural share of supplemental sustainable yield
- $\mathbf{Q_{smi}}$ = municipal-type share of supplemental sustainable yield

and:
$$\mathbf{Q_{sag} = R_{sag} + RF_{sag}}$$
$$\mathbf{Q_{smi} = R_{smi} + RF_{smi}}$$

or:
$$\mathbf{Q_{sag} = R_{sag} + 25\%\ Q_{sag}}$$
$$\mathbf{Q_{smi} = R_{smi} + 28.1\%\ Q_{smi}}$$

simplifying:
$$\mathbf{Q_{sag} = R_{sag}}/0.75$$
$$\mathbf{Q_{smi} = R_{smi}}/0.719$$

and: $\mathbf{SSY_{mix} = Q_{sag} + Q_{smi} = (R_{sag}}/0.75\mathbf{) + (R_{smi}}/0.719)$

Scenario 3a - 1995 - 1999 (land use = 51.9% Ag and 48.1% M&I; average supplemental water deliveries = 19,550 afy Ag and 48,100 afy M&I)

for this scenario: **NSY** = 82,300 afy (from Scenario 2a)
$\mathbf{SW_{ag}}$ = 19,550 afy
$\mathbf{SW_{mi}}$ = 48,100 afy
$\mathbf{R_{sag}}$ = 0.25 $\mathbf{SW_{ag}}$ = 0.25 x 19,550 afy = 4,890 afy
$\mathbf{R_{smi}}$ = 0.281 $\mathbf{SW_{mi}}$ = 0.281 x 48,100 afy = 13,515 afy

then: $\mathbf{Q_{sag}} = \mathbf{R_{sag}}/0.75$
$\mathbf{Q_{sag}}$ = 4,890/0.75 = **6,500 afy**

and: $\mathbf{Q_{smi}} = \mathbf{R_{smi}}/0.719$
$\mathbf{Q_{smi}}$ = 13,515/0.719 = **18,800 afy**

then: $\mathbf{SSY_{mix}} = \mathbf{Q_{sag}} + \mathbf{Q_{smi}}$

= 6,500 afy + 18,800 afy
$\mathbf{SSY_{mix}}$ **= 25,300 afy**

and: $\mathbf{TSY_{mix}} = \mathbf{NSY_{mix}} + \mathbf{SSY_{mix}}$

= 82,300 afy + 25,300 afy
$\mathbf{TSY_{mix}}$ **= 107,600 afy**

Scenario 3b - 1996 - 2005 (land use = 53.2% Ag and 46.8% M&I; average supplemental water deliveries = 16,625 afy Ag and 56,320 afy M&I)

for this scenario: **NSY** = 82,300 afy (from Scenario 2b)
$\mathbf{SW_{ag}}$ = 16,625 afy
$\mathbf{SW_{mi}}$ = 56,320 afy
$\mathbf{R_{sag}}$ = 0.25 $\mathbf{SW_{ag}}$ = 0.25 x 16,625 afy = 4,155 afy
$\mathbf{R_{smi}}$ = 0.281 $\mathbf{SW_{mi}}$ = 0.281 x 56,320 afy = 15,825 afy

then: $\mathbf{Q_{sag}} = \mathbf{R_{sag}}/0.75$
$\mathbf{Q_{sag}}$ = 4,155/0.75 = **5,500 afy**

and: $\mathbf{Q_{smi}} = \mathbf{R_{smi}}/0.719$
$\mathbf{Q_{smi}}$ = 15,825/0.719 = **22,000 afy**

then: $\mathbf{SSY_{mix}} = \mathbf{Q_{sag}} + \mathbf{Q_{smi}}$

= 5,500 afy + 22,000 afy

$\mathbf{SSY_{mix}}$ **= 27,500 afy**

and: $\mathbf{TSY_{mix} = NSY_{mix} + SSY_{mix}}$

= 82,300 afy + 27,500 afy

$\mathbf{TSY_{mix}}$ **= 109,800 afy**

Scenario 3c - Year 2005 (land use = 51.5% Ag and 48.5% M&I; supplemental water deliveries = 9,500 af Ag and 64,000 af M&I)

for this scenario: **NSY** = 82,300 afy (from Scenario 2c)
$\mathbf{SW_{ag}}$ = 9,500 afy
$\mathbf{SW_{mi}}$ = 64,000 afy
$\mathbf{R_{sag}}$ = 0.25 $\mathbf{SW_{ag}}$ = 0.25 x 9,500 afy = 2,375 afy
$\mathbf{R_{smi}}$ = 0.281 $\mathbf{SW_{mi}}$ = 0.281 x 64,000 afy = 17,985 afy

then: $\mathbf{Q_{sag} = R_{sag}}/0.75$
$\mathbf{Q_{sag}}$ = 2,375/0.75 = **3,200 afy**

and: $\mathbf{Q_{smi} = R_{smi}}/0.719$
$\mathbf{Q_{smi}}$ = 17,985/0.719 = **25,000 afy**

then: $\mathbf{SSY_{mix} = Q_{sag} + Q_{smi}}$

= 3,200 afy + 25,000 afy

$\mathbf{SSY_{mix}}$ **= 28,200 afy**

and: $\mathbf{TSY_{mix} = NSY_{mix} + SSY_{mix}}$

= 82,300 afy + 28,200 afy

$\mathbf{TSY_{mix}}$ **= 110,500 afy**

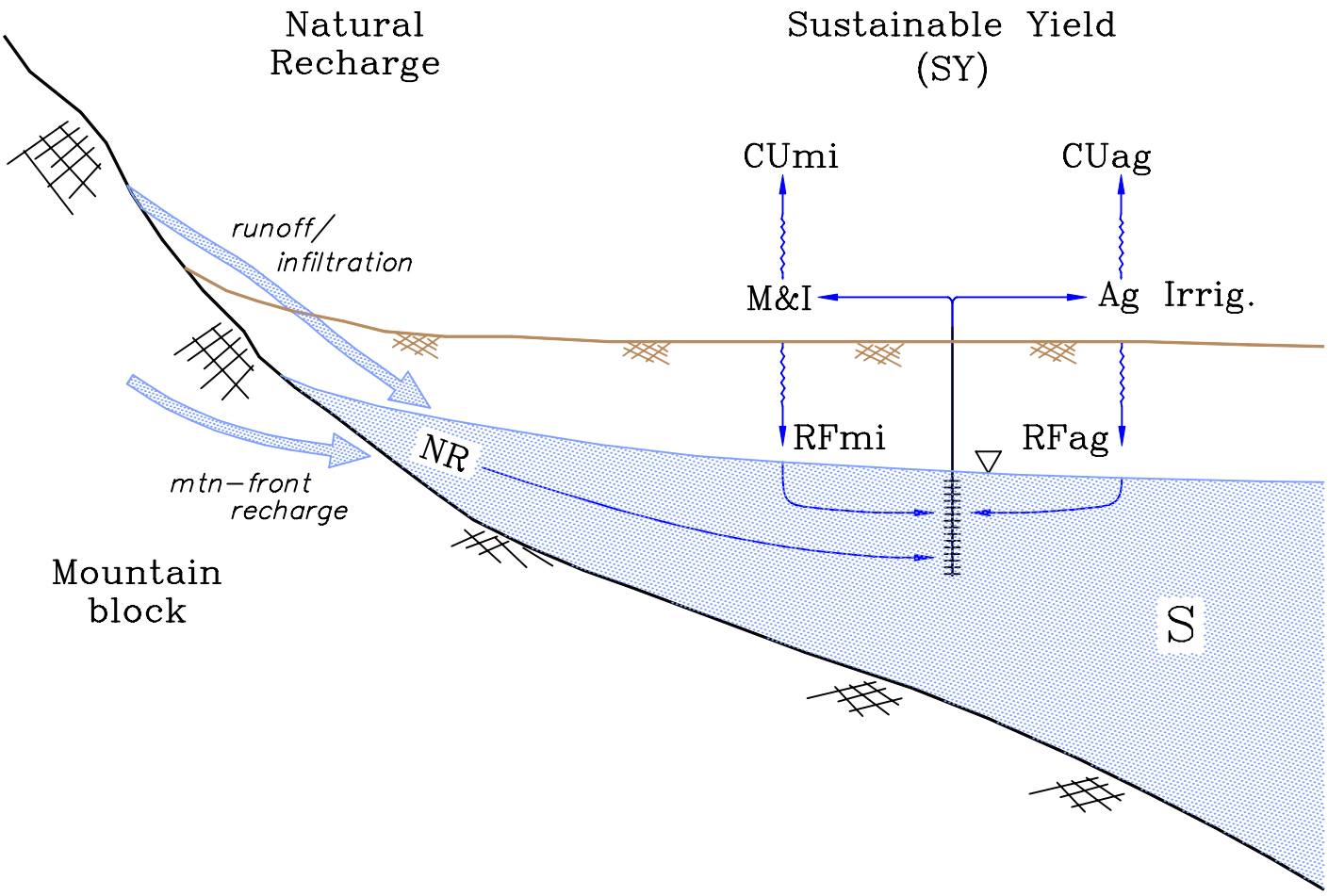
F.4 Summary

As would logically be expected, with the return flow contributions that have derived from the importation of supplemental water, the sustainable yield of the groundwater basin has been increased above native conditions. For the mixes of land use that have occurred since the mid-1990's, native sustainable yield has been about 82,300 afy. Depending on what time period is selected to be representative (recognizing the wide variations in imported water supply and

utilization in the three scenarios described above), total sustainable yield has increased to as much as about 110,000 afy as a result of supplemental water use. Of that increase, again depending on what time period is considered representative, the respective contributions to the increase vary as a result of the respective agricultural and municipal-type uses of supplemental water. For the time periods represented by the scenarios herein, the native and supplemental sustainable yield values are summarized in Table F.4-1; included in the table are the contributions to increased sustainable yield by agriculture and by municipal-type uses as a result of their respective uses of imported water.

Table F.4-1
Sustainable AVAA Groundwater Yield Summary

Scenario	Land Use Period	Native Sustainable Yield (afy)	Supplemental Sustainable Yield (afy)	Total Sustainable Yield (afy)	Contribution to Yield Increase (afy)	
					Ag.	M&I
1	All ag.	80,000	---	---	---	---
2a/3a	1995-1999	82,300	25,300	107,600	6,500	18,800
2b/3b	1996-2005	82,300	27,500	109,800	5,500	22,000
2c/3c	2005	82,300	28,200	110,500	3,200	25,000



Sustainable Yield (SY) = Natural Recharge (NR) + Ag Return Flows (RFag) + M&I Return Flows (RFmi)
(when S = constant over time)

Ag = agricultural irrigation

M&I = municipal and industrial use

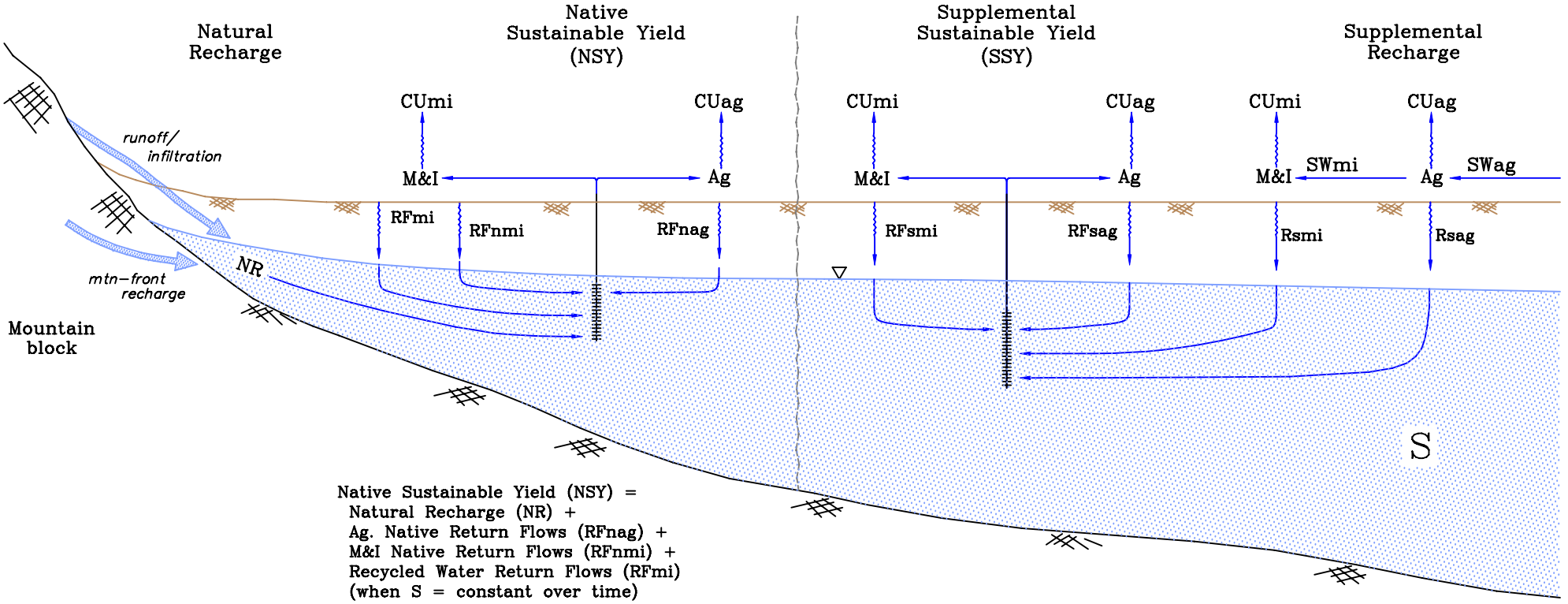
CU = consumptive use

S = groundwater storage

CAD FILE: G:/Projects/Antelope Valley/06-6-075/AV Sustainable Yield Diagram.dwg

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

Figure F.1-1
Schematic Illustration of Sustainable Yield
Antelope Valley Area of Adjudication



Ag = agricultural irrigation
M&I = municipal and industrial use
CU = consumptive use
SW = supplemental water
S = groundwater storage

CAD FILE: G:/Projects/Antelope Valley/06-6-075/AV NST Sustainable Yield Diagram.dwg

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

Figure F.1-2
Schematic Illustration of Native, Supplemental, and Total Sustainable Yield
Antelope Valley Area of Adjudication

APPENDIX B-11

DEPARTMENT OF CONSERVATION LETTER

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DEPARTMENT OF CONSERVATION

Managing California's Working Lands

DIVISION OF LAND RESOURCE PROTECTION

801 K STREET • MS 18-01 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 324-0850 • **FAX** 916 / 327-3430 • **TDD** 916 / 324-2555 • **WEBSITE** conservation.ca.gov

December 31, 2012

Ryan Galeria, Project Manager
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

RE: Los Angeles County Important Farmland status, Antelope Valley area property

Dear Mr. Galeria,

This letter is in response to your request for clarification regarding the Important Farmland status of two properties in the Antelope Valley of Los Angeles County, west of Lancaster, between Avenues I and J, near 90th street. These properties were classified as a combination of Prime Farmland and Farmland of Statewide Importance on the 2010 Important Farmland Map. Your request was to remove the properties from these classifications due to them being out of production for multiple years.

The goal of the Farmland Mapping and Monitoring Program (FMMP) is to document the location and extent of California's agricultural resources so that they may be considered in the planning process. Land use and soil data are combined to create Important Farmland Maps, which are updated every two years.

In order to be removed from the Prime Farmland or Farmland of Statewide Importance category, the land has to have been out of production for three update cycles. FMMP tracks the fallowing history to ensure that land in a crop rotational cycle is not prematurely removed from the agricultural resource base. In reference to the 2010 map, that would mean being out of production from 2006 to 2010.

During our standard map updating process, FMMP identified that the properties in question were fallow in 2008 and 2010, but did not have sufficient documentation of them being fallow dating back to 2006. There had been imagery and site verification of the land being cropped for onions and possibly carrots during the 2002-2004 timeframe. Prior to 2002 these areas were classified in the nonagricultural Other Land category.

The properties' 2010 status therefore is that they are still mapped as Prime Farmland and Farmland of Statewide Importance, but are in their second fallow cycle. If the properties continue to appear as they have in 2008 and 2010, they will be reclassified to Grazing Land on the 2012 edition of the Important Farmland Map for Los Angeles County.

Thank you for your interest in the Important Farmland mapping process. Please contact me at (916) 324-0863 should you have additional questions.

Sincerely,

Molly A. Penberth, Manager
Farmland Mapping and Monitoring Program

APPENDIX B-12

AIRPORT LAND USE COMMISSION COMMENT LETTER

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County of Los Angeles
Regional Planning Commission
Airport Land Use Commission

Commissioners
David W. Louie, Chair
Esther L. Valadez, Vice Chair
Harold V. Helsley
Curt Pedersen
Pat Modugno

August 28, 2013

Carolina Blengini
Los Angeles County Department of Regional Planning
Special Projects Section
320 W. Temple St.
Los Angeles, CA 90012

Dear Ms. Blengini:

SUBJECT: AMERICAN SOLAR GREENWORKS PROJECT AND LANCASTER WAD

The ALUC staff has reviewed the materials submitted for the American Solar Greenworks Project including the Lancaster WAD and offers the following comments:

- In December 1991, the Los Angeles County Regional Planning Commission in its capacity as the Airport Land Use Commission (ALUC) adopted the Airport Land Use Plan (ALUP) for the county's fifteen public use airports. For each airport the ALUC adopted planning boundaries within which certain proposed local actions must be submitted to the ALUC for review. Staff review of the proposed project has determined that the subject property is located within the planning boundaries established for General William J. Fox Airfield Airport Influence Area.

- Pursuant to Policy 2.2.2 of the Review Procedures, subsequent land use development actions that are consistent with applicable, previously reviewed, local plans, ordinances, and regulations are subject to ALUC review only under the conditions indicated in Policies 1.5.2 and 2.3.5. Policies 1.5.2 and 2.3.5 do not apply to this proposed project.

    - The General William J. Fox Airfield Land Use Compatibility Plan was reviewed by the ALUC for consistency with the Los Angeles County General Plan and its components, which included the Antelope Valley Area Plan (2004), and was deemed to be consistent. The proposed solar farm project is part of the Antelope Valley Area Plan (2004). Therefore, pursuant to Policy 2.2.2, ALUC review is not required.

- Once the Draft Environmental Impact Report is released for public review, we welcome the opportunity to provide staff comments on that document.

Should you have any questions, please contact **David McDonald** at dmcdonald@planning.lacounty.gov or (213) 974-6425 between 7:00AM and 6:00PM, Monday through Thursday.

Very truly yours,

Carmen Sainz, Supervising Regional Planner
Community Studies East / Airport Land Use Section

CS:DM

APPENDIX B-13

WILL SERVE LETERS

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HOMER

July 3, 2013

Ryan Galeria
Project Manager
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

Subject: Possible Purchase of Water by Silverado Power

Dear Mr. Galeria:

Thank you for your inquiry regarding water supplies for Silverado Power's ("Silverado") construction projects in the Antelope Valley. As we understand your needs, Silverado will require approximately 550 acre-feet/year of water for a two-year construction period of 2014 to 2015. Furthermore, we understand that Silverado requires that its water supply be available for use from a resource outside of the adjudicated Antelope Valley Groundwater Basin.

Homer, LLC ("Homer") has a supply of surface water that has been imported to the Antelope Valley Groundwater Basin and is stored in the Antelope Valley Water Bank ("AVWB"), west of Rosamond in Kern County. Currently, Homer has 15,000 AF available and would be willing to entertain a possible water supply contract to Silverado for its construction needs. Homer does not hold itself out as providing services to the public and would provide this accommodation to Silverado as a neighboring landowner. The point of delivery would be from one or several wells located within the designated recovery area of the AVWB which is bounded by Rosamond Blvd., 170th St W, 100th St. W, and Avenue A in Kern County. The specific terms and conditions governing the purchase of water by Silverado from Homer would be contained in a detailed, definitive Water Purchase Agreement with Homer.

We look forward to working with and providing service to the Silverado in connection with its service requirements. If you have any questions, please feel free to call me at 323-936-9303.

Sincerely,
Homer, LLC

By _____
Andrew Werner

DRAFT

5700 Wilshire Blvd. Suite 330 Los Angeles CA 90035 P(323) 936-9303 F (323) 930-9114

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lancaster ca
it's positively clear

R. Rex Parris Mayor
Marvin E. Crist Vice Mayor
Ronald D. Smith Council Member
Ken Mann Council Member
Sandra Johnson Council Member
Mark V. Bozigian City Manager

July 22, 2013

Ryan Galeria, Project Manager
Silverado Power
44 Montgomery Street #3065
San Francisco, California 94104

RECYCLED WATER CONDITIONAL WILL SERVE LETTER

The City of Lancaster is willing to provide to North Lancaster Ranch, LLC (User) 135 AFY of recycled water for their project on approximately 240 acres located at the north east corner of Avenue B and 110th Street West (APN: 3262-001-005, 3262-001-006), for the purpose of dust control during construction beginning November 2013.

Recycled water will be provided subject to the following conditions:

1. User will pay all applicable quantity, meter, and connection charges to the City of Lancaster.
2. User understands application must be made to Los Angeles County Sanitation District (LACSD) and the Regional Water Quality Control Board (RWQCB) for recycled water uses, and that approval by the LACSD and RWQCB are required prior to the City being able to provide recycled water. A specific RWQCB permit will need to be applied for and obtained by the User prior to the City being able to provide recycled water.
3. User understands the availability of recycled water is restricted to the amount of water delivered by LACSD and other factors beyond the City's control. The ability to provide water may be limited and may suffer periods of interruption.
4. The delivery location to User will be the nearest above ground connection point to User's Project site. Currently this location is a recycled water hydrant at the intersection of Avenue H and Division Street. The User is responsible for transportation of water to User's Project site.
5. Construction plans for any recycled water facilities are to be prepared by the User's engineer in accordance with the City of Lancaster and Los Angeles County Department of Public Health design requirements and at the Users expense.
6. The recycled water will meet the required Title 22 tertiary treated standards at the LACSD Lancaster Water Reclamation Plant located at approximately Avenue D and Sierra Highway.
7. User will comply with all Federal, State, and local laws pertaining to the use and transportation of recycled water.
8. User will make final application for recycled water with the City of Lancaster by following the City of Lancaster Recycled Water Application Process.

8. User will make final application for recycled water with the City of Lancaster by following the City of Lancaster Recycled Water Application Process.
9. Amount of recycled water available for use will be contingent upon LACSD providing adequate recycled water.
10. Permits for construction may be required from agencies other than the City of Lancaster.
11. Environmental documentation will need to be specific to the proposed use of recycled water on the property.

Should you have any questions please contact Mr. Allen Thompson, Assistant Utility Services Manager, at (661) 945-6896.

Sincerely,

Carlyle S. Workman, PE
Utility Services Manager
Department of Public Works

CSW:JY:cmm

Enclosure: Executed Recycled Water User Agreement

cc: Director of Public Works

SITE: North Lancaster Ranch **LOCATION:** West Avenue B at 110th Street West

THIS RECYCLED WATER USE AGREEMENT (this "Agreement") is entered into as of May 29, 2013 by and between the **CITY OF LANCASTER** (the "City") and North Lancaster Ranch LLC (the "User").

Preamble

The use of recycled water is governed by several agencies. The Sanitation District produces recycled water, holds the Master Recycling Permit, and holds the Waste Discharge Permit. The California Regional Water Quality Control Board, Lahontan Region, issues the Master Recycling Permit and the Waste Discharge Permit. The California State Department of Public Health is responsible for protecting public health and has delegated certain responsibilities to the Los Angeles County Department of Public Health. The Los Angeles County Department of Public Health oversees cross connection control and other aspects of the use of recycled water. The City has contracted with the Sanitation District to purchase recycled water for distribution to users.

Agreement

NOW, THEREFORE, the parties hereto agree as follows:

1. Definitions. For the purpose of this Agreement, the following definitions shall apply:

"Authorized Recycled Water Use Site" or **"Authorized Site"** is a site authorized for use of recycled water under a Master Recycling Permit. The use of recycled water and the site location must comply with permit conditions.

"Master Recycling Permit" is a permit issued to a supplier or a distributor, or both, of Recycled Water, which includes waste discharge requirements prescribed pursuant to Section 13263 and water recycling requirements pursuant to Section 13523.1 of the California Water Code.

"Recycled Water" is water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur, and is therefore considered a valuable resource.

"**Producer**" is the Sanitation District. The City has entered into an agreement with the Producer to purchase Recycled Water to resell to its customers.

"Sanitation District" means Los Angeles County Sanitation District No. 14.

"Site Supervisor" is an individual designated by the User to provide liaison with the City and other agencies as required. A Site Supervisor is trained and responsible for carrying out any requirements of the City and other regulating agencies, is responsible for the operation and maintenance of the recycled water system, and is charged with preventing violations of the laws, rules, and regulations governing the use of recycled water.

"User" includes the person or other entity to which the City distributes Recycled Water pursuant to this Agreement (including heirs, successors and assigns).

"Waste Discharge Requirements" are issued by the California Regional Water Quality Control Board, Lahontan Region, to the Sanitation District, concerning the discharge of recycled water into the environment.

"Water Recycling Criteria" or **"Uniform Statewide Reclamation Criteria"** are the criteria established by the California Department of Public Health generally dealing with the levels of constituents of Recycled Water, and the means for assurance of reliability under the design concept, which will result in safe Recycled Water from the standpoint of public health. The criteria are established pursuant to Section 13521 of the California Water Code and are contained in Chapter 3 of Division 4 of Title 22 of the California Code of Regulations.

2. User's Obligations.

a. User agrees to purchase recycled water from the City for a suitable use on the Authorized Recycled Water Use Site controlled by the User.

b. User agrees to follow the rules and regulations, including any future amendments thereto, for the use of Recycled Water as established by the City and/or Sanitation District. User also agrees to comply with the requirements of the Waste Discharge Permit issued by the California Regional Water Quality Control Board, Lahontan Regional, to the Sanitation District. User shall keep and maintain a current copy of each of the documents described in this paragraph on the Authorized Recycled Water Use Site.

c. User agrees to permit all regulatory agencies (including, without limitation, the City, Sanitation District, Los Angeles County Department of Public Health, California State Department of Public Health, and/or California Regional Water Quality Control Board, Lahontan Region), producers, and distributors involved with the project access to the Authorized Recycled Water Use Site for the purpose of inspection.

d. The City has designated a Site Supervisor who shall be responsible for the recycled water system under the City's control. The User's staff who will be in direct operation with or directly use recycled water shall be trained by the Site Supervisor in the proper use of recycled water.

e. User shall use Recycled Water in conformity with all applicable laws, including, without limitation, all applicable state laws and/or regulations, the permits issued by the California Regional Water Quality Control Board, Lahontan Region, any applicable regulation or ordinance of suppliers of Recycled Water to the City, and all other applicable federal, state or local laws, regulations or ordinances.

f. User shall ensure that its operations and maintenance staff and the Site Supervisor receive appropriate training related to the proper operation of recycling facilities, worker protection, emergency response and compliance with applicable laws and regulations.

3. Engineering Report. The Sanitation District has been issued a Master Permit for Recycled Water use that covers the City and for which an engineering report has been prepared. If modifications to the existing engineer's report are required and/or a new engineer's report is required, such modified or new report must be approved by the appropriate agencies prior to delivery of Recycled Water to the Authorized Recycled Water Use Site.

4. **Monitoring and Notification.** User is responsible for keeping records of the amount of Recycled Water used, (and for landscape irrigation, Recycled Water application rates, and supplemental nitrogen fertilizer application rates) and shall provide such records (or copies thereof) to the City on a monthly basis and any other regulatory agency upon request.

User agrees to notify the City in the event User experiences a spill of Recycled Water that exceeds fifty thousand (50,000) gallons, as required by Section 13529.2 of the California Water Code or such lesser quantity as it may from time to time be legally required to be reported. Such notification shall be by telephone within twenty-four (24) hours of knowledge of the spill, with a written report to follow within two (2) business days. Such written report must be provided by both telephone facsimile and electronic mail to the City Utility Services Manager or other designated person. Spills below 50,000 gallons but above the incidental runoff volumes shall also be reported to the City. Pursuant to the State Water Resources Control Board, incidental runoff refers to small amounts of runoff from intended Recycled Water use areas, over-spray from sprinklers that drifts out of the intended use area, and overflows during storms of ponds that contain recycled water.

5. **Price for Recycled Water.** The rate for Recycled Water shall be set from time to time by the City. Recycled Water use will be billed monthly and is payable within thirty (30) days of the invoice date.

6. **Term of the agreement**. The term of this Agreement shall be for ninety (90) days and shall renew automatically in thirty (30) day increments thereafter unless terminated as provided below.

7. **Termination of the agreement.** This Agreement may be terminated by either party on thirty (30) days written notice.

8. **Liability for Fine or Penalty.** User understands and acknowledges that the City has entered into an agreement with the Sanitation District, pursuant to which the City has agreed to reimburse the Sanitation District for certain fines and/or penalties imposed against the Sanitation District. Specifically, in the event the Chief Engineer of the Sanitation District determines, based "upon substantial evidence," that City is the party responsible for any action resulting in a fine or penalty against the Sanitation District, the City has agreed to reimburse the Sanitation District for the total amount of any such fine or penalty within thirty (30) business days of receiving notice thereof. In the event the City determines, based "upon substantial evidence," that the User is the responsible party for any action or inaction that results in the City being obligated to reimburse a fine or penalty pursuant to the terms of its agreement with the Sanitation District, the City shall send notice thereof to the User and the User shall, within thirty (30) business days of the date of the City's notice, reimburse the City the total amount of such fine or penalty.

9. **Release of Liability.** User is aware that there may be instances when the delivery of Recycled Water is suspended by the City, Sanitation District or other Recycled Water supplier. The User releases the City, Sanitation District, any other supplier of Recycled Water to the City's Recycled Water distribution system and Los Angeles County Water Works District No. 40 from all liability to User and User's principals, employees, agents, representatives, guardians, successors, assigns, heirs, children and next of kin for all liability, claims, damages or demands for personal injury, death or property damage, arising from or relating to this Agreement or an interruption or suspension of the Recycled Water supply. User bears sole responsibility for any loss.

10. Indemnification. User shall indemnify, defend and hold harmless the City, Sanitation District, and all of their respective officers, directors, employees, agents and representatives against all liability, demands, claims, costs, losses, damages, recoveries, settlements, and expenses, including, without limitation, claims based in tort or for personal injury (including interest, penalties, fines, attorney fees, expert witness fees, and accounting fees) incurred by the City and/or Sanitation District, known or unknown, contingent or otherwise, directly or indirectly arising from or related to the acts or omissions of User and/or its officers, directors, shareholders, employees, agents, representatives, contractors, subcontractors, tenants, subtenants, and invitees with respect to any of the following: (a) the use of Recycled Water provided by the City; (b) any personal injury (including wrongful death) or property damage (real or personal) arising from or related to Recycled Water provided to the User by the City; (c) any lawsuit brought or threatened, settlement reached, or governmental order relating to the Recycled Water provided to the User by the City; (d) any violations of laws, orders, regulations requirements, or demands of government authorities, or any reasonable policies or requirements of the City, that are based on or in any way related to the use of Recycled Water, including without limitation attorney and consultant fees, expert witness fees, investigation and laboratory fees, court costs, and litigation expenses.

The undersigned individuals or entities have knowledge of and consent to the requirements, rules, and responsibilities regarding the use of Recycled Water (reclaimed water) distributed by the City, as set forth in the *Design Standards Technical Memorandum*, the *Recycled Water User Manual* developed by the Los Angeles County Recycled Water Advisory Committee in 2005 and the *Recycled Water Users Handbook District Nos. 14 and 20* (2008). By executing this Agreement, the User agrees to comply with the guidelines, standards and requirements set forth in the foregoing publications and further agrees to comply with the terms and conditions set forth herein. By executing this Agreement, the City consents to the normal operation of the User's Recycled Water system, subject to the terms and conditions set forth herein.

USER:

Date: May 29, 2013

Signature: _____
Name (Print): Ryan Galeria
Address: 44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

CITY:

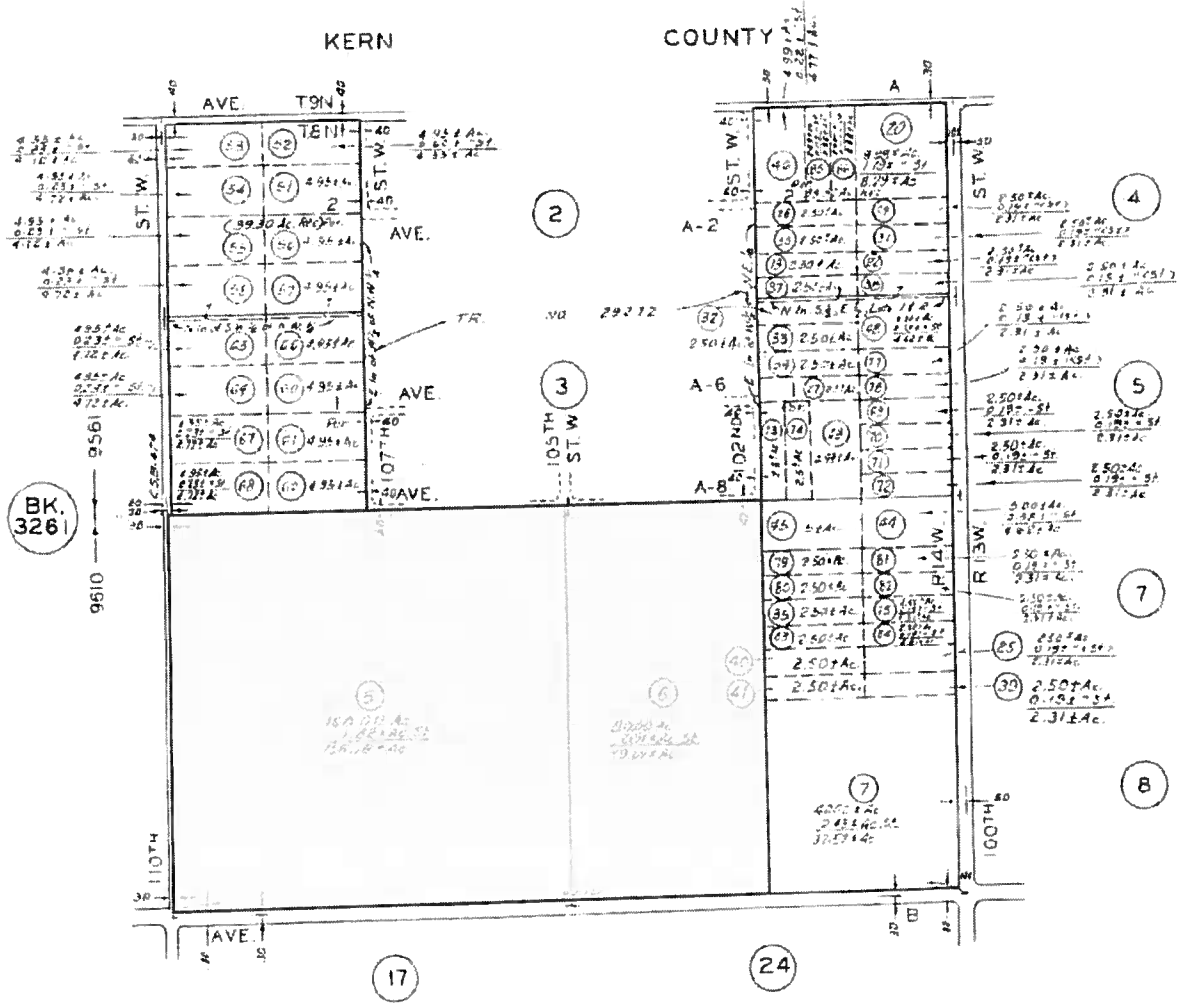
CITY OF LANCASTER

Date: July 16, 2013

By: _____
Name (Print): Carlyle S. Workman, P.E.
Title: Utility Services Manager
City of Lancaster

3262 | 1

SCALE 1" = 800'



CODE
9610
9561

FOR PREV. ASSM'T SEE:
3221 - 1

T. 8 N., R. 14 W.

ASSESSOR'S MAP
COUNTY OF LOS ANGELES, CALIF.

CITY OF LANCASTER RECYCLED WATER SYSTEM ✓
WILL SERVE APPLICATION FORM

Please complete the information requested below in order for the City to determine the availability of Recycled Water for a specific project

Date of Request:	**Owner/Developer**	**Owner/Developer Representative (or) Engineering Firm (if applicable)**
Company Name	North Lancaster Ranch LLC	Silverado Power
Contact Person	Ryan Galeria	Ryan Galeria
Mailing Address	44 Montgomery St, Ste. 3065	44 Montgomery St, Ste. 3065
City, State, Zip	San Francisco, CA 94104	San Francisco, CA 94104
Phone	415-692-7726	415-692-7726
Fax	415-362-4001	415-362-4001
Email Address	ryan@silveradopower.com	ryan@silveradopower.com

Parcel/Project

Requesting Party: City, County, Owner/Rep	Owner
Assessor Parcel Number(s)	3262-001-005, 3262-001-006
Situs Address	West Avenue B at 110th Street West
Parcel Acreage in Acres	240
Plan Reference: Tract, Parcel Map, Plot Plan, Other	Parcel map
Number of Lots	N/A
Zoning:	A-1: Light Agricultural Zone, Zone cha
City, County, Project Name, or Permit Reference	Los Angeles County, North Lancaster Ran

Recycled Water Flow Requirements			
Estimated Recycled Water Use in Acre Feet per Year	135	AFY	→ 0.12 MGD
Estimated peak demand in Gallons Per Day	325,851	GPD	40, 3000-gal. trucks/day
Required Pressure at the Street Connection in PSI	N/A	PSI	
Estimated Date of Connection (mm/dd/yyyy)	11/1/2013		
Is the Property Currently Served by Los Angeles County Water Works?	Yes	No	

Fire Flow Requirements	**Water Service (Indicate Below) Per Table "A" attached**
LACFD Fire Flow Requirements/GPM	Meter Size: Circle Size(s) Required
No. of Public Hydrants _____	1" 1-1/2" 2" 3" 4" Other _____
No. of On-site Hydrants _____	Meter Size: Portable/Temporary Circle Size(s) Required
Duration in Hours _____	1" 1-1/2" 2" 2-1/2" 3" 4" Other
Flow Requirement in GPM	

Return application form to City of Lancaster Utility Services Division, 615 West Avenue H, Lancaster, CA 93534. Or fax to (661) 723-6221 or return by email to sdassler@cityoflancasterca.org. Questions, please contact Steve Dassler at (661) 945-6863

TABLE "A"

Recycled Water Meter Size Selection

Meter Size	Maximum Rated Flow in GPM of Service Connection and Meter Installation
1	50
1-1/2	100
2	160
2-1/2	200
3	315
4	500
6	1,000.00
8	1,600.00
10	2,300.00
12	3,000.00

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lancaster ca
it's positively clear

R. Rex Parris Mayor
Marvin E. Crist Vice Mayor
Ronald D. Smith Council Member
Ken Mann Council Member
Sandra Johnson Council Member
Mark V. Bozigian City Manager

July 22, 2013

Ryan Galeria, Project Manager
Silverado Power
44 Montgomery Street #3065
San Francisco, California 94104

RECYCLED WATER CONDITIONAL WILL SERVE LETTER

The City of Lancaster is willing to provide to Western Antelope Blue Sky Ranch, LLC (User) 127 AFY of recycled water for their project on approximately 157 acres located at the north west corner of Avenue K and 110th Street West (APN: 3267-015-001), for the purpose of dust control during construction beginning October 2013.

Recycled water will be provided subject to the following conditions:

1. User will pay all applicable quantity, meter, and connection charges to the City of Lancaster.
2. User understands application must be made to Los Angeles County Sanitation District (LACSD) and the Regional Water Quality Control Board (RWQCB) for recycled water uses, and that approval by the LACSD and RWQCB are required prior to the City being able to provide recycled water. A specific RWQCB permit will need to be applied for and obtained by the User prior to the City being able to provide recycled water.
3. User understands the availability of recycled water is restricted to the amount of water delivered by LACSD and other factors beyond the City's control. The ability to provide water may be limited and may suffer periods of interruption.
4. The delivery location to User will be the nearest above ground connection point to User's Project site. Currently this location is a recycled water hydrant at the intersection of Avenue H and Division Street. The User is responsible for transportation of water to User's Project site.
5. Construction plans for any recycled water facilities are to be prepared by the User's engineer in accordance with the City of Lancaster and Los Angeles County Department of Public Health design requirements and at the Users expense.
6. The recycled water will meet the required Title 22 tertiary treated standards at the LACSD Lancaster Water Reclamation Plant located at approximately Avenue D and Sierra Highway.
7. User will comply with all Federal, State, and local laws pertaining to the use and transportation of recycled water.
8. User will make final application for recycled water with the City of Lancaster by following the City of Lancaster Recycled Water Application Process.

8. User will make final application for recycled water with the City of Lancaster by following the City of Lancaster Recycled Water Application Process.
9. Amount of recycled water available for use will be contingent upon LACSD providing adequate recycled water.
10. Permits for construction may be required from agencies other than the City of Lancaster.
11. Environmental documentation will need to be specific to the proposed use of recycled water on the property.

Should you have any questions please contact Mr. Allen Thompson, Assistant Utility Services Manager, at (661) 945-6896.

Sincerely,

Carlyle S. Workman, PE
Utility Services Manager
Department of Public Works

CSW:JY:cmm

Enclosure: Executed Recycled Water User Agreement

cc: Director of Public Works

SITE: Western Antelope Blue Sky Ranch **LOCATION:** West Avenue K at 110th Street West

THIS RECYCLED WATER USE AGREEMENT (this "Agreement") is entered into as of May 29, 2013 by and between the **CITY OF LANCASTER** (the "City") and Western Antelope Blue Sky Ranch LLC (the "User").

Preamble

The use of recycled water is governed by several agencies. The Sanitation District produces recycled water, holds the Master Recycling Permit, and holds the Waste Discharge Permit. The California Regional Water Quality Control Board, Lahontan Region, issues the Master Recycling Permit and the Waste Discharge Permit. The California State Department of Public Health is responsible for protecting public health and has delegated certain responsibilities to the Los Angeles County Department of Public Health. The Los Angeles County Department of Public Health oversees cross connection control and other aspects of the use of recycled water. The City has contracted with the Sanitation District to purchase recycled water for distribution to users.

Agreement

NOW, THEREFORE, the parties hereto agree as follows:

1. Definitions. For the purpose of this Agreement, the following definitions shall apply:

"Authorized Recycled Water Use Site" or **"Authorized Site"** is a site authorized for use of recycled water under a Master Recycling Permit. The use of recycled water and the site location must comply with permit conditions.

"Master Recycling Permit" is a permit issued to a supplier or a distributor, or both, of Recycled Water, which includes waste discharge requirements prescribed pursuant to Section 13263 and water recycling requirements pursuant to Section 13523.1 of the California Water Code.

"Recycled Water" is water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur, and is therefore considered a valuable resource.

"**Producer**" is the Sanitation District. The City has entered into an agreement with the Producer to purchase Recycled Water to resell to its customers.

"Sanitation District" means Los Angeles County Sanitation District No. 14.

"Site Supervisor" is an individual designated by the User to provide liaison with the City and other agencies as required. A Site Supervisor is trained and responsible for carrying out any requirements of the City and other regulating agencies, is responsible for the operation and maintenance of the recycled water system, and is charged with preventing violations of the laws, rules, and regulations governing the use of recycled water.

"User" includes the person or other entity to which the City distributes Recycled Water pursuant to this Agreement (including heirs, successors and assigns).

"Waste Discharge Requirements" are issued by the California Regional Water Quality Control Board, Lahontan Region, to the Sanitation District, concerning the discharge of recycled water into the environment.

"Water Recycling Criteria" or **"Uniform Statewide Reclamation Criteria"** are the criteria established by the California Department of Public Health generally dealing with the levels of constituents of Recycled Water, and the means for assurance of reliability under the design concept, which will result in safe Recycled Water from the standpoint of public health. The criteria are established pursuant to Section 13521 of the California Water Code and are contained in Chapter 3 of Division 4 of Title 22 of the California Code of Regulations.

2. User's Obligations.

a. User agrees to purchase recycled water from the City for a suitable use on the Authorized Recycled Water Use Site controlled by the User.

b. User agrees to follow the rules and regulations, including any future amendments thereto, for the use of Recycled Water as established by the City and/or Sanitation District. User also agrees to comply with the requirements of the Waste Discharge Permit issued by the California Regional Water Quality Control Board, Lahontan Regional, to the Sanitation District. User shall keep and maintain a current copy of each of the documents described in this paragraph on the Authorized Recycled Water Use Site.

c. User agrees to permit all regulatory agencies (including, without limitation, the City, Sanitation District, Los Angeles County Department of Public Health, California State Department of Public Health, and/or California Regional Water Quality Control Board, Lahontan Region), producers, and distributors involved with the project access to the Authorized Recycled Water Use Site for the purpose of inspection.

d. The City has designated a Site Supervisor who shall be responsible for the recycled water system under the City's control. The User's staff who will be in direct operation with or directly use recycled water shall be trained by the Site Supervisor in the proper use of recycled water.

e. User shall use Recycled Water in conformity with all applicable laws, including, without limitation, all applicable state laws and/or regulations, the permits issued by the California Regional Water Quality Control Board, Lahontan Region, any applicable regulation or ordinance of suppliers of Recycled Water to the City, and all other applicable federal, state or local laws, regulations or ordinances.

f. User shall ensure that its operations and maintenance staff and the Site Supervisor receive appropriate training related to the proper operation of recycling facilities, worker protection, emergency response and compliance with applicable laws and regulations.

3. Engineering Report. The Sanitation District has been issued a Master Permit for Recycled Water use that covers the City and for which an engineering report has been prepared. If modifications to the existing engineer's report are required and/or a new engineer's report is required, such modified or new report must be approved by the appropriate agencies prior to delivery of Recycled Water to the Authorized Recycled Water Use Site.

4. **Monitoring and Notification.** User is responsible for keeping records of the amount of Recycled Water used, (and for landscape irrigation, Recycled Water application rates, and supplemental nitrogen fertilizer application rates) and shall provide such records (or copies thereof) to the City on a monthly basis and any other regulatory agency upon request.

User agrees to notify the City in the event User experiences a spill of Recycled Water that exceeds fifty thousand (50,000) gallons, as required by Section 13529.2 of the California Water Code or such lesser quantity as it may from time to time be legally required to be reported. Such notification shall be by telephone within twenty-four (24) hours of knowledge of the spill, with a written report to follow within two (2) business days. Such written report must be provided by both telephone facsimile and electronic mail to the City Utility Services Manager or other designated person. Spills below 50,000 gallons but above the incidental runoff volumes shall also be reported to the City. Pursuant to the State Water Resources Control Board, incidental runoff refers to small amounts of runoff from intended Recycled Water use areas, over-spray from sprinklers that drifts out of the intended use area, and overflows during storms of ponds that contain recycled water.

5. **Price for Recycled Water.** The rate for Recycled Water shall be set from time to time by the City. Recycled Water use will be billed monthly and is payable within thirty (30) days of the invoice date.

6. **Term of the agreement**. The term of this Agreement shall be for ninety (90) days and shall renew automatically in thirty (30) day increments thereafter unless terminated as provided below.

7. **Termination of the agreement.** This Agreement may be terminated by either party on thirty (30) days written notice.

8. **Liability for Fine or Penalty.** User understands and acknowledges that the City has entered into an agreement with the Sanitation District, pursuant to which the City has agreed to reimburse the Sanitation District for certain fines and/or penalties imposed against the Sanitation District. Specifically, in the event the Chief Engineer of the Sanitation District determines, based "upon substantial evidence," that City is the party responsible for any action resulting in a fine or penalty against the Sanitation District, the City has agreed to reimburse the Sanitation District for the total amount of any such fine or penalty within thirty (30) business days of receiving notice thereof. In the event the City determines, based "upon substantial evidence," that the User is the responsible party for any action or inaction that results in the City being obligated to reimburse a fine or penalty pursuant to the terms of its agreement with the Sanitation District, the City shall send notice thereof to the User and the User shall, within thirty (30) business days of the date of the City's notice, reimburse the City the total amount of such fine or penalty.

9. **Release of Liability.** User is aware that there may be instances when the delivery of Recycled Water is suspended by the City, Sanitation District or other Recycled Water supplier. The User releases the City, Sanitation District, any other supplier of Recycled Water to the City's Recycled Water distribution system and Los Angeles County Water Works District No. 40 from all liability to User and User's principals, employees, agents, representatives, guardians, successors, assigns, heirs, children and next of kin for all liability, claims, damages or demands for personal injury, death or property damage, arising from or relating to this Agreement or an interruption or suspension of the Recycled Water supply. User bears sole responsibility for any loss.

10. Indemnification. User shall indemnify, defend and hold harmless the City, Sanitation District, and all of their respective officers, directors, employees, agents and representatives against all liability, demands, claims, costs, losses, damages, recoveries, settlements, and expenses, including, without limitation, claims based in tort or for personal injury (including interest, penalties, fines, attorney fees, expert witness fees, and accounting fees) incurred by the City and/or Sanitation District, known or unknown, contingent or otherwise, directly or indirectly arising from or related to the acts or omissions of User and/or its officers, directors, shareholders, employees, agents, representatives, contractors, subcontractors, tenants, subtenants, and invitees with respect to any of the following: (a) the use of Recycled Water provided by the City; (b) any personal injury (including wrongful death) or property damage (real or personal) arising from or related to Recycled Water provided to the User by the City; (c) any lawsuit brought or threatened, settlement reached, or governmental order relating to the Recycled Water provided to the User by the City; (d) any violations of laws, orders, regulations requirements, or demands of government authorities, or any reasonable policies or requirements of the City, that are based on or in any way related to the use of Recycled Water, including without limitation attorney and consultant fees, expert witness fees, investigation and laboratory fees, court costs, and litigation expenses.

The undersigned individuals or entities have knowledge of and consent to the requirements, rules, and responsibilities regarding the use of Recycled Water (reclaimed water) distributed by the City, as set forth in the *Design Standards Technical Memorandum*, the *Recycled Water User Manual* developed by the Los Angeles County Recycled Water Advisory Committee in 2005 and the *Recycled Water Users Handbook District Nos. 14 and 20* (2008). By executing this Agreement, the User agrees to comply with the guidelines, standards and requirements set forth in the foregoing publications and further agrees to comply with the terms and conditions set forth herein. By executing this Agreement, the City consents to the normal operation of the User's Recycled Water system, subject to the terms and conditions set forth herein.

USER:

Date: May 29, 2013

Signature: _____
Name (Print): Ryan Galeria
Address: 44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

CITY:

CITY OF LANCASTER

Date: July 16, 2013

By: _____
Name (Print): Carlyle S. Workman, P.E.
Title: Utility Services Manager
City of Lancaster

3267 | 15

SCALE 1" = 400'

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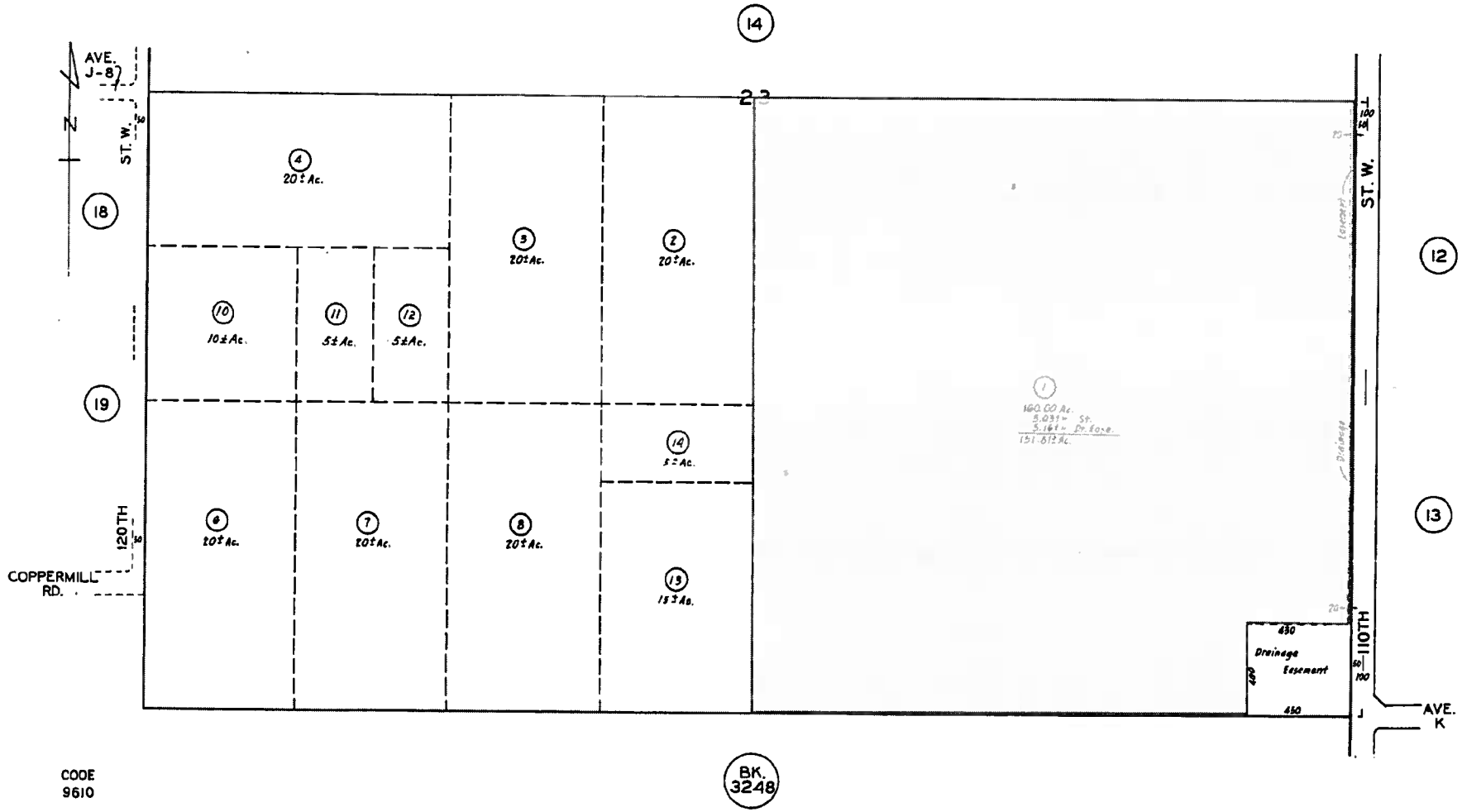

CODE
9610

FOR PREV. ASSM'T SEE:
3222-16

T. 7N., R. 14W.

ASSESSOR'S MAP
COUNTY OF LOS ANGELES, CALIF.

CITY OF LANCASTER RECYCLED WATER SYSTEM
WILL SERVE APPLICATION FORM

Please complete the information requested below in order for the City to determine the availability of Recycled Water for a specific project

Date of Request:	Owner/Developer	Owner/Developer Representative (or) Engineering Firm (if applicable)
Company Name	Western Antelope Blue Sky Ranch LLC	Silverado Power
Contact Person	Ryan Galeria	Ryan Galeria
Mailing Address	44 Montgomery St, Ste. 3065	44 Montgomery St, Ste. 3065
City, State, Zip	San Francisco, CA 94104	San Francisco, CA 94104
Phone	415-692-7726	415-692-7726
Fax	415-362-4001	415-362-4001
Email Address	ryan@silveradopower.com	ryan@silveradopower.com

Parcel/Project

Requesting Party: City, County, Owner/Rep	Owner
Assessor Parcel Number(s)	3267-015-001
Situs Address	West Avenue K at 110th Street West
Parcel Acreage in Acres	157
Plan Reference: Tract, Parcel Map, Plot Plan, Other	Parcel Map
Number of Lots	N/A
Zoning:	A-2: Heavy Agricultural Zone
City, County, Project Name, or Permit Reference	Los Angeles County, Western Antelope Blue Sky Ranch project, EIR in Process

Recycled Water Flow Requirements		
Estimated Recycled Water Use in Acre Feet per Year	127	AFY
Estimated peak demand in Gallons Per Day	651,702	GPD
Required Pressure at the Street Connection in PSI	N/A	PSI
Estimated Date of Connection (mm/dd/yyyy)	10/1/2013	
Is the Property Currently Served by Los Angeles County Water Works?	Yes	No

Fire Flow Requirements		Water Service (Indicate Below) Per Table "A" attached
LACFD Fire Flow Requirements/GPM		Meter Size: Circle Size(s) Required
No. of Public Hydrants		1" 1-1/2" 2" 3" 4" Other
No. of On-site Hydrants		Meter Size: Portable/Temporary Circle Size(s) Required
Duration in Hours		1" 1-1/2" 2" 2-1/2" 3" 4" Other
Flow Requirement in GPM		

Return application form to City of Lancaster Utility Services Division, 615 West Avenue H, Lancaster, CA 93534. Or fax to (661) 723-6221 or return by email to sdassler@cityoflancasterca.org. Questions, please contact Steve Dassler at (661) 945-6863

TABLE "A"

Recycled Water Meter Size Selection

Meter Size	Maximum Rated Flow in GPM of Service Connection and Meter Installation
1	50
1-1/2	100
2	160
2-1/2	200
3	315
4	500
6	1,000.00
8	1,600.00
10	2,300.00
12	3,000.00

lancaster ca
it's positively clear

R. Rex Parris Mayor
Marvin E. Crist Vice Mayor
Ronald D. Smith Council Member
Ken Mann Council Member
Sandra Johnson Council Member
Mark V. Bozigian City Manager

July 22, 2013

Ryan Galeria, Project Manager
Silverado Power
44 Montgomery Street #3065
San Francisco, California 94104

RECYCLED WATER CONDITIONAL WILL SERVE LETTER

The City of Lancaster is willing to provide to American Solar Greenworks, LLC (User) 110 AFY of recycled water for their project on approximately 130 acres located at the south east corner of Avenue G and 70th Street West (APN: 3268-018-002, 3268-018-035, 3268-018-036), for the purpose of dust control during construction beginning April 2014.

Recycled water will be provided subject to the following conditions:

1. User will pay all applicable quantity, meter, and connection charges to the City of Lancaster.
2. User understands application must be made to Los Angeles County Sanitation District (LACSD) and the Regional Water Quality Control Board (RWQCB) for recycled water uses, and that approval by the LACSD and RWQCB are required prior to the City being able to provide recycled water. A specific RWQCB permit will need to be applied for and obtained by the User prior to the City being able to provide recycled water.
3. User understands the availability of recycled water is restricted to the amount of water delivered by LACSD and other factors beyond the City's control. The ability to provide water may be limited and may suffer periods of interruption.
4. The delivery location to User will be the nearest above ground connection point to User's Project site. Currently this location is a recycled water hydrant at the intersection of Avenue H and Division Street. The User is responsible for transportation of water to User's Project site.
5. Construction plans for any recycled water facilities are to be prepared by the User's engineer in accordance with the City of Lancaster and Los Angeles County Department of Public Health design requirements and at the Users expense.
6. The recycled water will meet the required Title 22 tertiary treated standards at the LACSD Lancaster Water Reclamation Plant located at approximately Avenue D and Sierra Highway.
7. User will comply with all Federal, State, and local laws pertaining to the use and transportation of recycled water.
8. User will make final application for recycled water with the City of Lancaster by following the City of Lancaster Recycled Water Application Process.

8. User will make final application for recycled water with the City of Lancaster by following the City of Lancaster Recycled Water Application Process.
9. Amount of recycled water available for use will be contingent upon LACSD providing adequate recycled water.
10. Permits for construction may be required from agencies other than the City of Lancaster.
11. Environmental documentation will need to be specific to the proposed use of recycled water on the property.

Should you have any questions please contact Mr. Allen Thompson, Assistant Utility Services Manager, at (661) 945-6896.

Sincerely,

Carlyle S. Workman, PE
Utility Services Manager
Department of Public Works

CSW:JY:cmm

Enclosure: Executed Recycled Water User Agreement

cc: Director of Public Works

SITE: American Solar Greenworks LLC **LOCATION:** West Avenue G at 70th Street West

THIS RECYCLED WATER USE AGREEMENT (this "Agreement") is entered into as of May 29, 2013 by and between the **CITY OF LANCASTER** (the "City") and American Solar Greenworks LLC (the "User").

Preamble

The use of recycled water is governed by several agencies. The Sanitation District produces recycled water, holds the Master Recycling Permit, and holds the Waste Discharge Permit. The California Regional Water Quality Control Board, Lahontan Region, issues the Master Recycling Permit and the Waste Discharge Permit. The California State Department of Public Health is responsible for protecting public health and has delegated certain responsibilities to the Los Angeles County Department of Public Health. The Los Angeles County Department of Public Health oversees cross connection control and other aspects of the use of recycled water. The City has contracted with the Sanitation District to purchase recycled water for distribution to users.

Agreement

NOW, THEREFORE, the parties hereto agree as follows:

1. **Definitions.** For the purpose of this Agreement, the following definitions shall apply:

"Authorized Recycled Water Use Site" or **"Authorized Site"** is a site authorized for use of recycled water under a Master Recycling Permit. The use of recycled water and the site location must comply with permit conditions.

"Master Recycling Permit" is a permit issued to a supplier or a distributor, or both, of Recycled Water, which includes waste discharge requirements prescribed pursuant to Section 13263 and water recycling requirements pursuant to Section 13523.1 of the California Water Code.

"Recycled Water" is water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur, and is therefore considered a valuable resource.

"**Producer**" is the Sanitation District. The City has entered into an agreement with the Producer to purchase Recycled Water to resell to its customers.

"Sanitation District" means Los Angeles County Sanitation District No. 14.

"Site Supervisor" is an individual designated by the User to provide liaison with the City and other agencies as required. A Site Supervisor is trained and responsible for carrying out any requirements of the City and other regulating agencies, is responsible for the operation and maintenance of the recycled water system, and is charged with preventing violations of the laws, rules, and regulations governing the use of recycled water.

"User" includes the person or other entity to which the City distributes Recycled Water pursuant to this Agreement (including heirs, successors and assigns).

"Waste Discharge Requirements" are issued by the California Regional Water Quality Control Board, Lahontan Region, to the Sanitation District, concerning the discharge of recycled water into the environment.

"Water Recycling Criteria" or **"Uniform Statewide Reclamation Criteria"** are the criteria established by the California Department of Public Health generally dealing with the levels of constituents of Recycled Water, and the means for assurance of reliability under the design concept, which will result in safe Recycled Water from the standpoint of public health. The criteria are established pursuant to Section 13521 of the California Water Code and are contained in Chapter 3 of Division 4 of Title 22 of the California Code of Regulations.

2. User's Obligations.

a. User agrees to purchase recycled water from the City for a suitable use on the Authorized Recycled Water Use Site controlled by the User.

b. User agrees to follow the rules and regulations, including any future amendments thereto, for the use of Recycled Water as established by the City and/or Sanitation District. User also agrees to comply with the requirements of the Waste Discharge Permit issued by the California Regional Water Quality Control Board, Lahontan Regional, to the Sanitation District. User shall keep and maintain a current copy of each of the documents described in this paragraph on the Authorized Recycled Water Use Site.

c. User agrees to permit all regulatory agencies (including, without limitation, the City, Sanitation District, Los Angeles County Department of Public Health, California State Department of Public Health, and/or California Regional Water Quality Control Board, Lahontan Region), producers, and distributors involved with the project access to the Authorized Recycled Water Use Site for the purpose of inspection.

d. The City has designated a Site Supervisor who shall be responsible for the recycled water system under the City's control. The User's staff who will be in direct operation with or directly use recycled water shall be trained by the Site Supervisor in the proper use of recycled water.

e. User shall use Recycled Water in conformity with all applicable laws, including, without limitation, all applicable state laws and/or regulations, the permits issued by the California Regional Water Quality Control Board, Lahontan Region, any applicable regulation or ordinance of suppliers of Recycled Water to the City, and all other applicable federal, state or local laws, regulations or ordinances.

f. User shall ensure that its operations and maintenance staff and the Site Supervisor receive appropriate training related to the proper operation of recycling facilities, worker protection, emergency response and compliance with applicable laws and regulations.

3. Engineering Report. The Sanitation District has been issued a Master Permit for Recycled Water use that covers the City and for which an engineering report has been prepared. If modifications to the existing engineer's report are required and/or a new engineer's report is required, such modified or new report must be approved by the appropriate agencies prior to delivery of Recycled Water to the Authorized Recycled Water Use Site.

4. **Monitoring and Notification.** User is responsible for keeping records of the amount of Recycled Water used, (and for landscape irrigation, Recycled Water application rates, and supplemental nitrogen fertilizer application rates) and shall provide such records (or copies thereof) to the City on a monthly basis and any other regulatory agency upon request.

User agrees to notify the City in the event User experiences a spill of Recycled Water that exceeds fifty thousand (50,000) gallons, as required by Section 13529.2 of the California Water Code or such lesser quantity as it may from time to time be legally required to be reported. Such notification shall be by telephone within twenty-four (24) hours of knowledge of the spill, with a written report to follow within two (2) business days. Such written report must be provided by both telephone facsimile and electronic mail to the City Utility Services Manager or other designated person. Spills below 50,000 gallons but above the incidental runoff volumes shall also be reported to the City. Pursuant to the State Water Resources Control Board, incidental runoff refers to small amounts of runoff from intended Recycled Water use areas, over-spray from sprinklers that drifts out of the intended use area, and overflows during storms of ponds that contain recycled water.

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9. **Release of Liability.** User is aware that there may be instances when the delivery of Recycled Water is suspended by the City, Sanitation District or other Recycled Water supplier. The User releases the City, Sanitation District, any other supplier of Recycled Water to the City's Recycled Water distribution system and Los Angeles County Water Works District No. 40 from all liability to User and User's principals, employees, agents, representatives, guardians, successors, assigns, heirs, children and next of kin for all liability, claims, damages or demands for personal injury, death or property damage, arising from or relating to this Agreement or an interruption or suspension of the Recycled Water supply. User bears sole responsibility for any loss.

10. Indemnification. User shall indemnify, defend and hold harmless the City, Sanitation District, and all of their respective officers, directors, employees, agents and representatives against all liability, demands, claims, costs, losses, damages, recoveries, settlements, and expenses, including, without limitation, claims based in tort or for personal injury (including interest, penalties, fines, attorney fees, expert witness fees, and accounting fees) incurred by the City and/or Sanitation District, known or unknown, contingent or otherwise, directly or indirectly arising from or related to the acts or omissions of User and/or its officers, directors, shareholders, employees, agents, representatives, contractors, subcontractors, tenants, subtenants, and invitees with respect to any of the following: (a) the use of Recycled Water provided by the City; (b) any personal injury (including wrongful death) or property damage (real or personal) arising from or related to Recycled Water provided to the User by the City; (c) any lawsuit brought or threatened, settlement reached, or governmental order relating to the Recycled Water provided to the User by the City; (d) any violations of laws, orders, regulations requirements, or demands of government authorities, or any reasonable policies or requirements of the City, that are based on or in any way related to the use of Recycled Water, including without limitation attorney and consultant fees, expert witness fees, investigation and laboratory fees, court costs, and litigation expenses.

The undersigned individuals or entities have knowledge of and consent to the requirements, rules, and responsibilities regarding the use of Recycled Water (reclaimed water) distributed by the City, as set forth in the *Design Standards Technical Memorandum*, the *Recycled Water User Manual* developed by the Los Angeles County Recycled Water Advisory Committee in 2005 and the *Recycled Water Users Handbook District Nos. 14 and 20* (2008). By executing this Agreement, the User agrees to comply with the guidelines, standards and requirements set forth in the foregoing publications and further agrees to comply with the terms and conditions set forth herein. By executing this Agreement, the City consents to the normal operation of the User's Recycled Water system, subject to the terms and conditions set forth herein.

USER:

Date: May 29, 2013

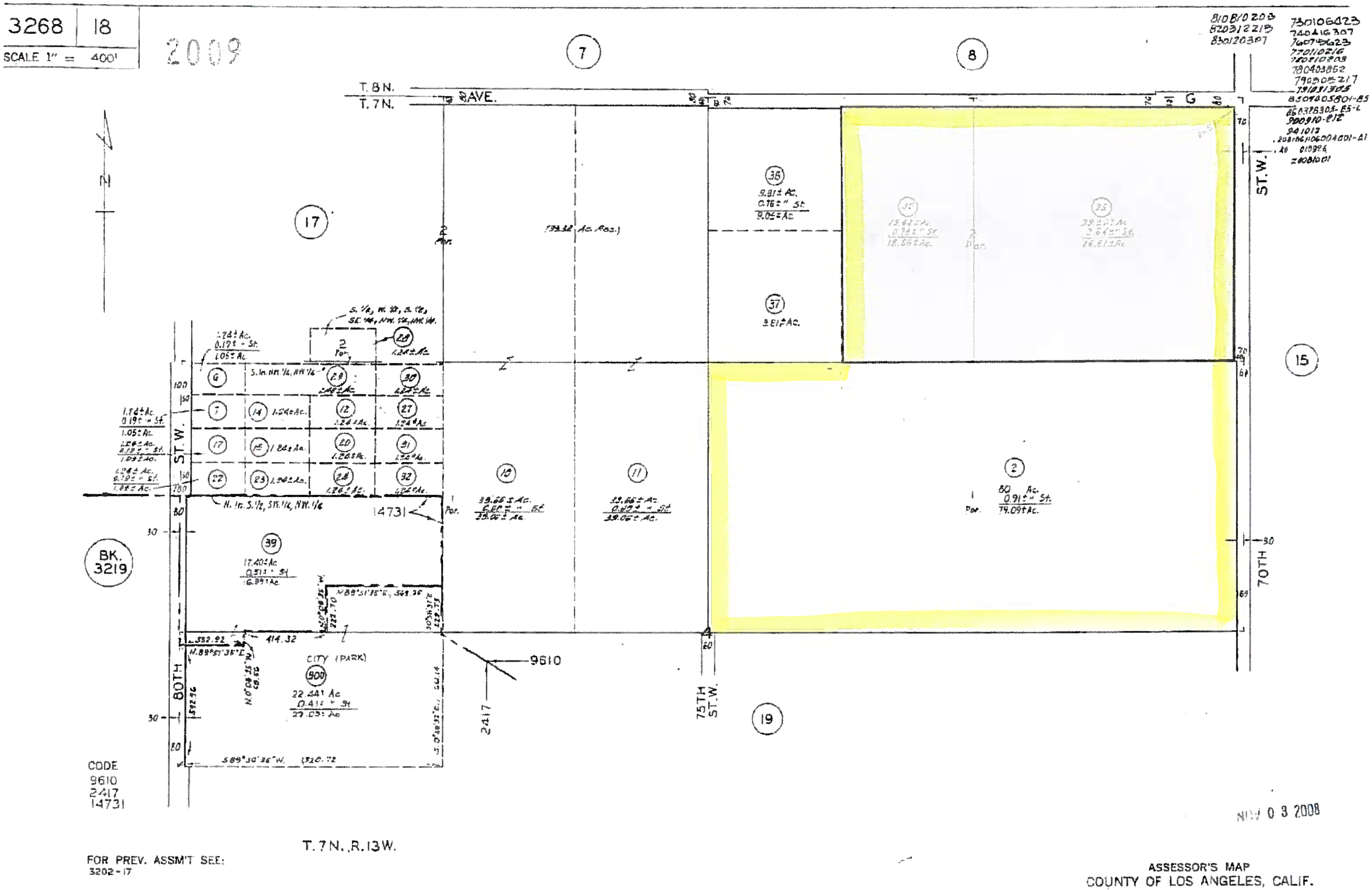
Signature: _____
Name (Print): Ryan Galeria
Address: 44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

CITY:

CITY OF LANCASTER

Date: July 16, 2013

By: _____
Name (Print): Carlyle S. Workman, P.E.
Title: Utility Services Manager
City of Lancaster



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T. 8 N.
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G AVE.
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70TH ST. W.
75TH ST. W.
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900
CITY (PARK)
14731
9610
2417
CODE
9610
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14731
T. 7 N., R. 13 W.
FOR PREV. ASSM'T SEE:
3202-17
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ASSESSOR'S MAP
COUNTY OF LOS ANGELES, CALIF.

CITY OF LANCASTER RECYCLED WATER SYSTEM
WILL SERVE APPLICATION FORM

Please complete the information requested below in order for the City to determine the availability of Recycled Water for a specific project

Date of Request:	Owner/Developer	Owner/Developer Representative (or) Engineering Firm (if applicable)
Company Name	American Solar Greenworks LLC	Silverado Power
Contact Person	Ryan Galeria	Ryan Galeria
Mailing Address	44 Montgomery St, Ste. 3065	44 Montgomery St, Ste. 3065
City, State, Zip	San Francisco, CA 94104	San Francisco, CA 94104
Phone	415-692-7726	415-692-7726
Fax	415-362-4001	415-362-4001
Email Address	ryan@silveradopower.com	ryan@silveradopower.com

Parcel/Project

Requesting Party: City, County, Owner/Rep	Owner
Assessor Parcel Number(s)	3268-018-035, 3268-018-002, 3268-018-036
Situs Address	West Avenue G at 70th Street West
Parcel Acreage in Acres	130
Plan Reference: Tract, Parcel Map, Plot Plan, Other	Parcel Map
Number of Lots	N/A
Zoning:	A-2: Heavy Agricultural Zone
City, County, Project Name, or Permit Reference	Los Angeles County, American Solar Greenworks project, EIR in Process

Recycled Water Flow Requirements		
Estimated Recycled Water Use in Acre Feet per Year	110	AFY
Estimated peak demand in Gallons Per Day	244,388	GPD
Required Pressure at the Street Connection in PSI	N/A	PSI
Estimated Date of Connection (mm/dd/yyyy)	4/1/2014	
Is the Property Currently Served by Los Angeles County Water Works?	Yes	No

Fire Flow Requirements	Water Service (Indicate Below) Per Table "A" attached
LACFD Fire Flow Requirements/GPM	Meter Size: Circle Size(s) Required
No. of Public Hydrants _____	1" 1-1/2" 2" 3" 4" Other _____
No. of On-site Hydrants _____	Meter Size: Portable/Temporary Circle Size(s) Required
Duration in Hours _____	1" 1-1/2" 2" 2-1/2" 3" 4" Other
Flow Requirement in GPM	

Return application form to City of Lancaster Utility Services Division, 615 West Avenue H, Lancaster, CA 93534. Or fax to (661) 723-6221 or return by email to sdassler@cityoflancasterca.org. Questions, please contact Steve Dassler at (661) 945-6863

TABLE "A"

Recycled Water Meter Size Selection

Meter Size	Maximum Rated Flow in GPM of Service Connection and Meter Installation
1	50
1-1/2	100
2	160
2-1/2	200
3	315
4	500
6	1,000.00
8	1,600.00
10	2,300.00
12	3,000.00

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lancaster ca
it's positively clear

R. Rex Parris Mayor
Marvin E. Crist Vice Mayor
Ronald D. Smith Council Member
Ken Mann Council Member
Sandra Johnson Council Member
Mark V. Bozigian City Manager

July 22, 2013

Ryan Galeria, Project Manager
Silverado Power
44 Montgomery Street #3065
San Francisco, California 94104

RECYCLED WATER CONDITIONAL WILL SERVE LETTER

The City of Lancaster is willing to provide to Antelope Solar Greenworks, LLC (User) 207.5 AFY of recycled water for their project on approximately 256 acres consisting of the following APNs: 3203-002-011, 3203-002-012, 3203-002-013, 3203-002-014, 3203-002-015, 3203-002-017, 3218-001-002, 3218-001-003, 3219-019-011, 3218-002-018 and 3218-002-023, for the purpose of dust control during construction beginning November 2013.

Recycled water will be provided subject to the following conditions:

1. User will pay all applicable quantity, meter, and connection charges to the City of Lancaster.
2. User understands application must be made to Los Angeles County Sanitation District (LACSD) and the Regional Water Quality Control Board (RWQCB) for recycled water uses, and that approval by the LACSD and RWQCB are required prior to the City being able to provide recycled water. A specific RWQCB permit will need to be applied for and obtained by the User prior to the City being able to provide recycled water.
3. User understands the availability of recycled water is restricted to the amount of water delivered by LACSD and other factors beyond the City's control. The ability to provide water may be limited and may suffer periods of interruption.
4. The delivery location to User will be the nearest above ground connection point to User's Project site. Currently this location is a recycled water hydrant at the intersection of Avenue H and Division Street. The User is responsible for transportation of water to User's Project site.
5. Construction plans for any recycled water facilities are to be prepared by the User's engineer in accordance with the City of Lancaster and Los Angeles County Department of Public Health design requirements and at the Users expense.
6. The recycled water will meet the required Title 22 tertiary treated standards at the LACSD Lancaster Water Reclamation Plant located at approximately Avenue D and Sierra Highway.
7. User will comply with all Federal, State, and local laws pertaining to the use and transportation of recycled water.
8. User will make final application for recycled water with the City of Lancaster by following the City of Lancaster Recycled Water Application Process.

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9. Amount of recycled water available for use will be contingent upon LACSD providing adequate recycled water.
10. Permits for construction may be required from agencies other than the City of Lancaster.
11. Environmental documentation will need to be specific to the proposed use of recycled water on the property.

Should you have any questions please contact Mr. Allen Thompson, Assistant Utility Services Manager, at (661) 945-6896.

Sincerely,

Carlyle S. Workman, PE
Utility Services Manager
Department of Public Works

CSW:JY:cmm

Enclosure: Executed Recycled Water User Agreement

cc: Director of Public Works

SITE: Antelope Solar Greenworks LLC **LOCATION:** West Avenue J at 90th Street West

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USER:

Date: May 29, 2013

Signature: _____
Name (Print): Ryan Galeria
Address: 44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

CITY:

CITY OF LANCASTER

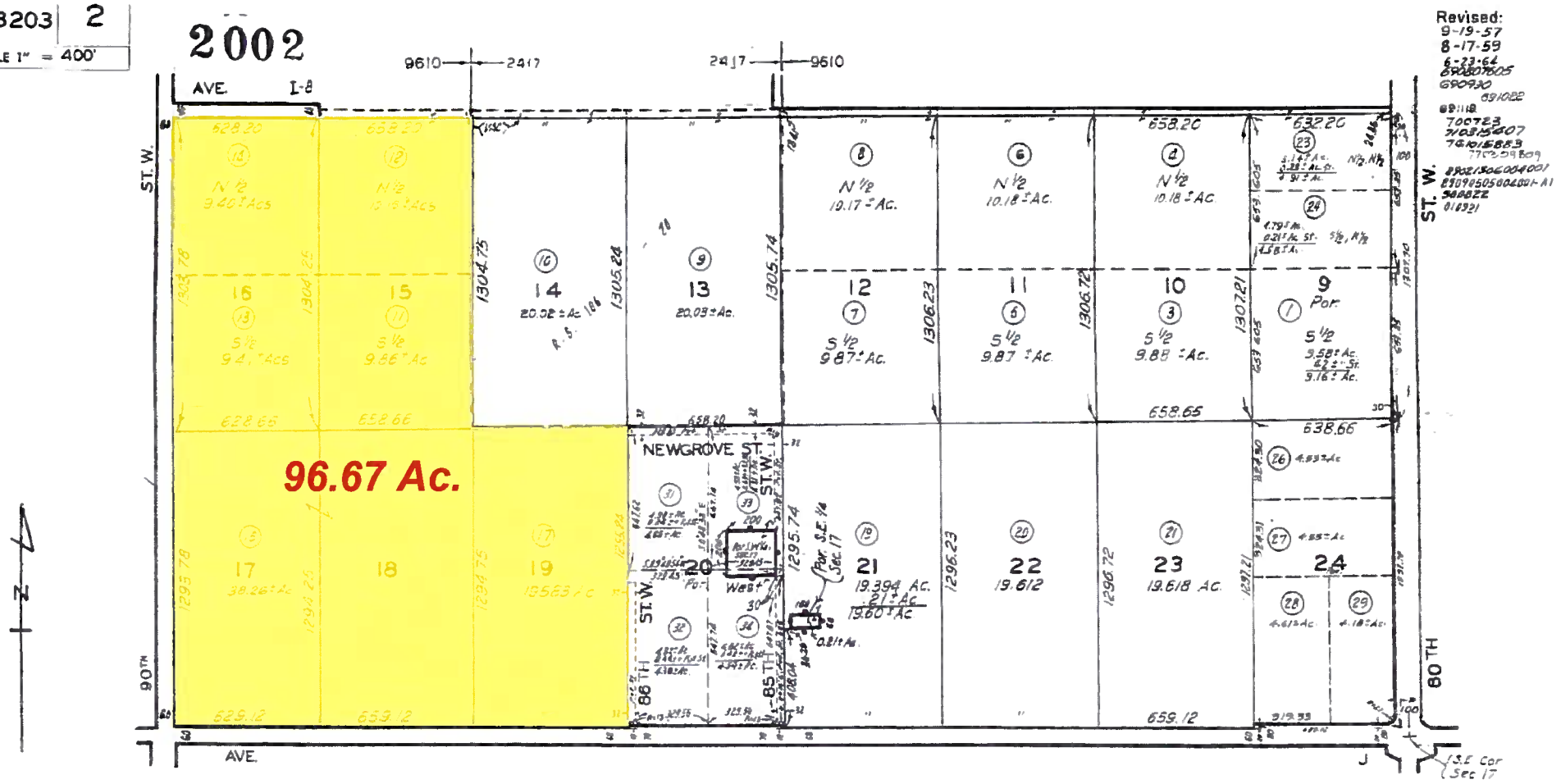
Date: July 16, 2013

By: _____
Name (Print): Carlyle S. Workman, P.E.
Title: Utility Services Manager
City of Lancaster

3203 | 2

SCALE 1" = 400'

2002



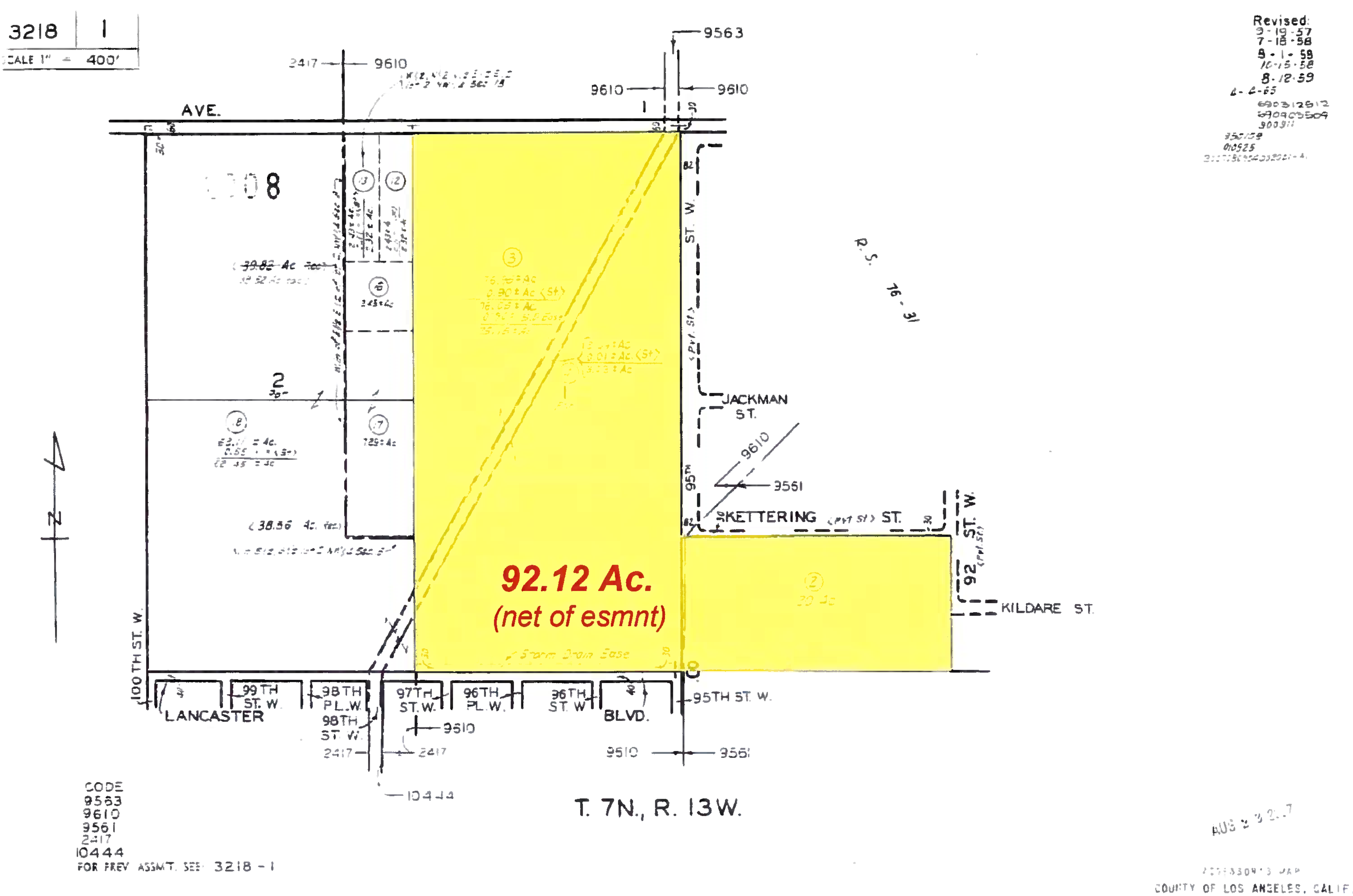
CODE
9610 - 2417

TRACT NO. 4837
M.B. 62-91

T. 7 N., R. 13 W.

FOR PREV. ASSMT. SEE:
3203 - 2

ASSESSOR'S MAP
COUNTY OF LOS ANGELES, CALIF.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SCALE 1" = 400'
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7-18-58
8-1-59
10-15-58
8-12-59
6-6-65
AVE.
2417
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9563
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Storm Drain Esmt
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JACKMAN ST.
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9561
95TH
KETTERING ST.
92 ST. W.
KILDARE ST.
R.S. 76-31
100TH ST. W.
LANCASTER
99TH ST. W.
98TH PL. W.
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97TH ST. W.
96TH PL. W.
96TH ST. W.
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FOR PREV. ASSM'T. SEE: 3218 - 1
COUNTY OF LOS ANGELES, CALIF.

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SCALE 1" = 400'

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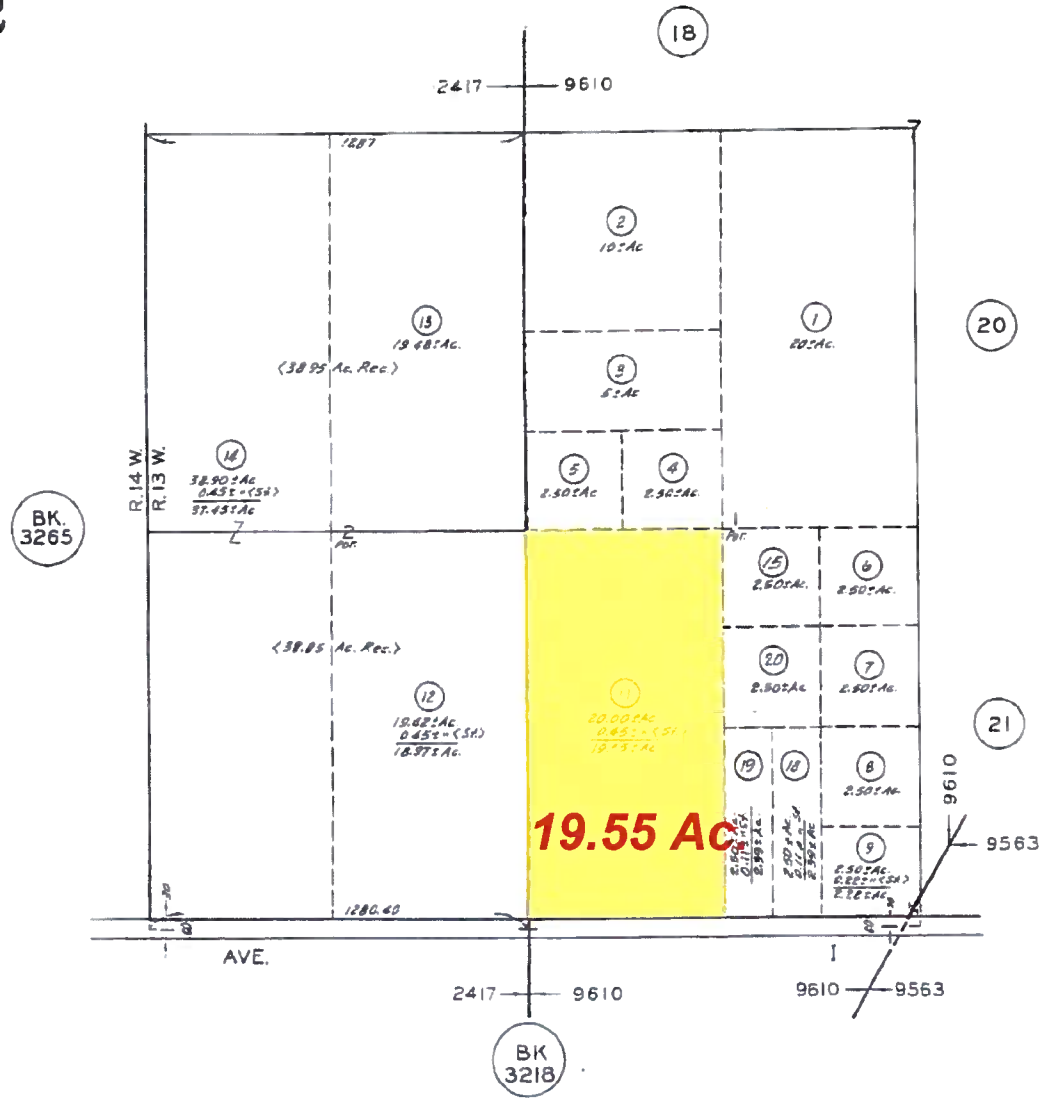

CODE
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T. 7 N., R. 13 W.

FOR PREV. ASSM'T SEE:
3202-20

ASSESSOR'S MAP
COUNTY OF LOS ANGELES, CALIF.

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SCALE 1" = 400'

11-23-64
12-23-64
3-3-65

Revised:
9-19-57
12-9-57
3-20-58
6-16-58
8-12-59
4-4-62
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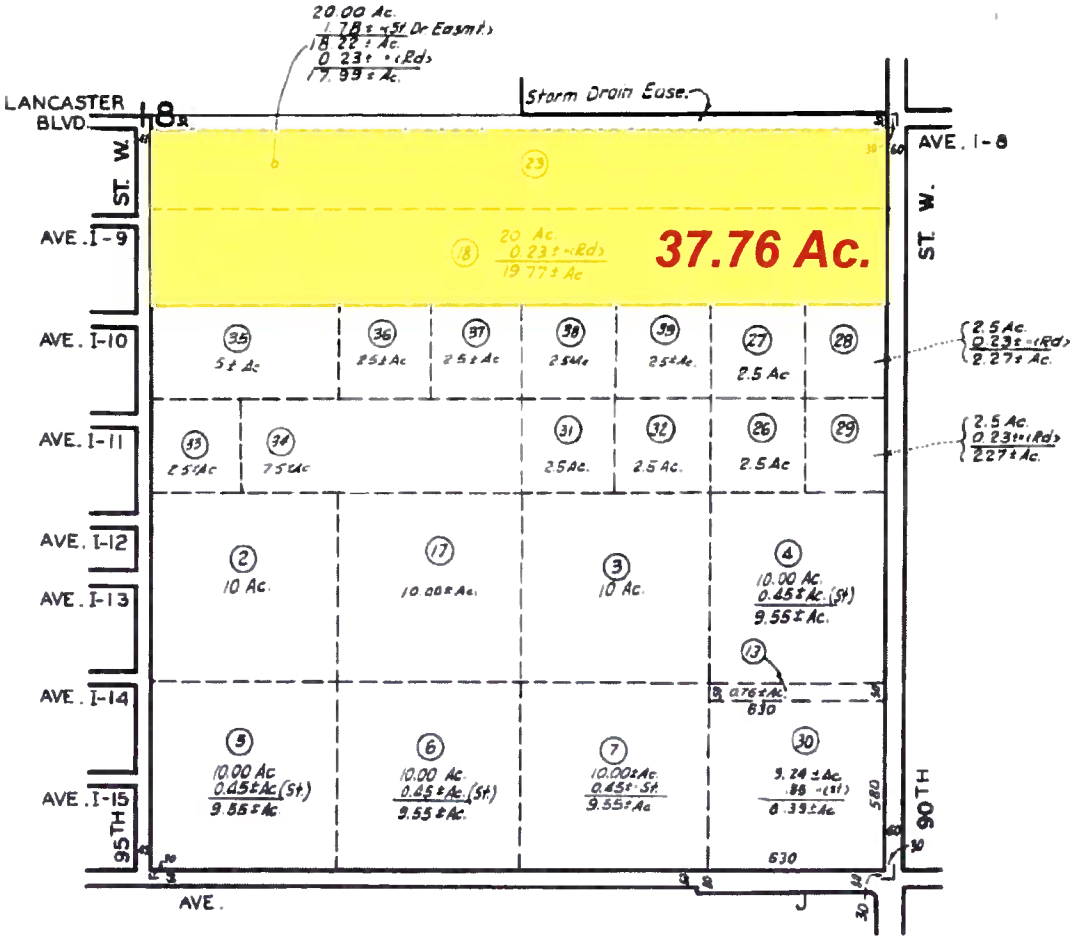

CODE
9610

T. 7N., R. 13W.

FOR PREV. ASSM'T. SEE: 3218-2

ASSESSOR'S MAP
COUNTY OF LOS ANGELES, CALIF.

CITY OF LANCASTER RECYCLED WATER SYSTEM
WILL SERVE APPLICATION FORM

Please complete the information requested below in order for the City to determine the availability of Recycled Water for a specific project

Date of Request:	Owner/Developer	Owner/Developer Representative (or) Engineering Firm (if applicable)
Company Name	Antelope Solar Greenworks LLC	Silverado Power
Contact Person	Ryan Galeria	Ryan Galeria
Mailing Address	44 Montgomery St, Ste. 3065	44 Montgomery St, Ste. 3065
City, State, Zip	San Francisco, CA 94104	San Francisco, CA 94104
Phone	415-692-7726	415-692-7726
Fax	415-362-4001	415-362-4001
Email Address	ryan@silveradopower.com	ryan@silveradopower.com

Parcel/Project

Requesting Party: City, County, Owner/Rep	Owner
Assessor Parcel Number(s)	18001003, 3218001002, 3203002011, 3203002012, 3203002(
Situs Address	West Avenue J at 90th Street West
Parcel Acreage in Acres	256
Plan Reference: Tract, Parcel Map, Plot Plan, Other	Parcel Map
Number of Lots	N/A
Zoning:	A-2: Heavy Agricultural Zone
City, County, Project Name, or Permit Reference	Los Angeles County, Antelope Solar Greenworks project, EIR in Process

Recycled Water Flow Requirements		
Estimated Recycled Water Use in Acre Feet per Year	207.5	AFY
Estimated peak demand in Gallons Per Day	270,456	GPD
Required Pressure at the Street Connection in PSI	N/A	PSI
Estimated Date of Connection (mm/dd/yyyy)	11/1/2013	
Is the Property Currently Served by Los Angeles County Water Works?	Yes	No

Fire Flow Requirements	Water Service (Indicate Below) Per Table "A" attached
LACFD Fire Flow Requirements/GPM	Meter Size: Circle Size(s) Required
No. of Public Hydrants _____	1" 1-1/2" 2" 3" 4" Other _____
No. of On-site Hydrants _____	Meter Size: Portable/Temporary Circle Size(s) Required
Duration in Hours _____	1" 1-1/2" 2" 2-1/2" 3" 4" Other
Flow Requirement in GPM	

Return application form to City of Lancaster Utility Services Division, 615 West Avenue H, Lancaster, CA 93534. Or fax to (661) 723-6221 or return by email to sdassler@cityoflancasterca.org. Questions, please contact Steve Dassler at (661) 945-6863

TABLE "A"

Recycled Water Meter Size Selection

Meter Size	Maximum Rated Flow in GPM of Service Connection and Meter Installation
1	50
1-1/2	100
2	160
2-1/2	200
3	315
4	500
6	1,000.00
8	1,600.00
10	2,300.00
12	3,000.00

lancaster ca
it's positively clear

R. Rex Parris Mayor
Marvin E. Crist Vice Mayor
Ronald D. Smith Council Member
Ken Mann Council Member
Sandra Johnson Council Member
Mark V. Bozigian City Manager

July 22, 2013

Ryan Galeria, Project Manager
Silverado Power
44 Montgomery Street #3065
San Francisco, California 94104

RECYCLED WATER CONDITIONAL WILL SERVE LETTER

The City of Lancaster is willing to provide to Silver Sun Greenworks, LLC (User) 130 AFY of recycled water for their project on approximately 160 acres located at the south east corner of Avenue I and 120th Street West (APN: 3267-003-001, 3267-003-002, 3267-003-003), for the purpose of dust control during construction beginning February 2014.

Recycled water will be provided subject to the following conditions:

1. User will pay all applicable quantity, meter, and connection charges to the City of Lancaster.
2. User understands application must be made to Los Angeles County Sanitation District (LACSD) and the Regional Water Quality Control Board (RWQCB) for recycled water uses, and that approval by the LACSD and RWQCB are required prior to the City being able to provide recycled water. A specific RWQCB permit will need to be applied for and obtained by the User prior to the City being able to provide recycled water.
3. User understands the availability of recycled water is restricted to the amount of water delivered by LACSD and other factors beyond the City's control. The ability to provide water may be limited and may suffer periods of interruption.
4. The delivery location to User will be the nearest above ground connection point to User's Project site. Currently this location is a recycled water hydrant at the intersection of Avenue H and Division Street. The User is responsible for transportation of water to User's Project site.
5. Construction plans for any recycled water facilities are to be prepared by the User's engineer in accordance with the City of Lancaster and Los Angeles County Department of Public Health design requirements and at the Users expense.
6. The recycled water will meet the required Title 22 tertiary treated standards at the LACSD Lancaster Water Reclamation Plant located at approximately Avenue D and Sierra Highway.
7. User will comply with all Federal, State, and local laws pertaining to the use and transportation of recycled water.

8. User will make final application for recycled water with the City of Lancaster by following the City of Lancaster Recycled Water Application Process.
9. Amount of recycled water available for use will be contingent upon LACSD providing adequate recycled water.
10. Permits for construction may be required from agencies other than the City of Lancaster.
11. Environmental documentation will need to be specific to the proposed use of recycled water on the property.

Should you have any questions please contact Mr. Allen Thompson, Assistant Utility Services Manager, at (661) 945-6896.

Sincerely,

Carlyle S. Workman, PE
Utility Services Manager
Department of Public Works

CSW:JY:cmm

Enclosure: Executed Recycled Water User Agreement

cc: Director of Public Works

LOCATION: West Avenue I at 120th Street West

SITE: Silver Sun Greenworks LLC

THIS RECYCLED WATER USE AGREEMENT (this "Agreement") is entered into as of May 29, 2013 by and between the **CITY OF LANCASTER** (the "City") and Silver Sun Greenworks LLC (the "User").

Preamble

The use of recycled water is governed by several agencies. The Sanitation District produces recycled water, holds the Master Recycling Permit, and holds the Waste Discharge Permit. The California Regional Water Quality Control Board, Lahontan Region, issues the Master Recycling Permit and the Waste Discharge Permit. The California State Department of Public Health is responsible for protecting public health and has delegated certain responsibilities to the Los Angeles County Department of Public Health. The Los Angeles County Department of Public Health oversees cross connection control and other aspects of the use of recycled water. The City has contracted with the Sanitation District to purchase recycled water for distribution to users.

Agreement

NOW, THEREFORE, the parties hereto agree as follows:

1. **Definitions.** For the purpose of this Agreement, the following definitions shall apply:

"Authorized Recycled Water Use Site" or **"Authorized Site"** is a site authorized for use of recycled water under a Master Recycling Permit. The use of recycled water and the site location must comply with permit conditions.

"Master Recycling Permit" is a permit issued to a supplier or a distributor, or both, of Recycled Water, which includes waste discharge requirements prescribed pursuant to Section 13263 and water recycling requirements pursuant to Section 13523.1 of the California Water Code.

"Recycled Water" is water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur, and is therefore considered a valuable resource.

"**Producer**" is the Sanitation District. The City has entered into an agreement with the Producer to purchase Recycled Water to resell to its customers.

"Sanitation District" means Los Angeles County Sanitation District No. 14.

"Site Supervisor" is an individual designated by the User to provide liaison with the City and other agencies as required. A Site Supervisor is trained and responsible for carrying out any requirements of the City and other regulating agencies, is responsible for the operation and maintenance of the recycled water system, and is charged with preventing violations of the laws, rules, and regulations governing the use of recycled water.

"User" includes the person or other entity to which the City distributes Recycled Water pursuant to this Agreement (including heirs, successors and assigns).

"Waste Discharge Requirements" are issued by the California Regional Water Quality Control Board, Lahontan Region, to the Sanitation District, concerning the discharge of recycled water into the environment.

"Water Recycling Criteria" or **"Uniform Statewide Reclamation Criteria"** are the criteria established by the California Department of Public Health generally dealing with the levels of constituents of Recycled Water, and the means for assurance of reliability under the design concept, which will result in safe Recycled Water from the standpoint of public health. The criteria are established pursuant to Section 13521 of the California Water Code and are contained in Chapter 3 of Division 4 of Title 22 of the California Code of Regulations.

2. User's Obligations.

a. User agrees to purchase recycled water from the City for a suitable use on the Authorized Recycled Water Use Site controlled by the User.

b. User agrees to follow the rules and regulations, including any future amendments thereto, for the use of Recycled Water as established by the City and/or Sanitation District. User also agrees to comply with the requirements of the Waste Discharge Permit issued by the California Regional Water Quality Control Board, Lahontan Regional, to the Sanitation District. User shall keep and maintain a current copy of each of the documents described in this paragraph on the Authorized Recycled Water Use Site.

c. User agrees to permit all regulatory agencies (including, without limitation, the City, Sanitation District, Los Angeles County Department of Public Health, California State Department of Public Health, and/or California Regional Water Quality Control Board, Lahontan Region), producers, and distributors involved with the project access to the Authorized Recycled Water Use Site for the purpose of inspection.

d. The City has designated a Site Supervisor who shall be responsible for the recycled water system under the City's control. The User's staff who will be in direct operation with or directly use recycled water shall be trained by the Site Supervisor in the proper use of recycled water.

e. User shall use Recycled Water in conformity with all applicable laws, including, without limitation, all applicable state laws and/or regulations, the permits issued by the California Regional Water Quality Control Board, Lahontan Region, any applicable regulation or ordinance of suppliers of Recycled Water to the City, and all other applicable federal, state or local laws, regulations or ordinances.

f. User shall ensure that its operations and maintenance staff and the Site Supervisor receive appropriate training related to the proper operation of recycling facilities, worker protection, emergency response and compliance with applicable laws and regulations.

3. Engineering Report. The Sanitation District has been issued a Master Permit for Recycled Water use that covers the City and for which an engineering report has been prepared. If modifications to the existing engineer's report are required and/or a new engineer's report is required, such modified or new report must be approved by the appropriate agencies prior to delivery of Recycled Water to the Authorized Recycled Water Use Site.

4. **Monitoring and Notification.** User is responsible for keeping records of the amount of Recycled Water used, (and for landscape irrigation, Recycled Water application rates, and supplemental nitrogen fertilizer application rates) and shall provide such records (or copies thereof) to the City on a monthly basis and any other regulatory agency upon request.

User agrees to notify the City in the event User experiences a spill of Recycled Water that exceeds fifty thousand (50,000) gallons, as required by Section 13529.2 of the California Water Code or such lesser quantity as it may from time to time be legally required to be reported. Such notification shall be by telephone within twenty-four (24) hours of knowledge of the spill, with a written report to follow within two (2) business days. Such written report must be provided by both telephone facsimile and electronic mail to the City Utility Services Manager or other designated person. Spills below 50,000 gallons but above the incidental runoff volumes shall also be reported to the City. Pursuant to the State Water Resources Control Board, incidental runoff refers to small amounts of runoff from intended Recycled Water use areas, over-spray from sprinklers that drifts out of the intended use area, and overflows during storms of ponds that contain recycled water.

5. **Price for Recycled Water.** The rate for Recycled Water shall be set from time to time by the City. Recycled Water use will be billed monthly and is payable within thirty (30) days of the invoice date.

6. **Term of the agreement**. The term of this Agreement shall be for ninety (90) days and shall renew automatically in thirty (30) day increments thereafter unless terminated as provided below.

7. **Termination of the agreement.** This Agreement may be terminated by either party on thirty (30) days written notice.

8. **Liability for Fine or Penalty.** User understands and acknowledges that the City has entered into an agreement with the Sanitation District, pursuant to which the City has agreed to reimburse the Sanitation District for certain fines and/or penalties imposed against the Sanitation District. Specifically, in the event the Chief Engineer of the Sanitation District determines, based "upon substantial evidence," that City is the party responsible for any action resulting in a fine or penalty against the Sanitation District, the City has agreed to reimburse the Sanitation District for the total amount of any such fine or penalty within thirty (30) business days of receiving notice thereof. In the event the City determines, based "upon substantial evidence," that the User is the responsible party for any action or inaction that results in the City being obligated to reimburse a fine or penalty pursuant to the terms of its agreement with the Sanitation District, the City shall send notice thereof to the User and the User shall, within thirty (30) business days of the date of the City's notice, reimburse the City the total amount of such fine or penalty.

9. **Release of Liability.** User is aware that there may be instances when the delivery of Recycled Water is suspended by the City, Sanitation District or other Recycled Water supplier. The User releases the City, Sanitation District, any other supplier of Recycled Water to the City's Recycled Water distribution system and Los Angeles County Water Works District No. 40 from all liability to User and User's principals, employees, agents, representatives, guardians, successors, assigns, heirs, children and next of kin for all liability, claims, damages or demands for personal injury, death or property damage, arising from or relating to this Agreement or an interruption or suspension of the Recycled Water supply. User bears sole responsibility for any loss.

10. Indemnification. User shall indemnify, defend and hold harmless the City, Sanitation District, and all of their respective officers, directors, employees, agents and representatives against all liability, demands, claims, costs, losses, damages, recoveries, settlements, and expenses, including, without limitation, claims based in tort or for personal injury (including interest, penalties, fines, attorney fees, expert witness fees, and accounting fees) incurred by the City and/or Sanitation District, known or unknown, contingent or otherwise, directly or indirectly arising from or related to the acts or omissions of User and/or its officers, directors, shareholders, employees, agents, representatives, contractors, subcontractors, tenants, subtenants, and invitees with respect to any of the following: (a) the use of Recycled Water provided by the City; (b) any personal injury (including wrongful death) or property damage (real or personal) arising from or related to Recycled Water provided to the User by the City; (c) any lawsuit brought or threatened, settlement reached, or governmental order relating to the Recycled Water provided to the User by the City; (d) any violations of laws, orders, regulations requirements, or demands of government authorities, or any reasonable policies or requirements of the City, that are based on or in any way related to the use of Recycled Water, including without limitation attorney and consultant fees, expert witness fees, investigation and laboratory fees, court costs, and litigation expenses.

The undersigned individuals or entities have knowledge of and consent to the requirements, rules, and responsibilities regarding the use of Recycled Water (reclaimed water) distributed by the City, as set forth in the *Design Standards Technical Memorandum*, the *Recycled Water User Manual* developed by the Los Angeles County Recycled Water Advisory Committee in 2005 and the *Recycled Water Users Handbook District Nos. 14 and 20* (2008). By executing this Agreement, the User agrees to comply with the guidelines, standards and requirements set forth in the foregoing publications and further agrees to comply with the terms and conditions set forth herein. By executing this Agreement, the City consents to the normal operation of the User's Recycled Water system, subject to the terms and conditions set forth herein.

USER:

Date: May 29, 2013

Signature: _____
Name (Print): Ryan Galeria
Address: 44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

CITY:

CITY OF LANCASTER

Date: July 16, 2013

By: _____
Name (Print): Carlyle S. Workman, P.E.
Title: Utility Services Manager
City of Lancaster

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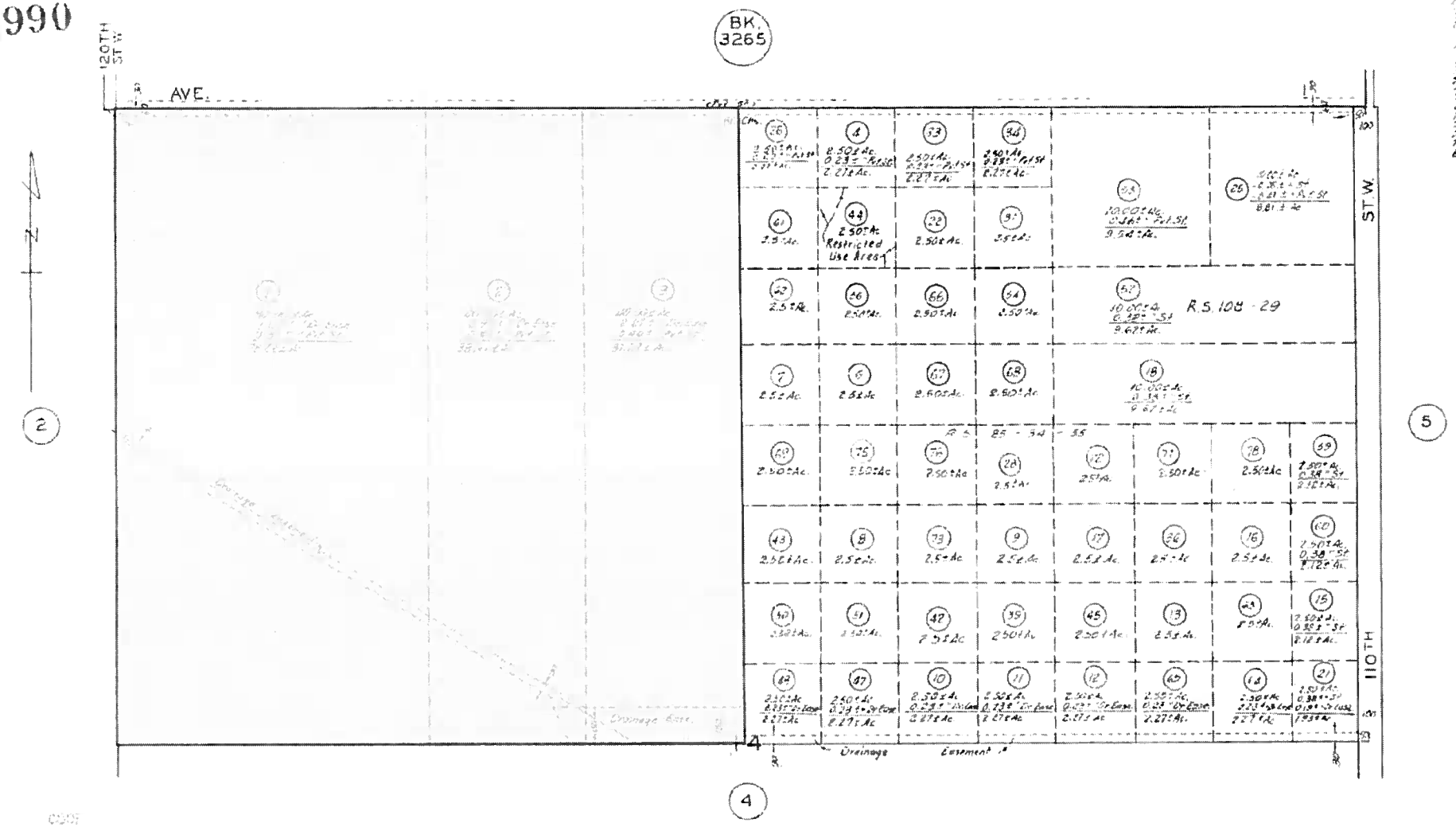

T.7N., R.14W

ASSESSOR'S MAP
COUNTY OF LOS ANGELES, CALIF.

CITY OF LANCASTER RECYCLED WATER SYSTEM
WILL SERVE APPLICATION FORM

Please complete the information requested below in order for the City to determine the availability of Recycled Water for a specific project

Date of Request:	Owner/Developer	Owner/Developer Representative (or) Engineering Firm (if applicable)
Company Name	Silver Sun Greenworks LLC	Silverado Power
Contact Person	Ryan Galeria	Ryan Galeria
Mailing Address	44 Montgomery St, Ste. 3065	44 Montgomery St, Ste. 3065
City, State, Zip	San Francisco, CA 94104	San Francisco, CA 94104
Phone	415-692-7726	415-692-7726
Fax	415-362-4001	415-362-4001
Email Address	ryan@silveradopower.com	ryan@silveradopower.com

Parcel/Project

Requesting Party: City, County, Owner/Rep	Owner
Assessor Parcel Number(s)	3267-003-003, 3267-003-002, 3267-003-001
Situs Address	West Avenue I at 120th Street West
Parcel Acreage in Acres	160
Plan Reference: Tract, Parcel Map, Plot Plan, Other	Parcel Map
Number of Lots	N/A
Zoning:	A-2: Heavy Agricultural Zone
City, County, Project Name, or Permit Reference	Los Angeles County, Silver Sun Greenworks project, EIR in Process

Recycled Water Flow Requirements		
Estimated Recycled Water Use in Acre Feet per Year	130	AFY
Estimated peak demand in Gallons Per Day	557,205	GPD
Required Pressure at the Street Connection in PSI	N/A	PSI
Estimated Date of Connection (mm/dd/yyyy)	2/1/2014	
Is the Property Currently Served by Los Angeles County Water Works?	Yes	No

Fire Flow Requirements	Water Service (Indicate Below) Per Table "A" attached
LACFD Fire Flow Requirements/GPM	Meter Size: Circle Size(s) Required
No. of Public Hydrants _____	1" 1-1/2" 2" 3" 4" Other _____
No. of On-site Hydrants _____	Meter Size: Portable/Temporary Circle Size(s) Required
Duration in Hours _____	1" 1-1/2" 2" 2-1/2" 3" 4" Other
Flow Requirement in GPM	

Return application form to City of Lancaster Utility Services Division, 615 West Avenue H, Lancaster, CA 93534. Or fax to (661) 723-6221 or return by email to sdassler@cityoflancasterca.org. Questions, please contact Steve Dassler at (661) 945-6863

TABLE "A"

Recycled Water Meter Size Selection

Meter Size	Maximum Rated Flow in GPM of Service Connection and Meter Installation
1	50
1-1/2	100
2	160
2-1/2	200
3	315
4	500
6	1,000.00
8	1,600.00
10	2,300.00
12	3,000.00

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lancaster ca
it's positively clear

R. Rex Parris Mayor
Marvin E. Crist Vice Mayor
Ronald D. Smith Council Member
Ken Mann Council Member
Sandra Johnson Council Member
Mark V. Bozigian City Manager

July 22, 2013

Ryan Galeria,Project Manager
Silverado Power
44 Montgomery Street #3065
San Francisco, California 94104

RECYCLED WATER CONDITIONAL WILL SERVE LETTER

The City of Lancaster is willing to provide to Lancaster WAD, LLC (User) 32 AFY of recycled water for their project on approximately 38.5 acres located at the north east corner of Avenue D and 35th Street West (APN: 3115-010-004), for the purpose of dust control during construction beginning April 2014.

Recycled water will be provided subject to the following conditions:

1. User will pay all applicable quantity, meter, and connection charges to the City of Lancaster.
2. User understands application must be made to Los Angeles County Sanitation District (LACSD) and the Regional Water Quality Control Board (RWQCB) for recycled water uses, and that approval by the LACSD and RWQCB are required prior to the City being able to provide recycled water. A specific RWQCB permit will need to be applied for and obtained by the User prior to the City being able to provide recycled water.
3. User understands the availability of recycled water is restricted to the amount of water delivered by LACSD and other factors beyond the City's control. The ability to provide water may be limited and may suffer periods of interruption.
4. The delivery location to User will be the nearest above ground connection point to User's Project site. Currently this location is a recycled water hydrant at the intersection of Avenue H and Division Street. The User is responsible for transportation of water to User's Project site.
5. Construction plans for any recycled water facilities are to be prepared by the User's engineer in accordance with the City of Lancaster and Los Angeles County Department of Public Health design requirements and at the Users expense.
6. The recycled water will meet the required Title 22 tertiary treated standards at the LACSD Lancaster Water Reclamation Plant located at approximately Avenue D and Sierra Highway.
7. User will comply with all Federal, State, and local laws pertaining to the use and transportation of recycled water.
8. User will make final application for recycled water with the City of Lancaster by following the City of Lancaster Recycled Water Application Process.

8. User will make final application for recycled water with the City of Lancaster by following the City of Lancaster Recycled Water Application Process.
9. Amount of recycled water available for use will be contingent upon LACSD providing adequate recycled water.
10. Permits for construction may be required from agencies other than the City of Lancaster.
11. Environmental documentation will need to be specific to the proposed use of recycled water on the property.

Should you have any questions please contact Mr. Allen Thompson, Assistant Utility Services Manager, at (661) 945-6896.

Sincerely,

Carlyle S. Workman, PE
Utility Services Manager
Department of Public Works

CSW:JY:cmm

Enclosure: Executed Recycled Water User Agreement

cc: Director of Public Works

LOCATION: West Avenue D at 35th Street West

SITE: Lancaster WAD LLC

THIS RECYCLED WATER USE AGREEMENT (this "Agreement") is entered into as of May 29, 2013 by and between the **CITY OF LANCASTER** (the "City") and Lancaster WAD LLC (the "User").

Preamble

The use of recycled water is governed by several agencies. The Sanitation District produces recycled water, holds the Master Recycling Permit, and holds the Waste Discharge Permit. The California Regional Water Quality Control Board, Lahontan Region, issues the Master Recycling Permit and the Waste Discharge Permit. The California State Department of Public Health is responsible for protecting public health and has delegated certain responsibilities to the Los Angeles County Department of Public Health. The Los Angeles County Department of Public Health oversees cross connection control and other aspects of the use of recycled water. The City has contracted with the Sanitation District to purchase recycled water for distribution to users.

Agreement

NOW, THEREFORE, the parties hereto agree as follows:

1. **Definitions.** For the purpose of this Agreement, the following definitions shall apply:

"Authorized Recycled Water Use Site" or **"Authorized Site"** is a site authorized for use of recycled water under a Master Recycling Permit. The use of recycled water and the site location must comply with permit conditions.

"Master Recycling Permit" is a permit issued to a supplier or a distributor, or both, of Recycled Water, which includes waste discharge requirements prescribed pursuant to Section 13263 and water recycling requirements pursuant to Section 13523.1 of the California Water Code.

"Recycled Water" is water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur, and is therefore considered a valuable resource.

"**Producer**" is the Sanitation District. The City has entered into an agreement with the Producer to purchase Recycled Water to resell to its customers.

"Sanitation District" means Los Angeles County Sanitation District No. 14.

"Site Supervisor" is an individual designated by the User to provide liaison with the City and other agencies as required. A Site Supervisor is trained and responsible for carrying out any requirements of the City and other regulating agencies, is responsible for the operation and maintenance of the recycled water system, and is charged with preventing violations of the laws, rules, and regulations governing the use of recycled water.

"User" includes the person or other entity to which the City distributes Recycled Water pursuant to this Agreement (including heirs, successors and assigns).

"Waste Discharge Requirements" are issued by the California Regional Water Quality Control Board, Lahontan Region, to the Sanitation District, concerning the discharge of recycled water into the environment.

"Water Recycling Criteria" or **"Uniform Statewide Reclamation Criteria"** are the criteria established by the California Department of Public Health generally dealing with the levels of constituents of Recycled Water, and the means for assurance of reliability under the design concept, which will result in safe Recycled Water from the standpoint of public health. The criteria are established pursuant to Section 13521 of the California Water Code and are contained in Chapter 3 of Division 4 of Title 22 of the California Code of Regulations.

2. User's Obligations.

a. User agrees to purchase recycled water from the City for a suitable use on the Authorized Recycled Water Use Site controlled by the User.

b. User agrees to follow the rules and regulations, including any future amendments thereto, for the use of Recycled Water as established by the City and/or Sanitation District. User also agrees to comply with the requirements of the Waste Discharge Permit issued by the California Regional Water Quality Control Board, Lahontan Regional, to the Sanitation District. User shall keep and maintain a current copy of each of the documents described in this paragraph on the Authorized Recycled Water Use Site.

c. User agrees to permit all regulatory agencies (including, without limitation, the City, Sanitation District, Los Angeles County Department of Public Health, California State Department of Public Health, and/or California Regional Water Quality Control Board, Lahontan Region), producers, and distributors involved with the project access to the Authorized Recycled Water Use Site for the purpose of inspection.

d. The City has designated a Site Supervisor who shall be responsible for the recycled water system under the City's control. The User's staff who will be in direct operation with or directly use recycled water shall be trained by the Site Supervisor in the proper use of recycled water.

e. User shall use Recycled Water in conformity with all applicable laws, including, without limitation, all applicable state laws and/or regulations, the permits issued by the California Regional Water Quality Control Board, Lahontan Region, any applicable regulation or ordinance of suppliers of Recycled Water to the City, and all other applicable federal, state or local laws, regulations or ordinances.

f. User shall ensure that its operations and maintenance staff and the Site Supervisor receive appropriate training related to the proper operation of recycling facilities, worker protection, emergency response and compliance with applicable laws and regulations.

3. Engineering Report. The Sanitation District has been issued a Master Permit for Recycled Water use that covers the City and for which an engineering report has been prepared. If modifications to the existing engineer's report are required and/or a new engineer's report is required, such modified or new report must be approved by the appropriate agencies prior to delivery of Recycled Water to the Authorized Recycled Water Use Site.

4. **Monitoring and Notification.** User is responsible for keeping records of the amount of Recycled Water used, (and for landscape irrigation, Recycled Water application rates, and supplemental nitrogen fertilizer application rates) and shall provide such records (or copies thereof) to the City on a monthly basis and any other regulatory agency upon request.

User agrees to notify the City in the event User experiences a spill of Recycled Water that exceeds fifty thousand (50,000) gallons, as required by Section 13529.2 of the California Water Code or such lesser quantity as it may from time to time be legally required to be reported. Such notification shall be by telephone within twenty-four (24) hours of knowledge of the spill, with a written report to follow within two (2) business days. Such written report must be provided by both telephone facsimile and electronic mail to the City Utility Services Manager or other designated person. Spills below 50,000 gallons but above the incidental runoff volumes shall also be reported to the City. Pursuant to the State Water Resources Control Board, incidental runoff refers to small amounts of runoff from intended Recycled Water use areas, over-spray from sprinklers that drifts out of the intended use area, and overflows during storms of ponds that contain recycled water.

5. **Price for Recycled Water.** The rate for Recycled Water shall be set from time to time by the City. Recycled Water use will be billed monthly and is payable within thirty (30) days of the invoice date.

6. **Term of the agreement**. The term of this Agreement shall be for ninety (90) days and shall renew automatically in thirty (30) day increments thereafter unless terminated as provided below.

7. **Termination of the agreement.** This Agreement may be terminated by either party on thirty (30) days written notice.

8. **Liability for Fine or Penalty.** User understands and acknowledges that the City has entered into an agreement with the Sanitation District, pursuant to which the City has agreed to reimburse the Sanitation District for certain fines and/or penalties imposed against the Sanitation District. Specifically, in the event the Chief Engineer of the Sanitation District determines, based "upon substantial evidence," that City is the party responsible for any action resulting in a fine or penalty against the Sanitation District, the City has agreed to reimburse the Sanitation District for the total amount of any such fine or penalty within thirty (30) business days of receiving notice thereof. In the event the City determines, based "upon substantial evidence," that the User is the responsible party for any action or inaction that results in the City being obligated to reimburse a fine or penalty pursuant to the terms of its agreement with the Sanitation District, the City shall send notice thereof to the User and the User shall, within thirty (30) business days of the date of the City's notice, reimburse the City the total amount of such fine or penalty.

9. **Release of Liability.** User is aware that there may be instances when the delivery of Recycled Water is suspended by the City, Sanitation District or other Recycled Water supplier. The User releases the City, Sanitation District, any other supplier of Recycled Water to the City's Recycled Water distribution system and Los Angeles County Water Works District No. 40 from all liability to User and User's principals, employees, agents, representatives, guardians, successors, assigns, heirs, children and next of kin for all liability, claims, damages or demands for personal injury, death or property damage, arising from or relating to this Agreement or an interruption or suspension of the Recycled Water supply. User bears sole responsibility for any loss.

10. Indemnification. User shall indemnify, defend and hold harmless the City, Sanitation District, and all of their respective officers, directors, employees, agents and representatives against all liability, demands, claims, costs, losses, damages, recoveries, settlements, and expenses, including, without limitation, claims based in tort or for personal injury (including interest, penalties, fines, attorney fees, expert witness fees, and accounting fees) incurred by the City and/or Sanitation District, known or unknown, contingent or otherwise, directly or indirectly arising from or related to the acts or omissions of User and/or its officers, directors, shareholders, employees, agents, representatives, contractors, subcontractors, tenants, subtenants, and invitees with respect to any of the following: (a) the use of Recycled Water provided by the City; (b) any personal injury (including wrongful death) or property damage (real or personal) arising from or related to Recycled Water provided to the User by the City; (c) any lawsuit brought or threatened, settlement reached, or governmental order relating to the Recycled Water provided to the User by the City; (d) any violations of laws, orders, regulations requirements, or demands of government authorities, or any reasonable policies or requirements of the City, that are based on or in any way related to the use of Recycled Water, including without limitation attorney and consultant fees, expert witness fees, investigation and laboratory fees, court costs, and litigation expenses.

The undersigned individuals or entities have knowledge of and consent to the requirements, rules, and responsibilities regarding the use of Recycled Water (reclaimed water) distributed by the City, as set forth in the *Design Standards Technical Memorandum*, the *Recycled Water User Manual* developed by the Los Angeles County Recycled Water Advisory Committee in 2005 and the *Recycled Water Users Handbook District Nos. 14 and 20* (2008). By executing this Agreement, the User agrees to comply with the guidelines, standards and requirements set forth in the foregoing publications and further agrees to comply with the terms and conditions set forth herein. By executing this Agreement, the City consents to the normal operation of the User's Recycled Water system, subject to the terms and conditions set forth herein.

USER:

Date: May 29, 2013

Signature: _____
Name (Print): Ryan Galeria
Address: 44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

CITY:

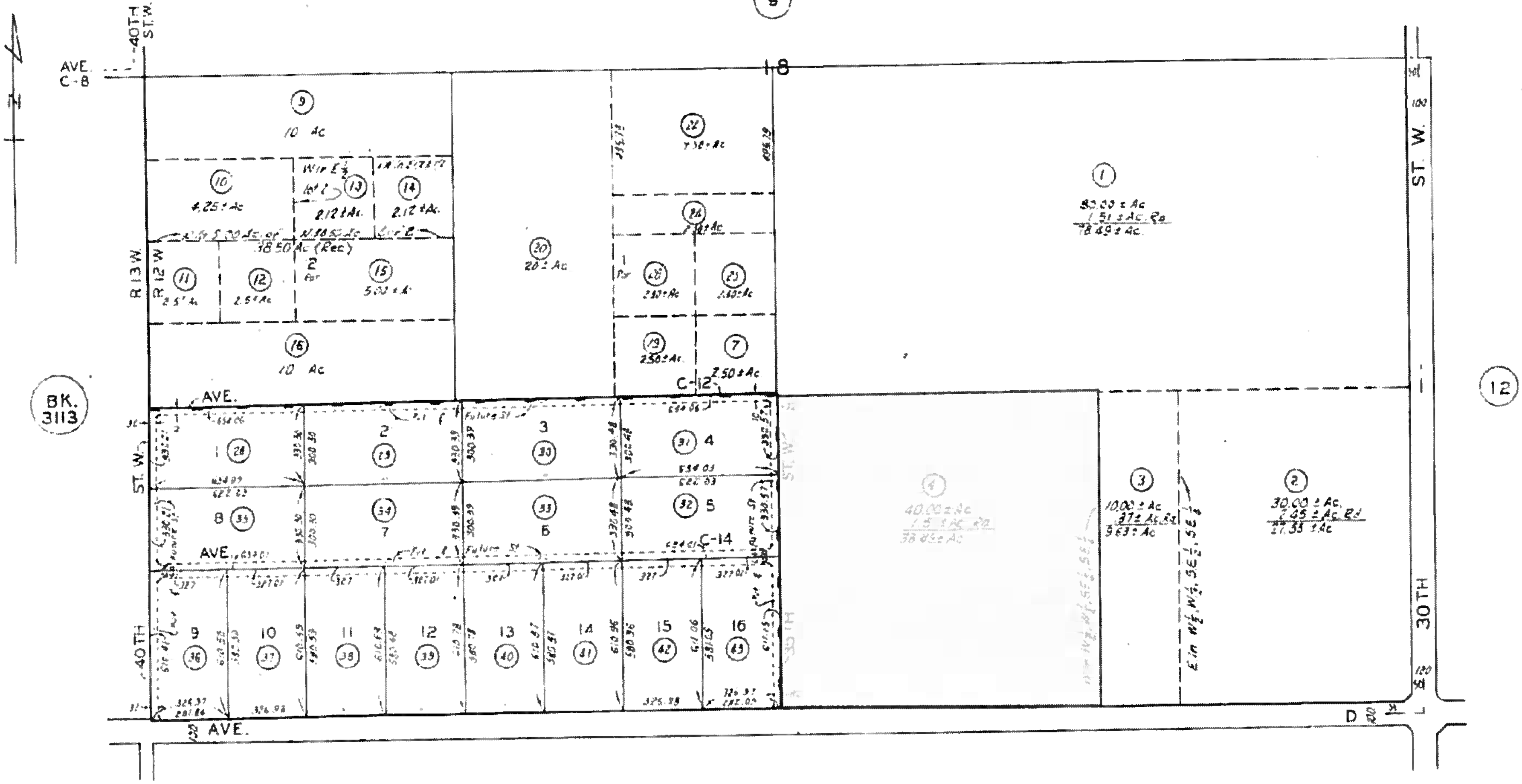
CITY OF LANCASTER

Date: July 16, 2013

By: _____
Name (Print): Carlyle S. Workman, P.E.
Title: Utility Services Manager
City of Lancaster

3115	10
SCALE 1" = 400	

REVISED
810223806-C
8503070400100Z
8904040200500
900227020020001-A1
900227020020002-A1



Lots 1 thru 16, Tr. No. 47003 are subject to Flood Hazard.

For recorded dimension of Private & Future St. see recorded map.

CODE
9610

FOR PREV. ASSM'T. SEE:
3108-10

T 8N., R.12W. TRACT NO. 47003 M.B. 1149-93-94

ASSESSOR'S MAP
COUNTY OF LOS ANGELES, CALIF.

CITY OF LANCASTER RECYCLED WATER SYSTEM
WILL SERVE APPLICATION FORM

Please complete the information requested below in order for the City to determine the availability of Recycled Water for a specific project

Date of Request:	Owner/Developer	Owner/Developer Representative (or) Engineering Firm (if applicable)
Company Name	Lancaster WAD LLC	Silverado Power
Contact Person	Ryan Galeria	Ryan Galeria
Mailing Address	44 Montgomery St, Ste. 3065	44 Montgomery St, Ste. 3065
City, State, Zip	San Francisco, CA 94104	San Francisco, CA 94104
Phone	415-692-7726	415-692-7726
Fax	415-362-4001	415-362-4001
Email Address	ryan@silveradopower.com	ryan@silveradopower.com

Parcel/Project

Requesting Party: City, County, Owner/Rep	Owner
Assessor Parcel Number(s)	3115-010-004
Situs Address	West Avenue D at 35th Street West
Parcel Acreage in Acres	38.5
Plan Reference: Tract, Parcel Map, Plot Plan, Other	Parcel Map
Number of Lots	N/A
Zoning:	A-2: Heavy Agricultural Zone
City, County, Project Name, or Permit Reference	Los Angeles County, Lancaster WAD project, EIR in Process

Recycled Water Flow Requirements		
Estimated Recycled Water Use in Acre Feet per Year	32	AFY
Estimated peak demand in Gallons Per Day	162,925	GPD
Required Pressure at the Street Connection in PSI	N/A	PSI
Estimated Date of Connection (mm/dd/yyyy)	4/1/2014	
Is the Property Currently Served by Los Angeles County Water Works?	Yes	

→ 0.03 GPD
10 3000-gallon trucks/day
@ 1 mgd = 1120 afy

Fire Flow Requirements	Water Service (Indicate Below) Per Table "A" attached
LACFD Fire Flow Requirements/GPM	Meter Size: Circle Size(s) Required
No. of Public Hydrants	1" 1-1/2" 2" 3" 4" Other
No. of On-site Hydrants	Meter Size: Portable/Temporary Circle Size(s) Required
Duration in Hours	1" 1-1/2" 2" 2-1/2" 3" 4" Other
Flow Requirement in GPM	

Return application form to City of Lancaster Utility Services Division, 615 West Avenue H, Lancaster, CA 93534. Or fax to (661) 723-6221 or return by email to sdassler@cityoflancasterca.org. Questions, please contact Steve Dassler at (661) 945-6863

TABLE "A"

Recycled Water Meter Size Selection

Meter Size	Maximum Rated Flow in GPM of Service Connection and Meter Installation
1	50
1-1/2	100
2	160
2-1/2	200
3	315
4	500
6	1,000.00
8	1,600.00
10	2,300.00
12	3,000.00

HOMER

July 3, 2013

Ryan Galeria
Project Manager
Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104

Subject: Possible Purchase of Water by Silverado Power

Dear Mr. Galeria:

Thank you for your inquiry regarding water supplies for Silverado Power's ("Silverado") construction projects in the Antelope Valley. As we understand your needs, Silverado will require approximately 550 acre-feet/year of water for a two-year construction period of 2014 to 2015. Furthermore, we understand that Silverado requires that its water supply be available for use from a resource outside of the adjudicated Antelope Valley Groundwater Basin.

Homer, LLC ("Homer") has a supply of surface water that has been imported to the Antelope Valley Groundwater Basin and is stored in the Antelope Valley Water Bank ("AVWB"), west of Rosamond in Kern County. Currently, Homer has 15,000 AF available and would be willing to entertain a possible water supply contract to Silverado for its construction needs. Homer does not hold itself out as providing services to the public and would provide this accommodation to Silverado as a neighboring landowner. The point of delivery would be from one or several wells located within the designated recovery area of the AVWB which is bounded by Rosamond Blvd., 170th St W, 100th St. W, and Avenue A in Kern County. The specific terms and conditions governing the purchase of water by Silverado from Homer would be contained in a detailed, definitive Water Purchase Agreement with Homer.

We look forward to working with and providing service to the Silverado in connection with its service requirements. If you have any questions, please feel free to call me at 323-936-9303.

Sincerely,
Homer, LLC

By _____
Andrew Werner

DRAFT

5700 Wilshire Blvd. Suite 330 Los Angeles CA 90035 P(323) 936-9303 F (323) 930-9114

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APPENDIX B-14

SITE PLANS

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APPENDIX B-14.1

PROJECT 1 NORTH LANCASTER RANCH
SITE PLANS

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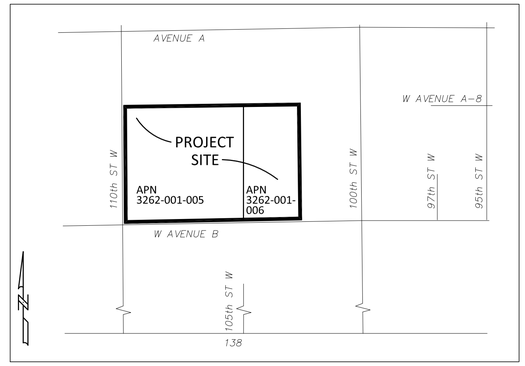
LOCATION MAP
NOT TO SCALE

PROJECT 1
NORTH LANCASTER RANCH
LOS ANGELES COUNTY, CALIFORNIA



VICINITY MAP
NOT TO SCALE

DRAWING INDEX

DRAWING NO.	TITLE	REVISION
T-01	TITLE SHEET	C
G-01	TOPOGRAPHIC MAP	A
G-01	TOPOGRAPHIC MAP	A
C-01	SITE PLAN	D
C-02	GRADING PLAN	C
C-03	ON-SITE DRAINAGE MAP	C
C-04	ON-SITE DRAINAGE MAP	C
C-05	ON-SITE DRAINAGE MAP	C
C-06	ON-SITE DRAINAGE MAP	C
C-07	DETAIL SHEET	D
C-08	SECTION SHEET	C

T-01
2011-00833 (RCUP201100079)

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/18/13	COUNTY REVISIONS	JD	SP
B	09/05/13	EXPANDED SITE	JD	SP
A	06/20/12	ADDED NEW SHEET	JD	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch
Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

DRAWING: TITLE SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power
PROJECT 1 NORTH LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\CAD\PROJECTS\106-4336 SILVERADO POWER\SP LA\P1-6\T-01-TITLE-6-B.DWG
PLOT/UPDATE: Dec 18, 2013 10:0.30 AM

SEE INS# 20120115888 AND RS 247 PAGES 17 AND 18 FOR THIS EDISON TOWER LINE

6'DIA METAL TOWER

6'DIA METAL TOWER

CP CL INT 105TH WEST & AVE B
FD CS MON IN HH PER TR 29272
N = 2115616.200
E = 6466442.060
EL = 2475.25'

CP CL INT 110TH WEST & A-8
FD CS MON PER TR29272
N = 2118227.080
E = 6463765.280
EL = N/A

FUTURE 105TH STREET WEST

110TH STREET WEST

AVENUE C

CP CL INT 105TH WEST & AVE A
FD CS MON IN HH PER TR 29272
N = 2120912.500
E = 6466379.380
EL = N/A

CP CTR SEC 1 AVE A-8 & 105TH WEST
FD 2" IP RCE 19429 PER TR 29272
N = 2118270.920
E = 6466410.770
EL = 2474.860'

FUTURE AVENUE A-8

AVENUE B

CP CL INT 100TH WEST & AVE B
FD CS MON IN HH PER TR 29272
N = 2115667.810
E = 6469090.370
EL = 2465.93

INS# 94-2211531

CP CL INT 100TH WEST & AVE A-8
FD CS MON PER TR 29272
N = 2118314.500
E = 6469056.320
EL = 2462.92'

100TH STREET WEST

SYMBOL LEGEND

- EP EDGE OF PAVEMENT
- ℞ PROPERTY LINE
- ℄ CENTER LINE
- R/W RIGHT OF WAY LINE
- FS FINISH SURFACE
- EL DIRT SPOT SHOT
- TREE
- CONCRETE
- CATV CABLE TV BOX
- POWER POLE
- GUY ANCHOR
- GP GUARD POST
- CONCRETE STANDPIPE
- FENCE
- EDGE OF PAVEMENT
- WALL

DATUM STATEMENT
COORDINATES SHOWN ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, (CCS83) ZONE V, 1983 NORTH AMERICAN DATUM, 1991.35 EPOCH ADJUSTMENT. COORDINATES SHOWN ARE GRID IN U.S. SURVEY FEET. ALL DISTANCES SHOWN ARE GRID DISTANCES. TO OBTAIN A GROUND DISTANCE, DIVIDE THE GRID DISTANCE BY 0.9998147. COMBINATION FACTOR IS PROJECT BASED.

LEGAL DESCRIPTION —INS# 94-2211531 APN 3262-001-006
THE WEST HALF OF THE SOUTHEAST QUARTER OF SECTION 1 TOWNSHIP 8 NORTH, RANGE 14 WEST, SAN BERNARDINO MERIDIAN IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA ACCORDING TO THE OFFICIAL PLAT THEREOF.

SHEET G-01

BASIS OF BEARING	BENCH MARK	SCALE
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE V, NAD 83, EPOCH 1991.35, AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING STATIONS (CGPS), EW7123 AND EW7124, BEING NORTH 13°31'30" EAST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE NATIONAL GEODETIC SURVEY.	LOS ANGELES COUNTY DPW BENCHMARK L 2329, LANCASTER 1998 ADJUSTMENT, NAVD 1988, ELEVATION = 2485.504 FEET. CS MON IN WELL 560MM DN @ C/L INT 110TH ST W & AVE B MKD (2, 1, 11, 12, R14W, T8N)	HORIZ: 1"= 100'

PROFESSIONAL LAND SURVEYOR
LARRY E JERNIGAN
No. 5924
EXP 12-31-12
STATE OF CALIFORNIA

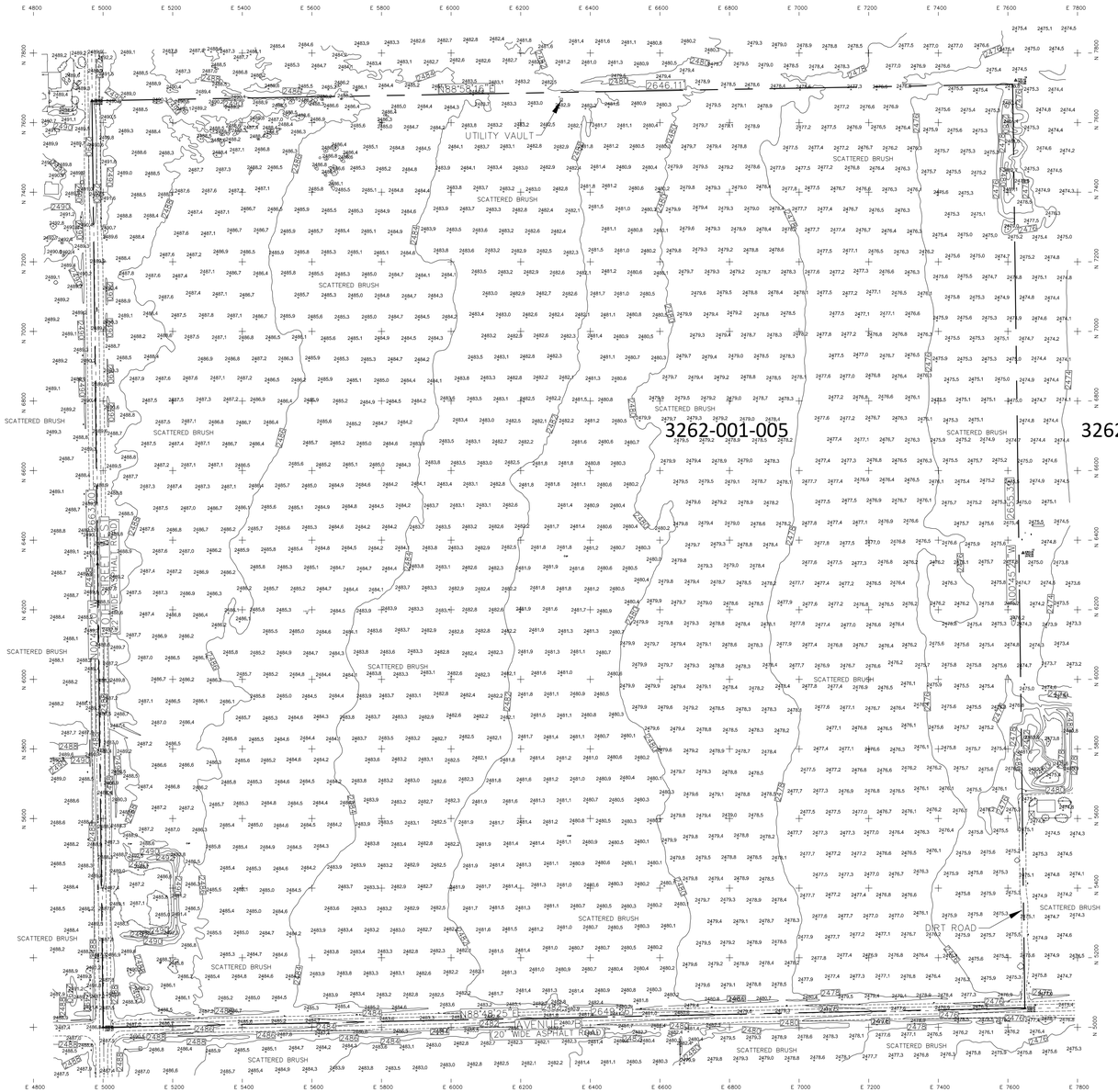
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA. 93534
(661) 942-3639

NO.	REVISION	BY	APPR.	DATE
1				
2				
3				

TOPOGRAPHIC MAP
105TH STREET WEST & WEST AVENUE B
ANTELOPE VALLEY
COUNTY OF LOS ANGELES
STATE OF CALIFORNIA

DATE OF SURVEY 4/5/12

COUNTY PLAN CHECK NUMBER 2011-00833 (RCUP201100079)



BENCH MARK

QUAD: LANCASTER
NO.: L 2328
ELEVATION: 2488.811
ADJUSTMENT: 1998
DESCRIPTION: CS MON IN WELL 300MM DN @ C/L INT 110TH ST W & AVE A-8 MKD (1/4 COR 2,1,T8N,R14W)

BENCH MARK

QUAD: LANCASTER
NO.: L 2329
ELEVATION: 2485.504
ADJUSTMENT: 1998
DESCRIPTION: CS MON IN WELL 560MM DN @ C/L INT 110TH ST W & AVE B MKD (2,1,11,12,R14W,T8N)

SURVEY NOTE

BOUNDARY BASED ON FIELD SURVEY BY SPEARS LAND SURVEY PERFORMED ON 4/28/08.

BASIS OF BEARING

THE BEARINGS SHOWN HEREON ARE BASED ON THE BEARING OF N88°48'25"E BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 1, TOWNSHIP 8 NORTH, RANGE 12 WEST, AS SHOWN ON THE MAP OF TRACT 29272, MAP BOOK 795, PAGES 54-59, O.R.

LEGEND

- POWER/TELEPHONE POLE
- STREET/TRAFFIC SIGN
- ON-SITE TREE

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

G-02

PLANS PREPARED UNDER THE SUPERVISION OF CHARLES J. BECK FOR E-SOLAR

(SIGNATURE) C19289 RCE# 9-30-09 EXP. DATE 07073 PROJECT

antelope valley engineering inc.
129 WEST PONDERA STREET
LANCASTER, CA. 93534
PHONE: (661) 948-0805

REV#		DATE
1		
2		
3		
4		
5		
6		

TOPOGRAPHY SURVEY
TUMBLEWEED SUNTOWER

SHEET 1 OF 1 SHTS

SCALE: 1" = 200' | CAD DWG. FILE NO.: 08066_TOPO_24x36.dwg

TOPOGRAPHIC SURVEY BY:

RJL

COMPILED USING PHOTOGRAMMETRIC METHODS BY
Bucher, James & Associates
2832 WALNUT AVENUE, SUITE E
TUSTIN, CALIFORNIA 92680
(714) 832-2077

WORK ORDER: 41344
DATE OF PHOTOGRAPHY: 5-2-08
CONTOUR INTERVAL: 2'

20MW AC Solar Photovoltaic Generation System

APNs
3262-001-005
3262-001-006

Project Name:
North Lancaster Ranch 6-22

Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

Silverado Power
44 Montgomery Street, Ste. 3065
San Francisco, CA 94104
(415) 692-7740

2011-00833 (RCUP201100079)
NORTH LANCASTER RANCH
LOS ANGELES COUNTY, CA

REGISTERED PROFESSIONAL ENGINEER
CHARLES J. BECK
C19289
EXP. 9-30-09
CIVIL
STATE OF CALIFORNIA

Julie.Delaney P:\4336-Silverado Power Solar Cup\CAD\SITE PLANS\6\6-County Submittal-C\G-02-TOPO.dwg Tue Nov 06, 2012 - 6:59am

EXPECTED UNDERGROUND GEN–TIE TO NORTH–SOUTH TRANSMISSION LINE

2646'

1323'

FLOOD ZONE 'X'

LOS ANGELES COUNTY

WEST AVENUE A–8 (FUTURE)

ANTICIPATED ℄ WEST AVENUE A–8 (FUTURE)

EXISTING WELL

27' PROPERTY LINE RADIUS

EXISTING IRRIGATION WELL

32' ROW

13' PROPERTY LINE RADIUS

10' SLOPE EASEMENT TO FENCE (SEE NOTE 5.)

HIGH VOLTAGE RISER

PROPOSED SUBSTATION/ SWITCHYARD (1 AC.) & CONSTRUCTION LAYDOWN AREA

20' WIDE INTERIOR ACCESS ROAD (TYP.) (SEE NOTE 4.)

DRIVEWAY 40' LONG x 24' WIDE TO GATE (SEE NOTE 6.)

PROPOSED 10,000 GALLON FIRE WATER TANK (SEE NOTE 8.)

STANDARD 8' SECURITY FENCE W/3–STRAND BARBED WIRE (SEE DETAIL SHEET)

24' WIDE PROJECT ENTRANCE ACCESS GATE (SEE NOTE 6.)

PROTECTIVE DEVICE (BREAKER/SHUTDOWN DEVICE)

PROVIDE 10' CLEAR ZONE WITHIN THE VEGETATIVE BUFFER EACH SIDE OF DRIVEWAY.

LOS ANGELES COUNTY

110TH STREET WEST

105TH STREET WEST (FUTURE)

102ND STREET (FUTURE)

PROPOSED 200' SCE EASEMENT

200'

100'

2633'

2621'

ANTICIPATED ℄ 102ND STREET (FUTURE)

APN 3262-001-006
SEE G-01 FOR TOPOGRAPHIC SURVEY
BENCHMARK: LOS ANGELES COUNTY DPW
BENCHMARK L 2329, LANCASTER 1998
ADJUSTMENT, NAVD 1988, ELEVATION = 2485.504 FEET
CS MON IN WELL 560MM DN @ C/L INT 110TH ST W & AVE B MKD (2, 1, 11, 12, R14W, T8N)

E' E C C'

APN 3262-001-005
SEE G-02 FOR TOPOGRAPHIC SURVEY
BENCHMARK: QUAD: LANCASTER NO.: L 2328 ELEVATION: 2488.811
ADJUSTMENT: 1998 DESCRIPTION: CS MON IN WELL 300MM
DN @ C/L INT 110TH ST W & AVE A-8 MKD (1/4 COR 2,1,T8N,R14W)
BENCHMARK: QUAD: LANCASTER NO.: L 2329 ELEVATION: 2485.504
ADJUSTMENT: 1998 DESCRIPTION: CS MON IN WELL 560MM
DN @ C/L INT 110TH ST W & AVE B MKD (2,1,11,12,R14W,T8N)

22' MINIMUM INTERIOR TURNING RADIUS (32' MINIMUM RADIUS AT CENTERLINE) (SEE NOTE 4). (TYPICAL)

FLOOD ZONE 'X'

EXISTING STRUCTURES TO BE DEMOLISHED EXISTING STANDPIPES TO BE REMOVED

INVERTER/ELECTRICAL EQUIPMENT PAD TYP. (SEE DETAIL SHEET)

20' MIN SETBACK SEE NOTE 9.

ANTICIPATED ℄ 105TH ST WEST (FUTURE) (APPROX. 12' WIDE, UNPAVED)

PROPOSED 10,000 GALLON FIRE WATER TANK (SEE NOTE 8.)

24' WIDE PROJECT ENTRANCE ACCESS GATE (SEE NOTE 6.)

CURRENT PROPERTY LINE

10' WIDE SLOPE EASEMENT

ANTICIPATED FUTURE PROPERTY LINE AFTER ROW DEDICATION

PROPOSED SUBSTATION/ SWITCHYARD (1 AC.) & CONSTRUCTION LAYDOWN AREA

13' PROPERTY LINE RADIUS

DIRT ROAD

A A' B B'

FLOOD ZONE 'X'

110TH STREET WEST (APPROX. 24' WIDE, PAVED)

43' ROW

20'

20' MIN SETBACK SEE NOTE 9.

EXISTING HIGH VOLTAGE LINES

27' PROPERTY LINE RADIUS HIGH VOLTAGE RISER

WEST AVENUE B (APPROX. 18' WIDE, PAVED) WIDEN EXISTING ROAD TO 20' FROM 110TH TO PROJECT DRIVEWAY.

EXPECTED 0.54 MILE UNDERGROUND GEN–TIE TO NORTH–SOUTH TRANSMISSION LINE

EXISTING WELL

2649'

WEST AVENUE B

LOS ANGELES COUNTY

FLOOD ZONE 'X'

PROVIDE 10' CLEAR ZONE WITHIN THE VEGETATIVE BUFFER EACH SIDE OF DRIVEWAY.

1324'

DRIVEWAY 40' LONG x 24' WIDE TO GATE (SEE NOTE 6.)

PROTECTIVE DEVICE (BREAKER/SHUTDOWN DEVICE)

30' ROW

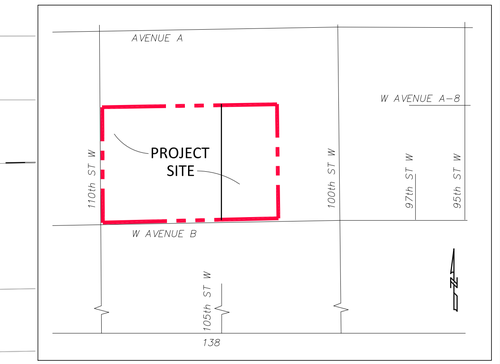
2'

13' PROPERTY LINE RADIUS

10' WIDE VEGETATIVE BUFFER

10' WIDE SLOPE EASEMENT

12' WIDE EASEMENT FOR LITTLE BUTTES TRAIL



VICINITY MAP

NO SCALE

PROJECT SITE:

PROJECT SITE IS 239 ACRES (NET)

NOTES:

1. 'ZONE X' AS SHOWN ON PANEL 0150F OF FLOOD INSURANCE RATE MAP NO. 06037C0150F. ZONE "X" DESIGNATED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

2. FIRE DEPARTMENT ACCESS DEVICE AND EMERGENCY CONTACT PLACARD LOCATED AT ALL ENTRANCE GATES.

3. MOBILE SANITATION FACILITY, AS DEFINED BY THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH, CAN BE LOCATED AT ALL PARKING LOCATIONS AND WILL BE LOCATED AT THE NEAREST LOCATION TO CONSTRUCTION AND OPERATIONAL WORKERS ACTIVITY. THE FACILITIES WILL BE KEPT TO LOS ANGELES COUNTY CODE, TITLE 11 – HEALTH & SAFETY, AND CAL–OSHA SANITATION STANDARDS IN SECTION 3360, TITLE 8, CALIFORNIA CODE OF REGULATIONS. MOBILE SANITATION FACILITIES WILL BE MADE AVAILABLE DURING CONSTRUCTION AND AS REQUIRED BY OSHA DURING OPERATIONS AND MAINTENANCE. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C–07.

4. INTERIOR ACCESS ROADS WILL BE 20' WIDE, COMPACTED TO 90%, WITH 32 FOOT TURNING RADIUS AT CENTER LINE. THE INNER RADIUS WILL BE 22' AND THE OUTER RADIUS WILL BE 42'. INTERIOR ACCESS ROADS WILL BE PROVIDED TO INVERTER/ELECTRICAL EQUIPMENT PADS AND AROUND THE PERIMETER OF THE PROJECT. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C–07.

5. 10 FOOT WIDE SLOPE EASEMENT WILL BE PROVIDED AROUND PERIMETER.

6. DRIVEWAY ACCESS GATES TO BE SET 40 FEET BACK FROM EDGE OF PROPERTY. DRIVEWAY WILL BE 24 FEET WIDE.

7. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION DURING DETAILED DESIGN.

8. TANK CONNECTIONS PER LOS ANGELES COUNTY FIRE DEPARTMENT.

9. A 20' MINIMUM SETBACK FROM PROPERTY LINE (AFTER DEDICATIONS) TO ARRAYS OR EQUIPMENT TO BE MAINTAINED ON SITE. PROJECT FENCE, FIRE ROADS, EASEMENTS, AND VEGETATION ARE OK WITHIN THE SETBACK.

LEGEND:

MIN	MINIMUM
ROW	RIGHT OF WAY
℄	CENTERLINE
x x	FENCE LINE
	OVERHEAD LINE
	UNDERGROUND LINE
	PROPERTY LINE (AFTER ROW DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
(2470)	CONTOUR LINE
	SOLAR ARRAY FIELD
	10' WIDE VEGETATIVE BUFFER
	10' WIDE SLOPE EASEMENT
	12' WIDE EASEMENT FOR LITTLE BUTTES TRAIL

200 0 200 400

SCALE IN FEET
1"=200'

WHEN PRINTED TO SCALE ON 22"x34" SHEET

C-01

2011-00833 (RCUP201100079)

REGISTERED PROFESSIONAL ENGINEER JULIE ANN DELANEY No.C54558 CIVIL STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
D	12/18/13	COUNTY REVISIONS	JD	SP
C	09/05/13	EXPANDED SITE	JD	SP
B	6/20/12	REVISIONS FOR COUNTY	JD	SP
A	5/26/11	INITIAL ISSUE	JD	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch

Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

DRAWING: Site Plan

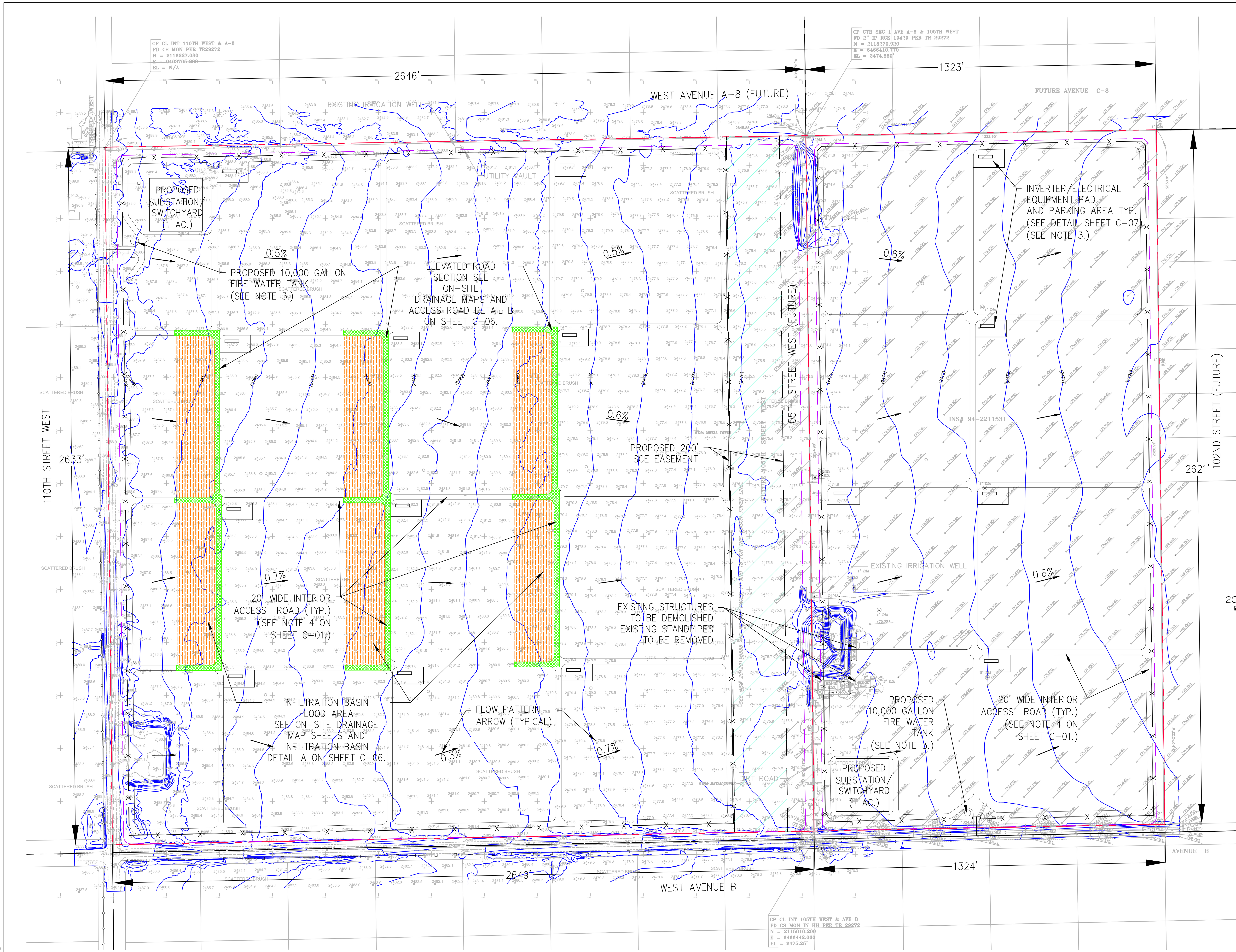
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 1 NORTH
LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

C:\SP LAYPLAYS\C-01-SITE-4.DWG
PLOT/UPDATE: Dec 26, 2013 8:48:53 AM



NOTES:

1. DRAINAGE ACROSS SITE IS CURRENTLY FROM THE WEST TO THE EAST, AS SHOWN ON THE SURFACE CONTOURS. TOPOGRAPHY/CONTOURS ARE BASED ON SURVEY DATA PROVIDED BY ALL VALLEY SURVEYING AND ANTELOPE VALLEY ENGINEERING, INC.

2. OVERALL EXISTING GRADING AND DRAINAGE PATTERN TO REMAIN UNCHANGED DURING AND AFTER CONSTRUCTION WITH THE EXCEPTION OF AREAS USED FOR DRAINAGE FEATURES. ELEVATED ROAD SECTIONS WILL BE USED TO CREATE INFILTRATION BASINS. FLOOD AREAS AND FLOW PATTERN ARROWS ARE SHOWN ON THIS SHEET AND SHEETS C-03 AND C-04. LIMIT OF GRADING ACTIVITIES WILL BE AT PROPERTY LINE (AFTER DEDICATIONS).

3. EQUIPMENT PADS WILL BE GRADED AS REQUIRED PER MANUFACTURER SPECIFICATIONS.

LEGEND:

CATV	CABLE TV BOX	EP	EDGE OF PAVEMENT
	POWER POLE	PL	PROPERTY LINE
	GUY ANCHOR	CL	CENTER LINE
GP	GUARD POST	R/W	RIGHT OF WAY LINE
	CONCRETE STANDPIPE	FS	FINISH SURFACE
	FENCE	EL	DIRT SPOT SHOT
	EDGE OF PAVEMENT		TREE
	WALL		CONCRETE

MIN	MINIMUM
ROW	RIGHT OF WAY
℄	CENTERLINE
	FENCE LINE
	OVERHEAD LINE
	UNDERGROUND LINE
	PROPERTY LINE (AFTER DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
(2470)	CONTOUR LINE
	INFILTRATION BASIN FLOOD AREA
	ELEVATED ROAD SECTION

200 0 200 400
SCALE IN FEET
1"=200'
WHEN PRINTED TO SCALE ON 22"x34" SHEET

EARTHWORK QUANTITIES:

OVEREXCAVATION	=	43,600 CUBIC YARDS
CUT	=	5,400 CUBIC YARDS
FILL	=	5,400 CUBIC YARDS

CUT & FILL QUANTITIES INCLUDE INVERTER PADS, SUBSTATIONS/SWITCHYARDS, BASINS, AND ELEVATED ROAD BED FOR DRAINAGE FEATURES.

OVEREXCAVATION QUANTITY INCLUDES ACCESSIBLE FIRE ROAD.

SURVEY INFORMATION:

TOPOGRAPHIC MAP AND CONTOURING PREPARED BY ALL VALLEY SURVEYING, SEE TOPOGRAPHIC MAP SHEET G-01 AND ANTELOPE VALLEY ENGINEERING, INC. SEE TOPOGRAPHIC MAP SHEET G-02

BASIS OF BEARINGS:

SEE TOPOGRAPHIC MAP SHEETS G-01 & G-02.

BENCHMARK:

SEE TOPOGRAPHIC MAP SHEETS G-01 & G-02.

SURVEYORS:

LARRY E. JERNIGAN, PLS #5924
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA 93534
(661) 942-3639

CHARLES J. BECK, PE #C19289
ANTELOPE VALLEY ENGINEERING, INC.
129 WEST PONDERA ST.
LANCASTER, CA 93534
(661) 948-0805

C-02

2011-00833 (RCUP201100079)

REGISTERED PROFESSIONAL ENGINEER — JULIE ANN DELANEY — No. C54558 — CIVIL — STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/18/13	REVISIONS FOR COUNTY	JD	SP
B	09/05/13	EXPANDED SITE	JD	SP
A	6/20/12	ADDED NEW SHEET	JD	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs
3262-001-005
3262-001-006
SCH # 2012061068

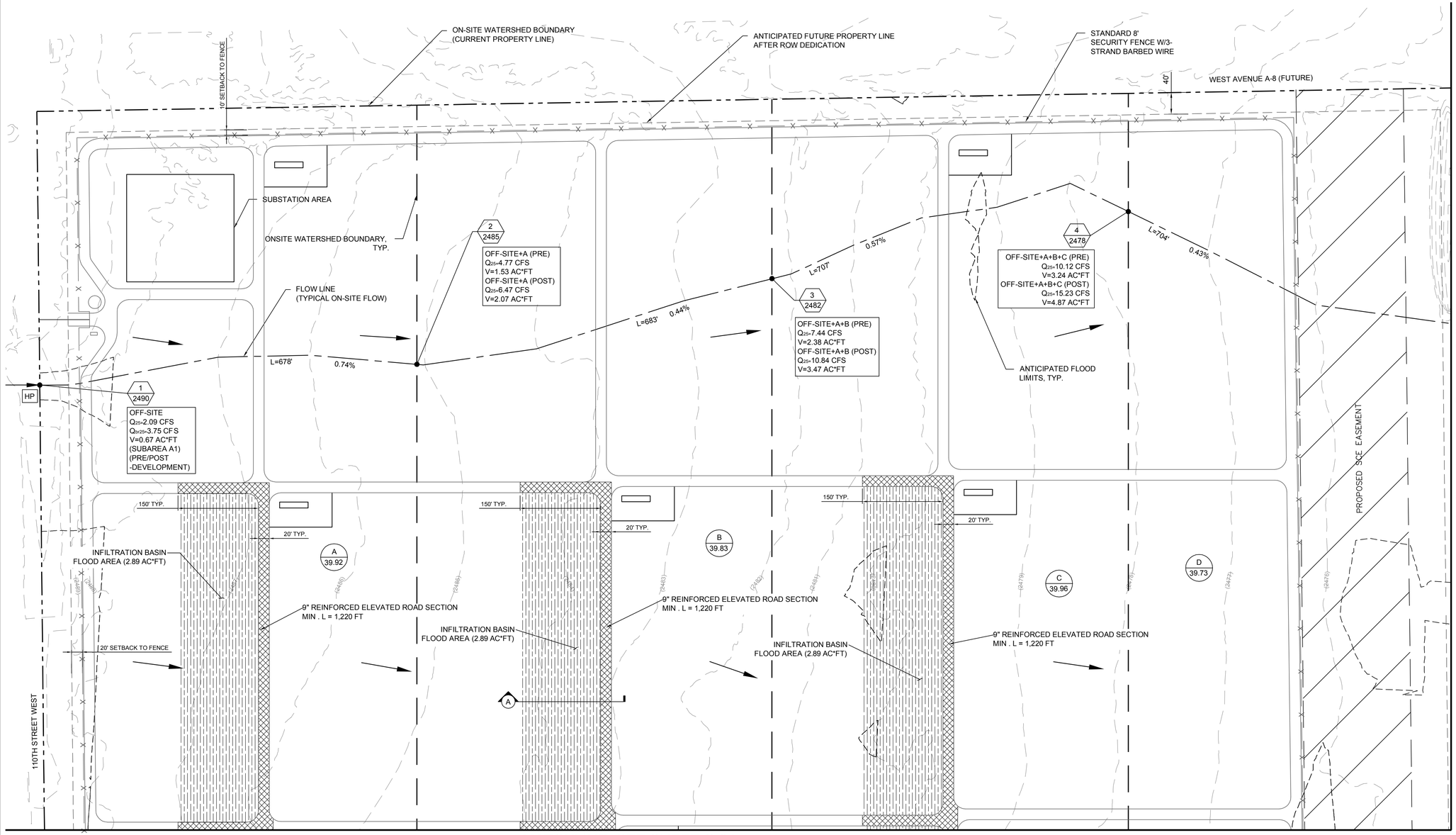
Project Name:
Project 1 North Lancaster Ranch
Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

DRAWING:
Preliminary Grading & Drainage Plan
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 1 NORTH
LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



LEGEND:

- SUBAREA ID / ACREAGE
- NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.419 SQ. MI.) = 545 CY

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA FLOOD ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATE (Q_{50}) DECREASED BY 1.5%, THE VOLUME (V_{50}) INCREASED BY 6.9%, THE DEPTH INCREASED BY 0.0%, AND THE VELOCITY INCREASED BY 0.0%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____ RCE NO:_____ DATE_____
CHECKED BY:_____ DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N

0 50 100 200
SCALE: 1":100' (ON FULL SIZE DWG.)

2011-00833 (RCUP201100079) C-03

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch
Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100079
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

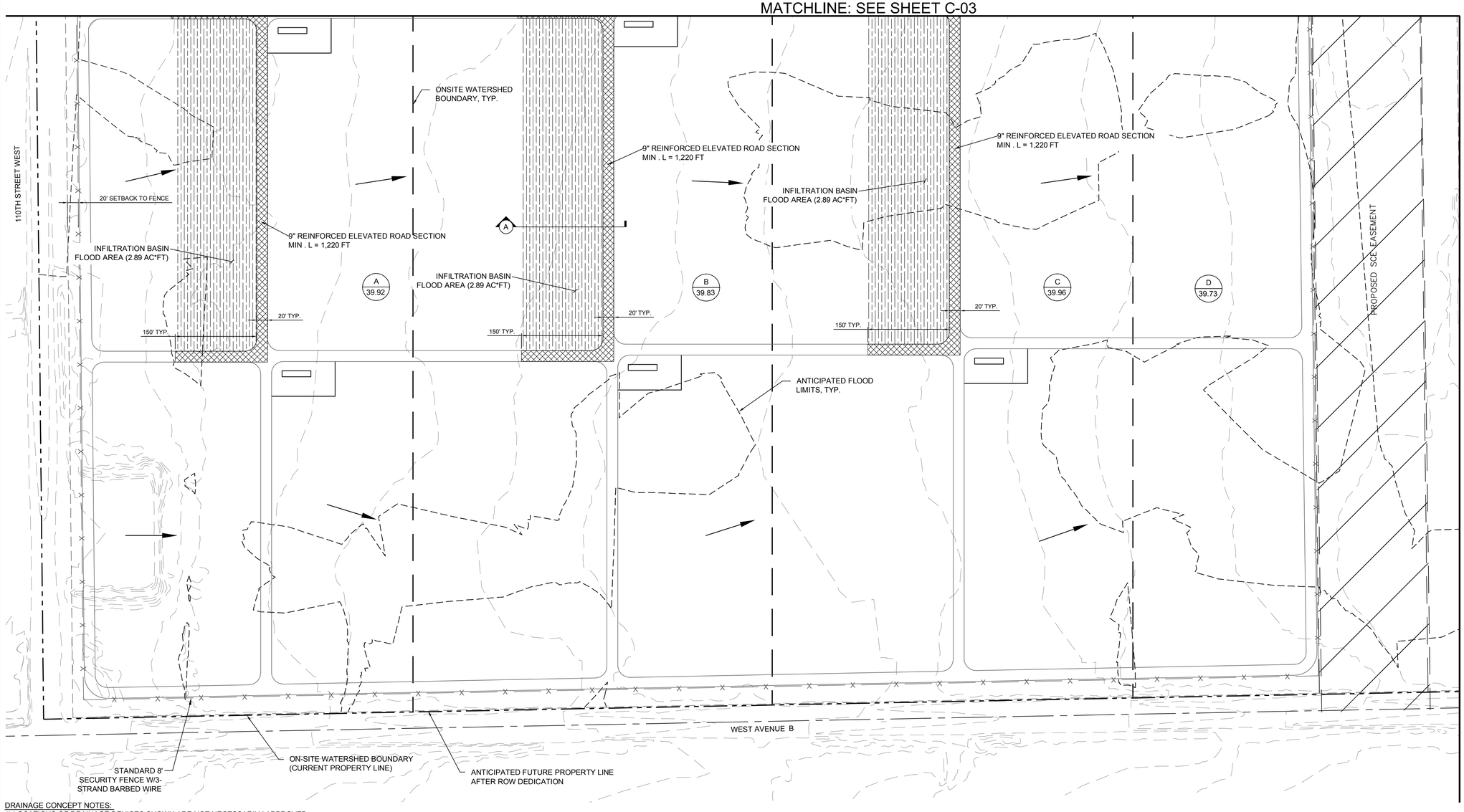
SILVERADO power

PROJECT 1 NORTH
LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\34546\L35--04546--1200\1\SUPPORTDOCS\CAL(S)\HYDROLOGY\GUPK\FINAL DESIGN\ONSITE HYDROLOGY C03.DWG
PLOT/APDATE: Dec 6, 2013 10:44:45 AM

MATCHLINE: SEE SHEET C-03



MATCHLINE: SEE SHEET C-06

LEGEND:

- SUBAREA ID / ACREAGE
- NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.419 SQ. MI.) = 545 CY

DRAINAGE CONCEPT NOTES:

1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
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10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATE (Q_{50}) DECREASED BY 1.5%, THE VOLUME (V_{50}) INCREASED BY 6.9%, THE DEPTH INCREASED BY 0.0%, AND THE VELOCITY INCREASED BY 0.0%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N

0 50 100 200
SCALE: 1":100' (ON FULL SIZE DWG.)

2011-00833 (RCUP201100079) C-04

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Dec 6, 2013 10:39:57 AM

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch

Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

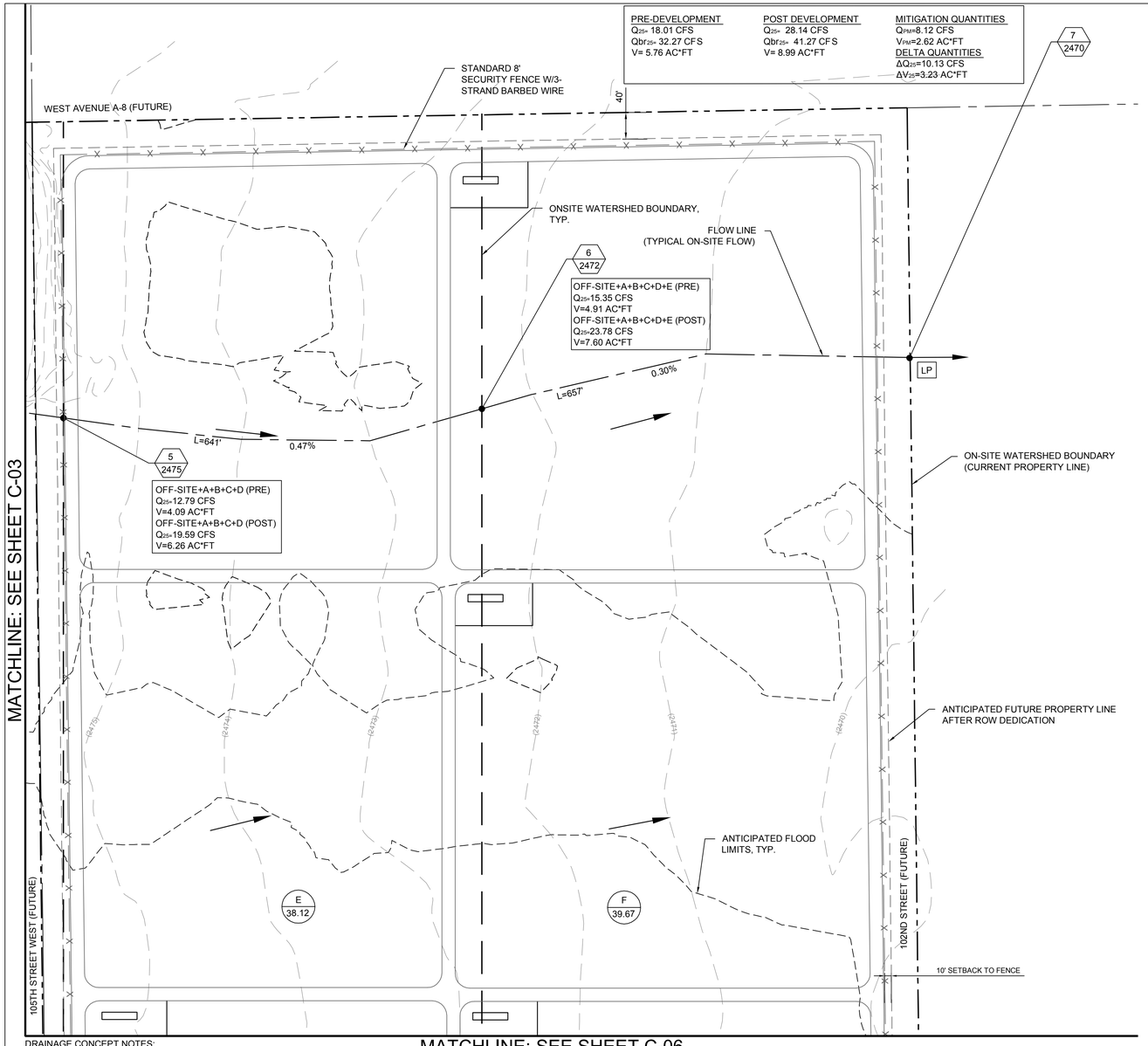
HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100079
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 1 NORTH
LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

ON-SITE HYDROLOGY (PRE DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc calculated (min.)	Intensity (in./hr)	Co	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 1	A	39.92	0.01	2	120	678	0.0074	1.0	30	0.27	0.10	0.11	1.19	0.34	1.92	0.38
Project 1	B	39.83	0.01	2	120	683	0.0044	1.0	30	0.27	0.10	0.11	1.18	0.34	1.92	0.37
Project 1	C	39.96	0.01	2	120	707	0.0057	1.0	30	0.27	0.10	0.11	1.19	0.34	1.92	0.38
Project 1	D	39.73	0.01	2	120	704	0.0043	1.0	30	0.27	0.10	0.11	1.18	0.34	1.91	0.37
Project 1	E	38.12	0.01	2	120	641	0.0047	1.0	30	0.27	0.10	0.11	1.13	0.34	1.94	0.36
Project 1	F	39.67	0.01	2	120	657	0.0030	1.0	30	0.27	0.10	0.11	1.18	0.34	1.93	0.37
Project 1	A	39.92	0.01	5	120	678	0.0074	1.6	30	0.41	0.10	0.11	1.80	0.34	3.08	0.57
Project 1	B	39.83	0.01	5	120	683	0.0044	1.6	30	0.41	0.10	0.11	1.80	0.34	3.07	0.57
Project 1	C	39.96	0.01	5	120	707	0.0057	1.6	30	0.41	0.10	0.11	1.80	0.34	3.08	0.57
Project 1	D	39.73	0.01	5	120	704	0.0043	1.6	30	0.41	0.10	0.11	1.79	0.34	3.06	0.57
Project 1	E	38.12	0.01	5	120	641	0.0047	1.6	30	0.41	0.10	0.11	1.72	0.34	2.94	0.55
Project 1	F	39.67	0.01	5	120	657	0.0030	1.6	30	0.41	0.10	0.11	1.79	0.34	3.06	0.57
Project 1	A	39.92	0.01	10	120	678	0.0074	1.9	30	0.50	0.10	0.11	2.20	0.34	3.85	0.70
Project 1	B	39.83	0.01	10	120	683	0.0044	1.9	30	0.50	0.10	0.11	2.19	0.34	3.84	0.70
Project 1	C	39.96	0.01	10	120	707	0.0057	1.9	30	0.50	0.10	0.11	2.20	0.34	3.85	0.70
Project 1	D	39.73	0.01	10	120	704	0.0043	1.9	30	0.50	0.10	0.11	2.19	0.34	3.83	0.69
Project 1	E	38.12	0.01	10	120	641	0.0047	1.9	30	0.50	0.10	0.11	2.10	0.34	3.67	0.67
Project 1	F	39.67	0.01	10	120	657	0.0030	1.9	30	0.50	0.10	0.11	2.18	0.34	3.82	0.69
Project 1	A	39.92	0.01	25	120	678	0.0074	2.4	30	0.61	0.10	0.11	2.68	0.34	4.90	0.86
Project 1	B	39.83	0.01	25	120	683	0.0044	2.4	30	0.61	0.10	0.11	2.67	0.34	4.79	0.85
Project 1	C	39.96	0.01	25	120	707	0.0057	2.4	30	0.61	0.10	0.11	2.68	0.34	4.80	0.86
Project 1	D	39.73	0.01	25	120	704	0.0043	2.4	30	0.61	0.10	0.11	2.67	0.34	4.78	0.85
Project 1	E	38.12	0.01	25	120	641	0.0047	2.4	30	0.61	0.10	0.11	2.56	0.34	4.58	0.82
Project 1	F	39.67	0.01	25	120	657	0.0030	2.4	30	0.61	0.10	0.11	2.66	0.34	4.77	0.85
Project 1	A	39.92	0.01	50	120	678	0.0074	2.7	30	0.69	0.13	0.14	3.86	0.34	6.24	0.99
Project 1	B	39.83	0.01	50	120	683	0.0044	2.7	30	0.69	0.13	0.14	3.85	0.34	6.23	0.98
Project 1	C	39.96	0.01	50	120	707	0.0057	2.7	30	0.69	0.13	0.14	3.86	0.34	6.25	0.99
Project 1	D	39.73	0.01	50	120	704	0.0043	2.7	30	0.69	0.13	0.14	3.84	0.34	6.21	0.98
Project 1	E	38.12	0.01	50	120	641	0.0047	2.7	30	0.69	0.13	0.14	3.68	0.34	5.96	0.94
Project 1	F	39.67	0.01	50	120	657	0.0030	2.7	30	0.69	0.13	0.14	3.83	0.34	6.21	0.98
Project 1	A	39.92	0.01	MIT.	120	678	0.0074	0.75	30	0.19	0.10	0.11	0.83	0.34	1.29	0.27
Project 1	B	39.83	0.01	MIT.	120	683	0.0044	0.75	30	0.19	0.10	0.11	0.83	0.34	1.29	0.27
Project 1	C	39.96	0.01	MIT.	120	707	0.0057	0.75	30	0.19	0.10	0.11	0.84	0.34	1.29	0.27
Project 1	D	39.73	0.01	MIT.	120	704	0.0043	0.75	30	0.19	0.10	0.11	0.83	0.34	1.28	0.27
Project 1	E	38.12	0.01	MIT.	120	641	0.0047	0.75	30	0.19	0.10	0.11	0.80	0.34	1.23	0.26
Project 1	F	39.67	0.01	MIT.	120	657	0.0030	0.75	30	0.19	0.10	0.11	0.83	0.34	1.28	0.27

ON-SITE HYDROLOGY (POST DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc calculated (min.)	Intensity (in./hr)	Co	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 1	A	39.92	0.1	2	120	678	0.0074	1.0	30	0.27	0.10	0.18	1.94	0.34	2.61	0.61
Project 1	B	39.83	0.1	2	120	683	0.0044	1.0	30	0.27	0.10	0.18	1.94	0.34	2.61	0.61
Project 1	C	39.96	0.1	2	120	707	0.0057	1.0	30	0.27	0.10	0.18	1.94	0.34	2.61	0.62
Project 1	D	39.73	0.1	2	120	704	0.0043	1.0	30	0.27	0.10	0.18	1.93	0.34	2.60	0.61
Project 1	E	38.12	0.1	2	120	641	0.0047	1.0	30	0.27	0.10	0.18	1.85	0.34	2.49	0.59
Project 1	F	39.67	0.1	2	120	657	0.0030	1.0	30	0.27	0.10	0.18	1.93	0.34	2.60	0.61
Project 1	A	39.92	0.1	5	120	678	0.0074	1.6	30	0.41	0.10	0.18	2.95	0.34	4.11	0.93
Project 1	B	39.83	0.1	5	120	683	0.0044	1.6	30	0.41	0.10	0.18	2.94	0.34	4.10	0.93
Project 1	C	39.96	0.1	5	120	707	0.0057	1.6	30	0.41	0.10	0.18	2.95	0.34	4.12	0.93
Project 1	D	39.73	0.1	5	120	704	0.0043	1.6	30	0.41	0.10	0.18	2.93	0.34	4.09	0.93
Project 1	E	38.12	0.1	5	120	641	0.0047	1.6	30	0.41	0.10	0.18	2.81	0.34	3.93	0.89
Project 1	F	39.67	0.1	5	120	657	0.0030	1.6	30	0.41	0.10	0.18	2.93	0.34	4.09	0.93
Project 1	A	39.92	0.1	10	120	678	0.0074	1.9	30	0.50	0.10	0.18	3.59	0.34	5.10	1.14
Project 1	B	39.83	0.1	10	120	683	0.0044	1.9	30	0.50	0.10	0.18	3.58	0.34	5.08	1.14
Project 1	C	39.96	0.1	10	120	707	0.0057	1.9	30	0.50	0.10	0.18	3.60	0.34	5.10	1.14
Project 1	D	39.73	0.1	10	120	704	0.0043	1.9	30	0.50	0.10	0.18	3.58	0.34	5.07	1.14
Project 1	E	38.12	0.1	10	120	641	0.0047	1.9	30	0.50	0.10	0.18	3.43	0.34	4.87	1.09
Project 1	F	39.67	0.1	10	120	657	0.0030	1.9	30	0.50	0.10	0.18	3.57	0.34	5.06	1.13
Project 1	A	39.92	0.1	25	120	678	0.0074	2.4	30	0.61	0.10	0.18	4.38	0.34	6.33	1.40
Project 1	B	39.83	0.1	25	120	683	0.0044	2.4	30	0.61	0.10	0.18	4.37	0.34	6.30	1.40
Project 1	C	39.96	0.1	25	120	707	0.0057	2.4	30	0.61	0.10	0.18	4.39	0.34	6.32	1.40
Project 1	D	39.73	0.1	25	120	704	0.0043	2.4	30	0.61	0.10	0.18	4.36	0.34	6.28	1.39
Project 1	E	38.12	0.1	25	120	641	0.0047	2.4	30	0.61	0.10	0.18	4.19	0.34	6.03	1.34
Project 1	F	39.67	0.1	25	120	657	0.0030	2.4	30	0.61	0.10	0.18	4.36	0.34	6.28	1.39
Project 1	A	39.92	0.1	50	120	678	0.0074	2.7	30	0.69	0.13	0.21	5.78	0.34	7.95	1.61
Project 1	B	39.83	0.1	50	120	683	0.0044	2.7	30	0.69	0.13	0.21	5.77	0.34	7.94	1.60
Project 1	C	39.96	0.1	50	120	707	0.0057	2.7	30	0.69	0.13	0.21	5.79	0.34	7.96	1.61
Project 1	D	39.73	0.1	50	120	704	0.0043	2.7	30	0.69	0.13	0.21	5.76	0.34	7.92	1.60
Project 1	E	38.12	0.1	50	120	641	0.0047	2.7	30	0.69	0.13	0.21	5.52	0.34	7.59	1.53
Project 1	F	39.67	0.1	50	120	657	0.0030	2.7	30	0.69	0.13	0.21	5.75	0.34	7.90	1.60
Project 1	A	39.92	0.1	MIT.	120	678	0.0074	0.75	30	0.19	0.10	0.18	1.37	0.34	1.78	0.44
Project 1	B	39.83	0.1	MIT.	120	683	0.0044	0.75	30	0.19	0.10	0.18	1.36	0.34	1.77	0.44
Project 1	C	39.96	0.1	MIT.	120	707	0.0057	0.75	30	0.19	0.10	0.18	1.37	0.34	1.78	0.44
Project 1	D	39.73	0.1	MIT.	120	704	0.0043	0.75	30	0.19	0.10	0.18	1.36	0.34	1.77	0.44
Project 1	E	38.12	0.1	MIT.	120	641	0.0047	0.75	30	0.19	0.10	0.18	1.30	0.34	1.70	0.42
Project 1	F	39.67	0.1	MIT.	120	657	0.0030	0.75	30	0.19	0.10	0.18	1.36	0.34	1.77	0.44

Incremental Flow and Volume Increase for Various Storm Events

Storm Event	Pre-Q (cfs)	Post-Q (cfs)	Delta Q (cfs)	Pre-V (acre-ft)	Post-V (acre-ft	Delta-V (acre-ft)
2.00	7.05	11.53	4.48	2.23	3.65	1.42
5.00	10.70	17.51	6.81	3.40	5.54	2.14
10.00	13.06	21.35	8.29	4.15	6.78	2.63
25.00	15.92	26.05	10.13	5.09	8.32	3.23
50.00	22.92	34.37	11.45	5.86	9.55	3.69

NOTE: FOR INFILTRATION BASIN MITIGATION VOLUME, SUM MIT. FREQUENCY VOLUMES UNDER POST-DEVELOPMENT TABLE. V_{PM}=2.62 AC*FT.

DELTA QUANTITIES FOR DRAINAGE AREA A:
ΔQ25 = 4.38 - 2.68 = 1.70 CFS
ΔV25 = 1.40 - 0.86 = 0.54 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA B:
ΔQ25 = 4.37 - 2.67 = 1.70 CFS
ΔV25 = 1.40 - 0.85 = 0.55 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA C
ΔQ25 = 4.39 - 2.68 = 1.71 CFS
ΔV25 = 1.32 - 0.86 = 0.54 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA D
ΔQ25 = 4.36 - 2.67 = 1.69 CFS
ΔV25 = 1.39 - 0.85 = 0.54 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA E
ΔQ25 = 4.19 - 2.56 = 1.63 CFS
ΔV25 = 1.34 - 0.82 = 0.52 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA F
ΔQ25 = 4.36 - 2.66 = 1.70 CFS
ΔV25 = 1.39 - 0.85 = 0.54 AC*FT

TOTAL DELTA QUANTITIES
ΔQ25 = 10.13 CFS
ΔV25 = 3.23 AC*FT

NOTE: DUE TO THE LID Δ QUANTITIES ABOVE BEING GREATER THAN THE MITIGATION QUANTITIES (Q_{PM} AND V_{PM}) THEY REPRESENT THE WORST CASE SCENARIO BETWEEN THE PRE-/POST DEVELOPMENT CONDITIONS AND THEREFORE SHALL BE USED FOR SIZING THE INFILTRATION BASINS.

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{Br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.419 SQ. MI.) = 545 CY

N
0 50 100 200
SCALE: 1":100' (ON FULL SIZE DWG.)

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA FLOOD ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATE (Q_{50}) DECREASED BY 1.5%, THE VOLUME (V_{50}) INCREASED BY 6.9%, THE DEPTH INCREASED BY 0.0%, AND THE VELOCITY INCREASED BY 0.0%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

2011-00833 (RCUP201100079) C-05

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch
Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100079 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 1 NORTH LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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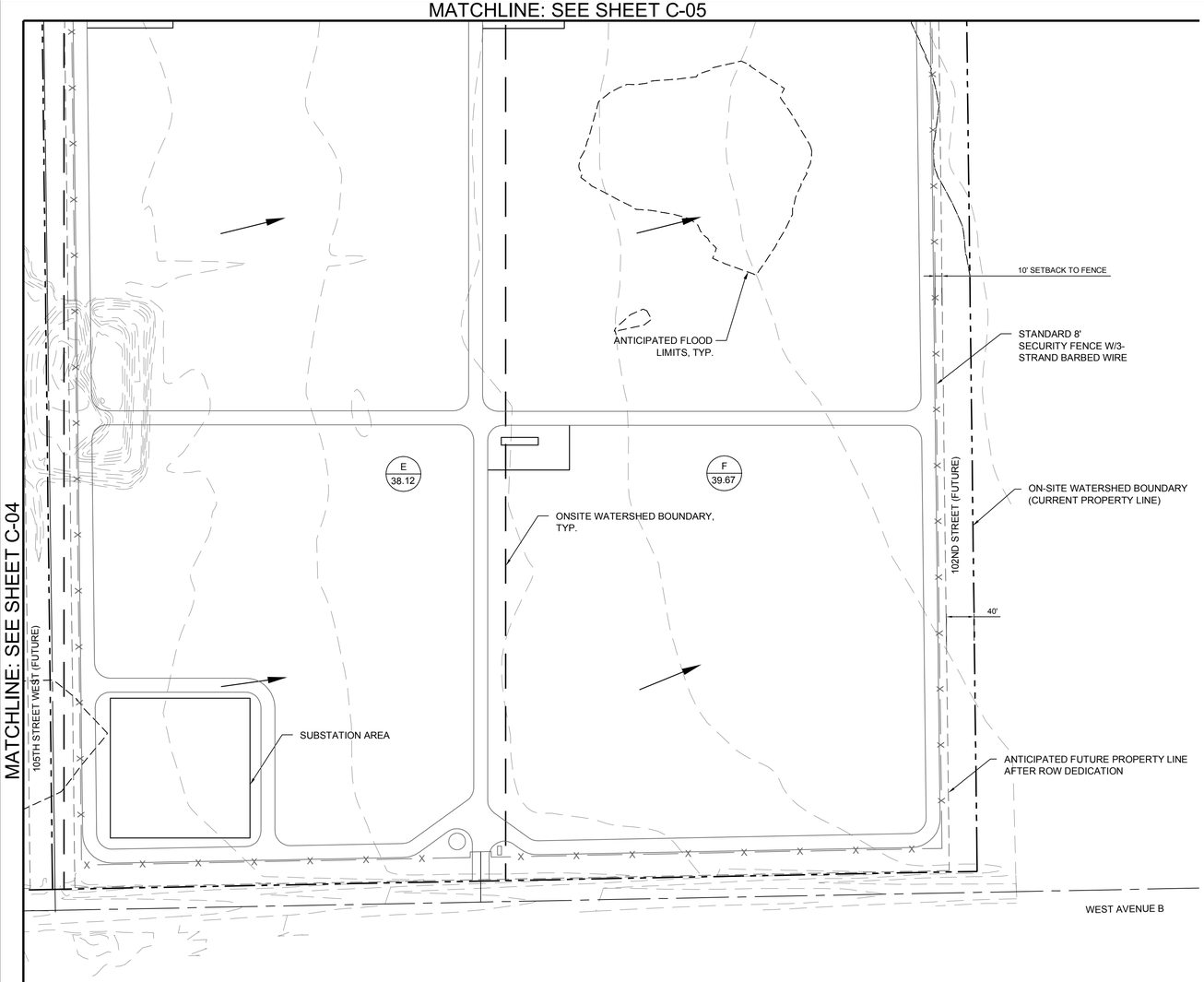

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
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- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
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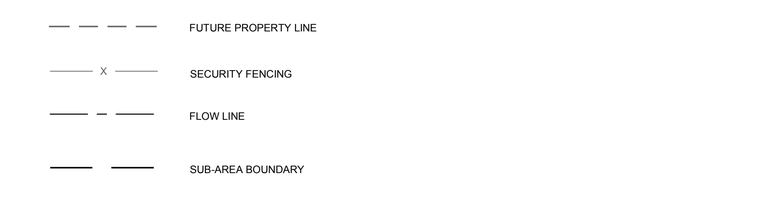
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.419 SQ. MI.) = 545 CY

A INFILTRATION BASIN DETAIL
SCALE: NTS



B ACCESS ROAD DETAIL (TYP.)
SCALE: NTS

N

0 50 100 200
SCALE: 1":100' (ON FULL SIZE DWG.)

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
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HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY: _____ RCE NO: _____ DATE _____
CHECKED BY: _____ DATE _____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

2011-00833 (RCUP201100079) C-06

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PLOT/UPDATE: Dec 6, 2013 10:44:37 AM

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch
Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

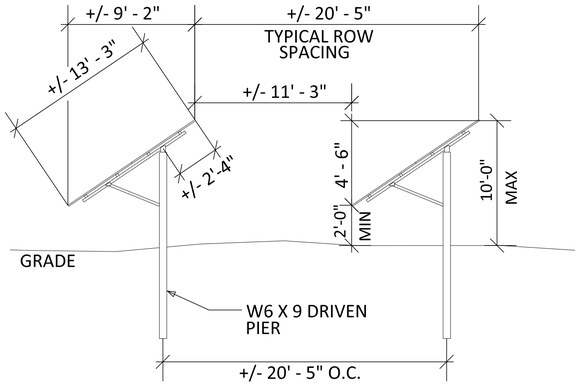
HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100079
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

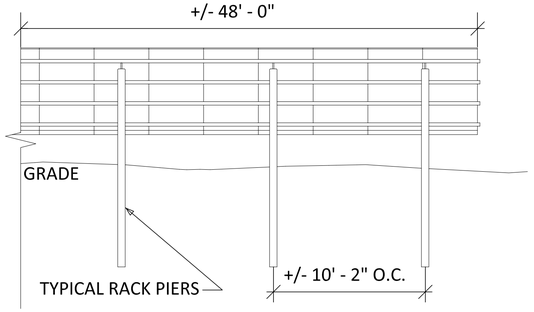
PROJECT 1 NORTH
LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



TYPICAL SOLAR ARRAY RACK DETAIL AND END ELEVATION

NOT TO SCALE



SOLAR ARRAY RACK DETAIL ELEVATION

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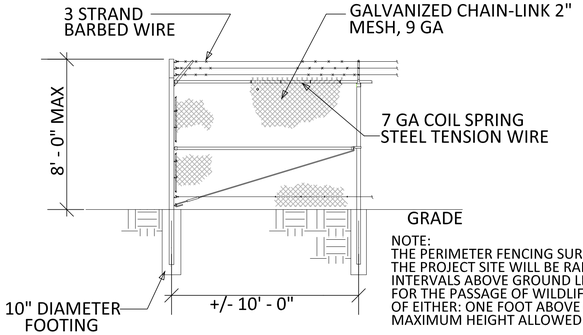
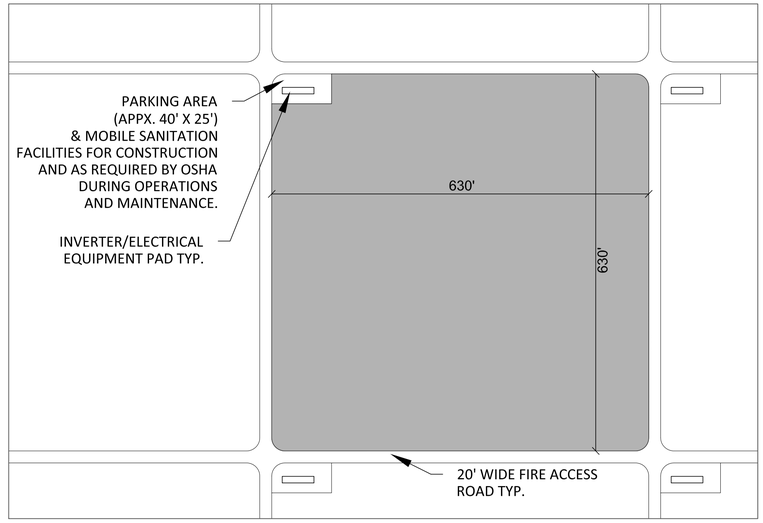


NOTE:
THE PERIMETER FENCING SURROUNDING THE PROJECT SITE WILL BE RAISED AT REGULAR INTERVALS ABOVE GROUND LEVEL TO ALLOW FOR THE PASSAGE OF WILDLIFE TO THE LESSER OF EITHER: ONE FOOT ABOVE GRADE OR TO THE MAXIMUM HEIGHT ALLOWED BY THE PUC.

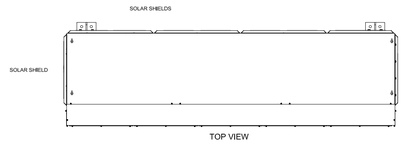
CHAIN LINK SECURITY FENCE ELEVATION

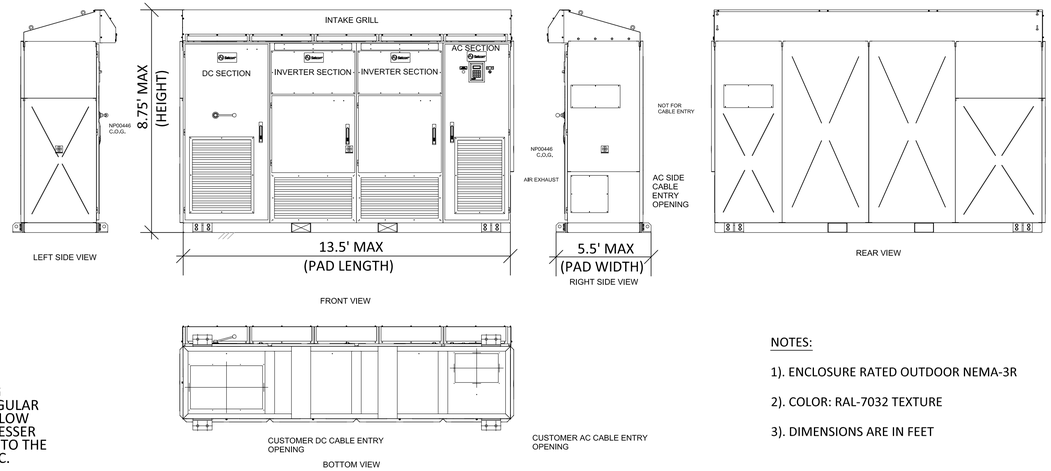
NOT TO SCALE



ARRAY BLOCK DETAIL (TYPICAL)

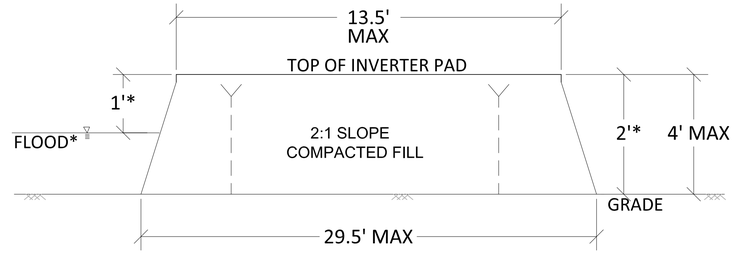
NOT TO SCALE





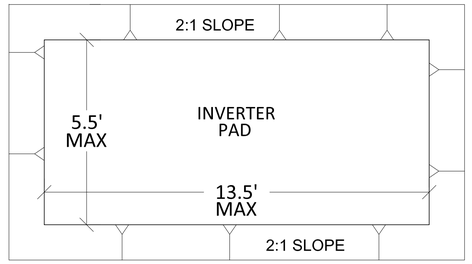
INVERTER PAD DETAILS (TYPICAL)

NOT TO SCALE



*TOP OF INVERTER PAD TO BE 1' MINIMUM ABOVE FLOOD WATER ELEVATION AS DETERMINED IN FINAL HYDROLOGY REPORT AND 2' ABOVE GRADE IN FEMA ZONE A.

ELEVATION VIEW



PLAN VIEW

RAISED INVERTER PAD DETAILS FOR FLOOD AREAS AS NEEDED

NOT TO SCALE

NOTES:

1). ENCLOSURE RATED OUTDOOR NEMA-3R

2). COLOR: RAL-7032 TEXTURE

3). DIMENSIONS ARE IN FEET

C-07

2011-00833 (RCUP201100079)

REGISTERED PROFESSIONAL ENGINEER — JULIE ANN DELANEY — No.C54558 — CIVIL — STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
D	12/18/13	REVISIONS FOR AGENCY	JD	SP
C	09/05/13	SHEET NUMBERING CHANGE	JD	SP
B	06/20/12	REVISIONS FOR AGENCY	JD	SP
A	05/26/11	INITIAL ISSUE	JD	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch

Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

DRAWING: DETAIL SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 1 NORTH
LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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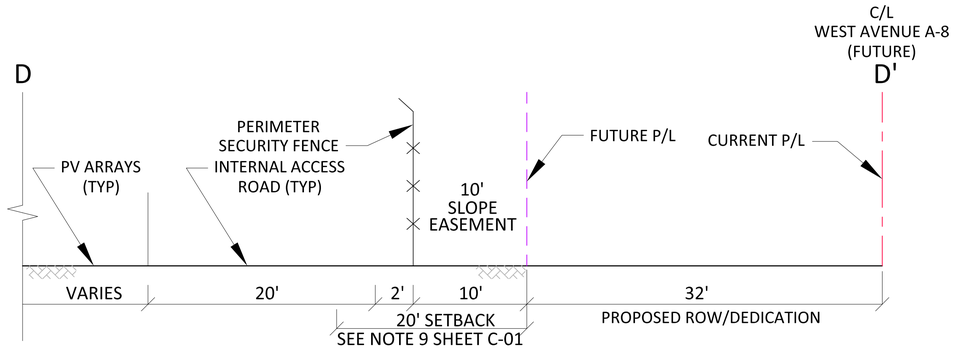

SECTION D - D'

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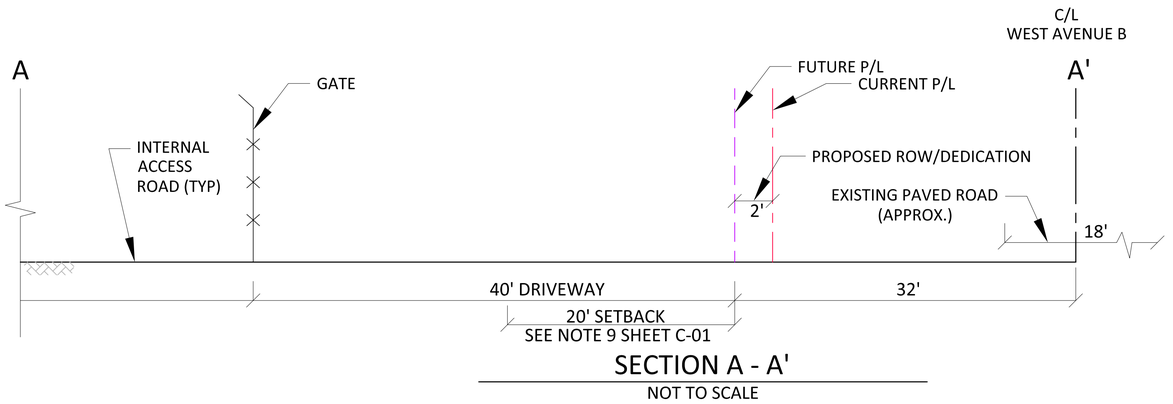

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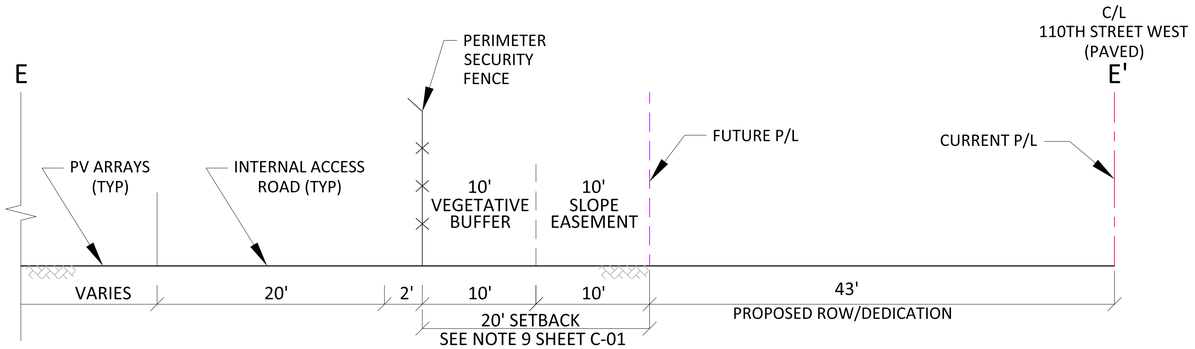

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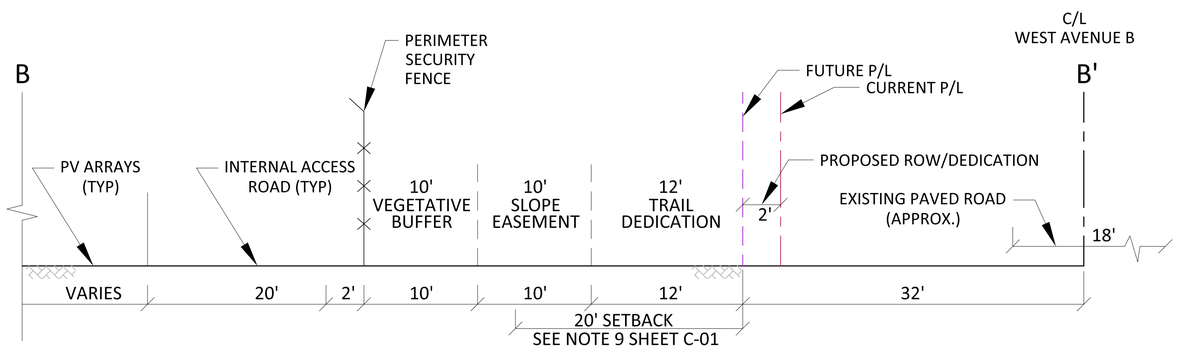

SECTION B - B'

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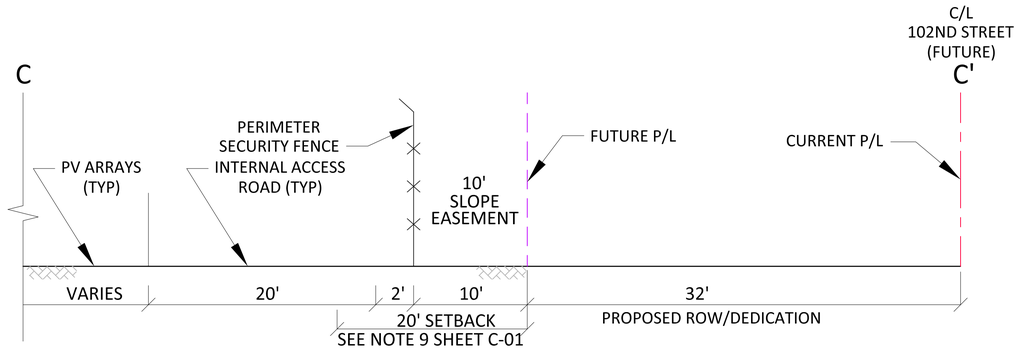

SECTION C - C'

NOT TO SCALE

C-08

2011-00833 (RCUP201100079)

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/18/13	REVISIONS FOR COUNTY	JD	SP
B	09/05/13	ADDED LAND	JD	SP
A	06/20/12	ADDED SHEET	JD	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs
3262-001-005
3262-001-006
SCH # 2012061068

Project Name:
Project 1 North Lancaster Ranch

Project Address:
110th Street West & West Avenue B
Lancaster
Los Angeles County, CA

DRAWING: SECTION SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 1 NORTH
LANCASTER RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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PLOT/UPDATE: Dec 20, 2013 2:27:29 PM

APPENDIX B-14.2

PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH SITE PLANS

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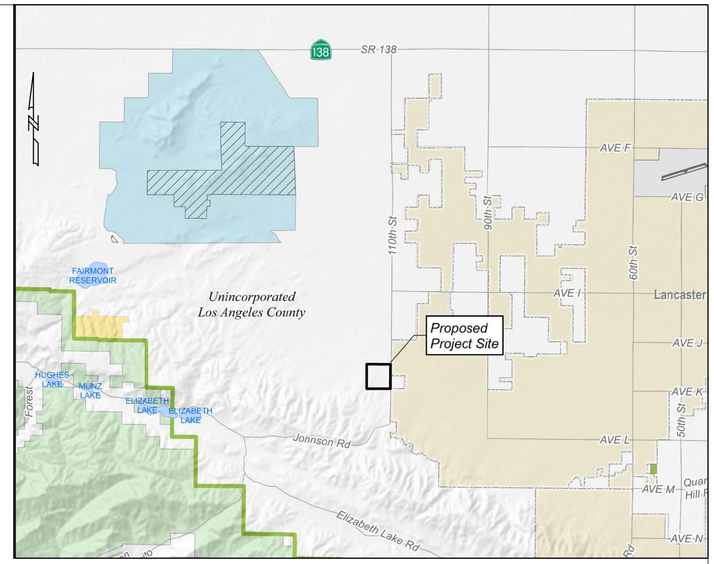
LOCATION MAP
NOT TO SCALE

PROJECT 2 WESTERN ANTELOPE BLUE SKY RANCH

LOS ANGELES COUNTY, CALIFORNIA



VICINITY MAP
NOT TO SCALE

DRAWING INDEX

DRAWING NO.	TITLE	REVISION
T-01	TITLE SHEET	B
G-01	TOPOGRAPHIC MAP	A
G-02	TOPOGRAPHIC MAP	A
C-01	SITE PLAN	C
C-02	GRADING PLAN	B
C-03	ON-SITE DRAINAGE MAP	B
C-04	ON-SITE DRAINAGE MAP	B
C-05	ON-SITE DRAINAGE MAP	B
C-06	ON-SITE DRAINAGE MAP	B
C-07	DETAIL SHEET	C
C-08	SECTION SHEET	B
C-09	GEN-TIE ROUTE OPTIONS	B

SURVEY INFORMATION:

TOPOGRAPHIC MAP AND 2' CONTOURING PREPARED BY ALL VALLEY SURVEYING.
BENCHMARK AND BASIS OF BEARINGS SHOWN ON TOPOGRAPHIC MAP, DRAWING G-01 & G-02.

SURVEYOR:

LARRY E. JERNIGAN, PLS #5924
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA 93534
(661) 942-3639

T-01

R2011-00798 (RCUP201100070)

C:\USERS\JULIE.DELANEY\DESKTOP\SP_14\P2-T\T-01-TITLE-T.DWG
PLOT/UPDATE: Dec 22, 2013 10:34:59 AM

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
B	12/22/13	REVISIONS FOR AGENCY	JD	SP
A	09/05/13	ADDED NEW SHEET	JD	SP

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

DRAWING: TITLE SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE
BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

CL INT J-8 & 115TH WEST
FD 2" IP LS 4089 CTR SEC 23
N = 2070694.45
E = 6461529.99
EL = 2639.27'

HIGH POWER ELECTRIC TOWER

FUTURE AVENUE J-8

HIGH POWER ELECTRIC TOWER

CL INT 110TH ST WEST & AVE J-8
FD CS MON IN HH E 1/4 COR SEC 23
N = 2070707.45
E = 6464201.47
EL = 2584.38'

N89°43'18"E 2621.51'

2671.51'

50.00

(587.0)EL

20'

2651.43'

20'

2651.67'

2663.77'

110TH STREET WEST

APN# 3267-015-001

INS# 86-1835531

MATCHLINE SEE SHEET 2

MATCHLINE SEE SHEET 2

APN# 3267-015-001

INS# 86-1835531

DATUM STATEMENT
COORDINATES SHOWN ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, (CCS83) ZONE V, 1983 NORTH AMERICAN DATUM, 1991.35 EPOCH ADJUSTMENT. COORDINATES SHOWN ARE IN U.S. SURVEY FEET. ALL DISTANCES SHOWN ARE GRID DISTANCES. TO OBTAIN A GROUND DISTANCE, DIVIDE THE GRID DISTANCE BY 0.999853427 COMBINATION FACTOR IS PROJECT BASED.

SHEET 1/2	SHEET G-01

BASIS OF BEARING	BENCH MARK
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE V, NAD 83, EPOCH 1991.35, AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING STATIONS (CGPS), EW7110 AND EW7125, BEING NORTH 00°10'12" EAST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE NATIONAL GEODETIC SURVEY.	LOS ANGELES COUNTY BENCHMARK L 5660, LANCASTER 1998 ADJUSTMENT, NAVD 1988, ELEVATION= 2685.887 FEET DPW BM TAG IN NW COR CONC GTE PAD @ SE COR AVE K & 110TH ST W 39M E & 11.7M S/O C/L INT

SCALE
HORIZ: 1"= 100'

PROFESSIONAL LAND SURVEYOR
LARRY E JERNIGAN
No. 5924
EXP 12-31-12
STATE OF CALIFORNIA

ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA. 93534
(661) 942-3639

NO.	REVISION	BY	APPR.	DATE
1				
2				
3				

TOPOGRAPHIC MAP
AVENUE K & 110TH STREET WEST
ANTELOPE VALLEY
COUNTY OF LOS ANGELES
STATE OF CALIFORNIA

DATE OF SURVEY	COUNTY PLAN CHECK NUMBER
4/28/12	2011-00833(RCUP201100079)

MATCHLINE SEE SHEET 1

MATCHLINE SEE SHEET 1

CL INT 110TH ST WEST & AVE K
FD CS MON IN HH SE COR SEC 23
N = 2068056.02
E = 6464205.83
EL = 2678.23

CL INT 110TH ST WEST & AVE K
FD CS MON S 1/4 COR SEC 23
N = 2068030.75
E = 6461549.22
EL = 2737.28'

EASEMENT INFORMATION FROM :
FIRST AMERICAN TITLE COMPANY
TITLE REPORTS:
NCS-467227-SD (12/14/10)

(4) – EASEMENT FOR POLE LINES AND INCIDENTAL PURPOSE RECORDED IN BOOK 5861 PAGE 166 OF DEEDS

(5) – 30' ROAD EASEMENT FOR 110TH STREET WEST RECORDED IN BOOK 18303 PAGE 233, O.R. BK 4738, PG 306 O.R.

(6) – EASEMENT FOR DEBRIS BASIN AND STORM DRAIN RECORDED 6/1/44 AS INS# 1577 IN BOOK 21009 PAGE 15, O.R.

(7) – DOES NOT APPLY TO THIS PROPERTY

(8) – 20' ROAD EASEMENT TO 50' FOR 110TH STREET WEST RECORDED 2/4/65 AS INS# 3344 IN BOOK D-2788 PAGE 420

FUTURE AVENUE K

APN# 3267-015-001

INS# 86-1835531

DATUM STATEMENT
COORDINATES SHOWN ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, (CCS83) ZONE V, 1983 NORTH AMERICAN DATUM, 1991.35 EPOCH ADJUSTMENT. COORDINATES SHOWN ARE IN U.S. SURVEY FEET. ALL DISTANCES SHOWN ARE GRID DISTANCES. TO OBTAIN A GROUND DISTANCE, DIVIDE THE GRID DISTANCE BY 0.999853427 COMBINATION FACTOR IS PROJECT BASED.

SYMBOL LEGEND

	POWER POLE	STOP	STOP SIGN
←	GUY ANCHOR	SIGN	MISC SIGN
ELEC	ELECTRIC BOX	EP	EDGE OF PAVEMENT
		FL	FLOW LINE
	EDGE OF PAVEMENT	PL	PROPERTY LINE
	SHRUB/TREE	℄	CENTER LINE
		R/W	RIGHT OF WAY LINE
	CONCRETE	FS	FINISH SURFACE

BASIS OF BEARING	BENCH MARK
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE V, NAD 83, EPOCH 1991.35, AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING STATIONS (CGPS), EW7110 AND EW7125, BEING NORTH 00°10'12" EAST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE NATIONAL GEODETIC SURVEY.	LOS ANGELES COUNTY BENCHMARK L 5660, LANCASTER 1998 ADJUSTMENT, NAVD 1988, ELEVATION= 2685.887 FEET DPW BM TAG IN NW COR CONC GTE PAD @ SE COR AVE K & 110TH ST W 39M E & 11.7M S/O C/L INT

SCALE
HORIZ: 1"= 100'

PROFESSIONAL LAND SURVEYOR
LARRY E JERNIGAN
No. 5924
EXP 12-31-12
STATE OF CALIFORNIA

ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA. 93534
(661) 942-3639

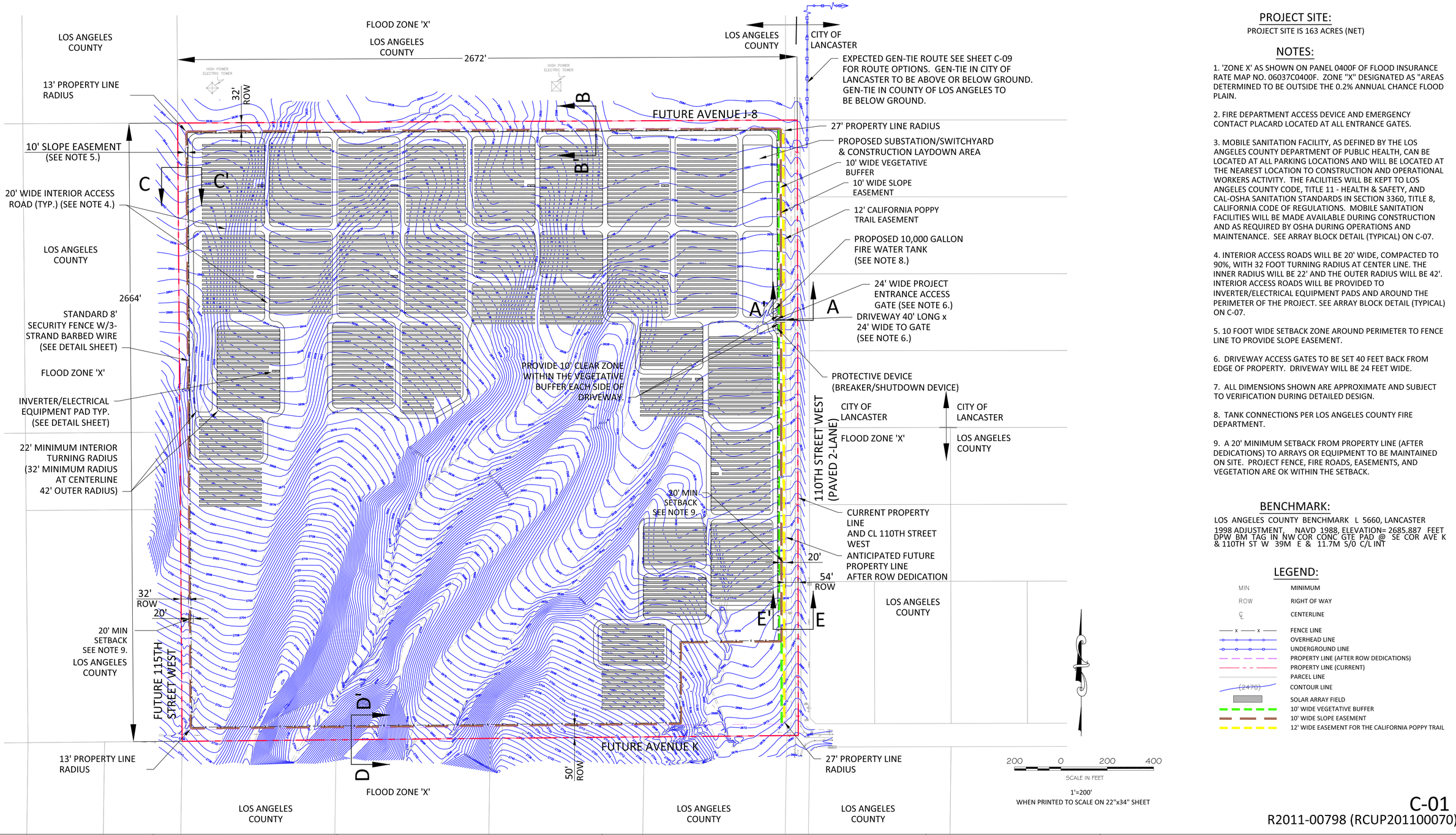
NO.	REVISION	BY	APPR.	DATE
1				
2				
3				

SHEET 1/2 | SHEET G-01

TOPOGRAPHIC MAP
AVENUE K & 110TH STREET WEST
ANTELOPE VALLEY
COUNTY OF LOS ANGELES
STATE OF CALIFORNIA

DATE OF SURVEY
4/28/12

COUNTY PLAN CHECK NUMBER
2011-00833(RCUP201100079)



PROJECT SITE:

PROJECT SITE IS 163 ACRES (NET)

NOTES:

1. 'ZONE X' AS SHOWN ON PANEL 0400F OF FLOOD INSURANCE RATE MAP NO. 06037C0400F. ZONE "X" DESIGNATED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

2. FIRE DEPARTMENT ACCESS DEVICE AND EMERGENCY CONTACT PLACARD LOCATED AT ALL ENTRANCE GATES.

3. MOBILE SANITATION FACILITY, AS DEFINED BY THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH, CAN BE LOCATED AT ALL PARKING LOCATIONS AND WILL BE LOCATED AT THE NEAREST LOCATION TO CONSTRUCTION AND OPERATIONAL WORKERS ACTIVITY. THE FACILITIES WILL BE KEPT TO LOS ANGELES COUNTY CODE, TITLE 11 - HEALTH & SAFETY, AND CAL-OSHA SANITATION STANDARDS IN SECTION 3360, TITLE 8, CALIFORNIA CODE OF REGULATIONS. MOBILE SANITATION FACILITIES WILL BE MADE AVAILABLE DURING CONSTRUCTION AND AS REQUIRED BY OSHA DURING OPERATIONS AND MAINTENANCE. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-07.

4. INTERIOR ACCESS ROADS WILL BE 20' WIDE, COMPACTED TO 90%, WITH 32 FOOT TURNING RADIUS AT CENTER LINE. THE INNER RADIUS WILL BE 22' AND THE OUTER RADIUS WILL BE 42'. INTERIOR ACCESS ROADS WILL BE PROVIDED TO INVERTER/ELECTRICAL EQUIPMENT PADS AND AROUND THE PERIMETER OF THE PROJECT. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-07.

5. 10 FOOT WIDE SETBACK ZONE AROUND PERIMETER TO FENCE LINE TO PROVIDE SLOPE EASEMENT.

6. DRIVEWAY ACCESS GATES TO BE SET 40 FEET BACK FROM EDGE OF PROPERTY. DRIVEWAY WILL BE 24 FEET WIDE.

7. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION DURING DETAILED DESIGN.

8. TANK CONNECTIONS PER LOS ANGELES COUNTY FIRE DEPARTMENT.

9. A 20' MINIMUM SETBACK FROM PROPERTY LINE (AFTER DEDICATIONS) TO ARRAYS OR EQUIPMENT TO BE MAINTAINED ON SITE. PROJECT FENCE, FIRE ROADS, EASEMENTS, AND VEGETATION ARE OK WITHIN THE SETBACK.

BENCHMARK:

LOS ANGELES COUNTY BENCHMARK L 5660, LANCASTER
1998 ADJUSTMENT, NAVD 1988, ELEVATION= 2685.887 FEET
DPW BM TAG IN NW COR CONC GTE PAD @ SE COR AVE K & 110TH ST W 39M E & 11.7M S/O C/L INT

LEGEND:

MIN	MINIMUM
ROW	RIGHT OF WAY
℄	CENTERLINE
x x	FENCE LINE
	OVERHEAD LINE
	UNDERGROUND LINE
	PROPERTY LINE (AFTER ROW DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
(2470)	CONTOUR LINE
	SOLAR ARRAY FIELD
	10' WIDE VEGETATIVE BUFFER
	10' WIDE SLOPE EASEMENT
	12' WIDE EASEMENT FOR THE CALIFORNIA POPPY TRAIL

C-01
R2011-00798 (RCUP201100070)

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/22/13	REVISIONS PER AGENCY	JD	SP
B	09/05/13	REVISIONS FOR COUNTY	JD	SP
A	5/26/11	INITIAL ISSUE	JD	SP

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

DRAWING: Site Plan

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE
BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

C:\SP_LAYS2-7\C-01-SITE-7-B.DWG
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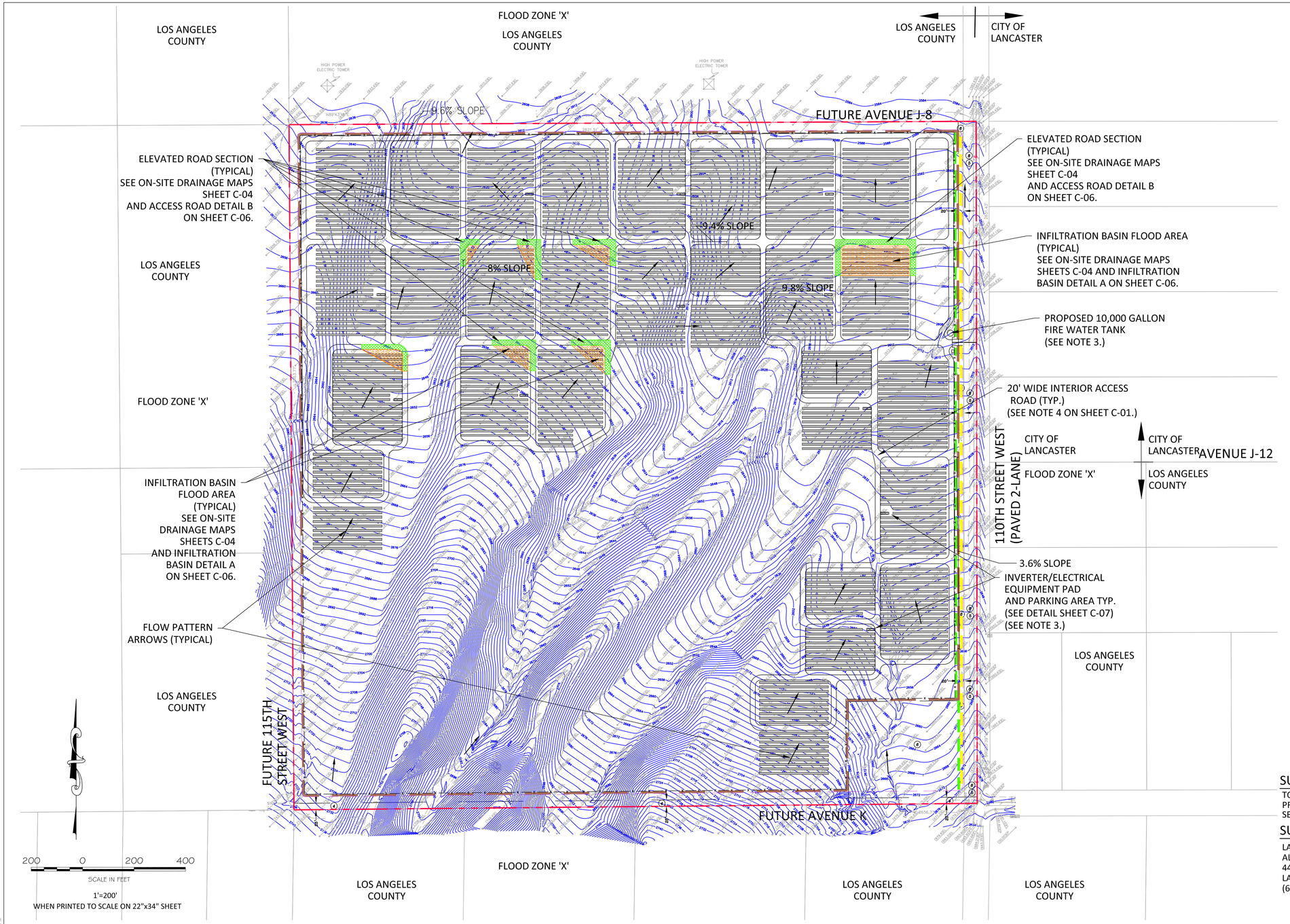

NOTES:

1. OVERALL DRAINAGE ACROSS SITE IS CURRENTLY FROM THE SOUTHWEST TO THE NORTHEAST, AS SHOWN ON THE SURFACE CONTOURS. TOPOGRAPHY/CONTOURS ARE BASED ON SURVEY DATA PROVIDED BY ALL VALLEY SURVEYING.

2. OVERALL EXISTING GRADING AND DRAINAGE PATTERN TO REMAIN UNCHANGED DURING AND AFTER CONSTRUCTION WITH THE EXCEPTION OF AREAS USED FOR DRAINAGE FEATURES. ELEVATED ROAD SECTIONS WILL BE USED TO CREATE INFILTRATION BASINS. FLOOD AREAS AND FLOW PATTERN ARROWS ARE SHOWN ON THIS SHEET AND SHEETS C-03 AND C-04.

3. EQUIPMENT PADS WILL BE GRADED AS REQUIRED PER MANUFACTURER SPECIFICATIONS.

LEGEND:

- POWER POLE
- GUY ANCHOR
- ELECTRIC BOX
- EDGE OF PAVEMENT
- SHRUB/TREE
- CONCRETE
- CENTERLINE
- L.F. LINEAR FEET
- TYP. TYPICAL
- STOP SIGN
- MISC SIGN
- EP EDGE OF PAVEMENT
- FL FLOW LINE
- PL PROPERTY LINE
- ℄ CENTER LINE
- R/W RIGHT OF WAY LINE
- FS FINISH SURFACE
- (S) EASEMENT (SEE SHEET G-02)
- PROPOSED FENCE LINE
- PROPERTY LINE (AFTER DEDICATIONS)
- PROPERTY LINE (CURRENT)
- PARCEL LINE
- INFILTRATION BASIN FLOOD AREA
- ELEVATED ROAD SECTION
- CONTOUR LINE (2' INTERVAL FROM ALL VALLEY SURVEYING)

EARTHWORK QUANTITIES:

OVEREXCAVATION	=	28,700 CUBIC YARDS
CUT	=	18,500 CUBIC YARDS
FILL	=	18,500 CUBIC YARDS

CUT & FILL QUANTITIES INCLUDE INVERTER PADS, SUBSTATION/SWITCHYARD, BASINS, AND ELEVATED ROAD BED FOR DRAINAGE FEATURES.

OVEREXCAVATION QUANTITY INCLUDES ACCESSIBLE FIRE ROAD.

SURVEY INFORMATION:

TOPOGRAPHIC MAP AND 2' CONTOURING PREPARED BY ALL VALLEY SURVEYING, SEE TOPOGRAPHIC MAP SHEETS.

SURVEYOR:

LARRY E. JERNIGAN, PLS #5924
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA 93534
(661) 942-3639

BASIS OF BEARINGS:

SEE TOPOGRAPHIC MAP SHEETS (G-01 & G-02).

BENCHMARK:

SEE TOPOGRAPHIC MAP SHEETS (G-01 & G-02).

EASEMENTS:

SEE TOPOGRAPHIC MAP SHEET (G-02).

C-02

R2011-00798 (RCUP201100070)

REGISTERED PROFESSIONAL ENGINEER — JULIE ANN DELANEY — No.C54568 — CIVIL — STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
B	12/22/13	REVISIONS PER AGENCY	JD	SP
A	09/05/13	ADDED NEW SHEET	JD	SP

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

DRAWING:
Preliminary Grading & Drainage Plan

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

C:\SP_LA\P2-7\C-02-GRAD-7-8.DWG
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MATCHLINE: SEE SHEET C-04

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- X — SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{BrF25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (7,100CY / SQ. MI.) * (TOTAL WATERSHED AREA 1.055 SQ. MI.) = 7,491 CY

B 17.43
C 22.59
E 21.40
F 13.24
G 18.44
J 22.34
K 7.96
11 2717 — OFF-SITE Q_{25}=14.16 CFS Q_{BrF25}=16.44 CFS V=1.11 AC*FT (HALF OF SUBAREAS A1 & A2) (PRE/POST -DEVELOPMENT)
31 2700 — OFF-SITE Q_{25}=28.15 CFS Q_{BrF25}=31.36 CF S V=2.13 AC*FT (SUBAREA E1) (PRE/POST -DEVELOPMENT)
41 2690 — OFF-SITE Q_{25}=300.99 CFS Q_{BrF25}=333.23 CF S V=16.56 AC*FT (SUBAREAS B1, B2, B3, B4, B5, C1, D1, & D2) (PRE/POST -DEVELOPMENT)
51 2672 — OFF-SITE Q_{25}=257.96 CFS Q_{BrF25}=285.23 CF S V=16.00 AC*FT (SUBAREAS F1, F2, F3, F4, F5, G1, G2, G3, & H1) (PRE/POST -DEVELOPMENT)
52 2634 — OFF-SITE+J (PRE) Q_{25}=280.57 CFS V=17.50 AC*FT; OFF-SITE+J (POST) Q_{25}=282.61 CFS V=17.79 AC*FT

L=1710' 4.70%
L=1710' 4.49%
L=1196' 5.26%
L=1155' 3.28%

FLOW LINE (TYPICAL ON-SITE FLOW)
SUB-AREA DRAINAGE BOUNDARY, TYP.
ANTICIPATED FLOOD LIMITS, TYP.
ANTICIPATED FUTURE PROPERTY LINE AFTER ROW DEDICATION
ON-SITE WATERSHED BOUNDARY (CURRENT PROPERTY LINE)
10' SETBACK TO FENCE
STANDARD 8' SECURITY FENCE W/3-STRAND BARBED WIRE
32' SETBACK TO FENCE
110TH ST. W.
W. AVE. K

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 8.7%, THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 10.0%, THE DEPTHS INCREASED BY A MAXIMUM OF 7.1%, AND THE VELOCITIES INCREASED BY A MAXIMUM OF 3.1%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N

0 50 100 200
SCALE: 1":100' (ON FULL SIZE DWG.)

R2011-00798 (RCUP201100070) C-03

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER — JOSEPH E. DIETZ — No. 67032 EXP: 9-30-14 — CIVIL — STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100070 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\24546\135--24546-12001\SUPPORTDOCS\CALCS\HYDROLOGY\7\FINAL DESIGN\ONSITE HYDROLOGY C03.DWG
PLOT/UPDATE: Dec 6, 2013 11:45:20 AM

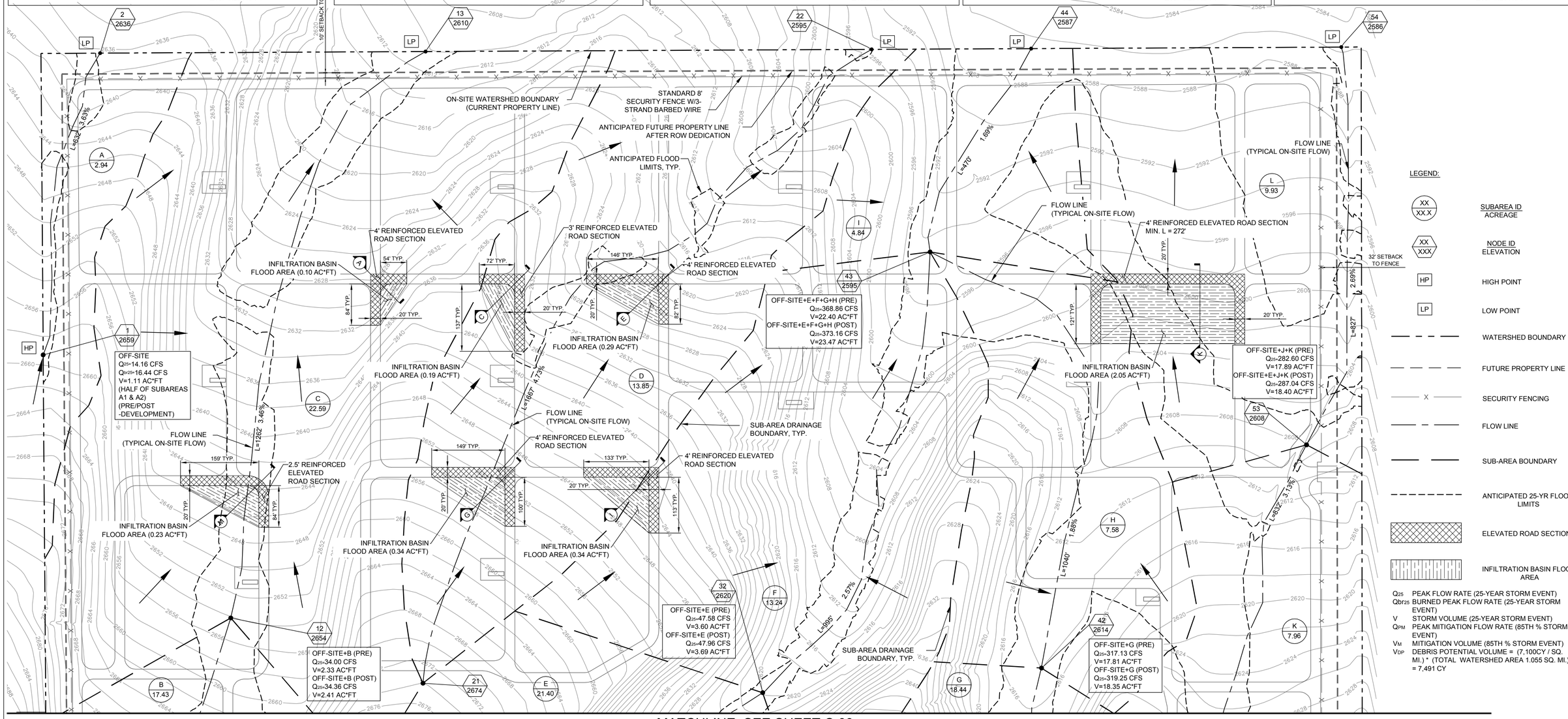
PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 15.93 CFS	Q_{25}= 16.48 CFS	Q_{PM}=4.80 CFS
Qbr_{25}= 18.70 CFS	Qbr_{25}= 19.24 CF S	V_M=1.54 AC*FT
V= 1.27 AC*FT	V= 1.36 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=17.19 CFS
		ΔV_{25}=3.23 AC*FT

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 38.99 CFS	Q_{25}= 42.22 CFS	Q_{PM}=4.80 CFS
Qbr_{25}= 46.38 CF S	Qbr_{25}= 49.42 CF S	V_M=1.54 AC*FT
V= 3.46 AC*FT	V= 4.15 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=17.19 CFS
		ΔV_{25}=3.23 AC*FT

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 2.76 CFS	Q_{25}= 4.05 CFS	Q_{PM}=4.80 CFS
Qbr_{25}= 4.58 CF S	Qbr_{25}= 5.70 CF S	V_M=1.54 AC*FT
V= 0.66 AC*FT	V= 1.08 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=17.19 CFS
		ΔV_{25}=3.23 AC*FT

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 371.27 CFS	Q_{25}= 376.40 CFS	Q_{PM}=4.80 CFS
Qbr_{25}= 414.48 CF S	Qbr_{25}= 419.28 CF S	V_M=1.54 AC*FT
V= 22.64 AC*FT	V= 23.85 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=17.19 CFS
		ΔV_{25}=3.23 AC*FT

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 284.39 CFS	Q_{25}= 291.38 CFS	Q_{PM}=4.80 CFS
Qbr_{25}= 316.54 CF S	Qbr_{25}= 323.50 CF S	V_M=1.54 AC*FT
V= 18.34 AC*FT	V= 19.16 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=17.19 CFS
		ΔV_{25}=3.23 AC*FT



MATCHLINE: SEE SHEET C-03

DRAINAGE CONCEPT NOTES:

1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 8.7%, THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 10.0%, THE DEPTHS INCREASED BY A MAXIMUM OF 7.1%, AND THE VELOCITIES INCREASED BY A MAXIMUM OF 3.1%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____ RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N

0 50 100 200
SCALE: 1":100' (ON FULL SIZE DWG.)

R2011-00798 (RCUP201100070) C-04

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100070
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE
BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\04540\133--04540-12001\SUPPORTDOCS\CALCS\HYDROLOGY\7.VYINAL DESIGN\ONSITE HYDROLOGY C04.DWG
PLOT/UPDATE: Dec 6, 2013 11:36:08 AM

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 2	A	2.94	0.01	2	134	632	0.0363	2.3	30	0.60	0.10	0.11	0.19	0.34	0.35	0.06
Project 2	B	17.43	0.01	2	120	1196	0.0529	2.4	30	0.62	0.10	0.11	1.19	0.34	2.13	0.38
Project 2	C	22.59	0.01	2	134	1262	0.0346	2.4	30	0.61	0.10	0.11	1.52	0.34	2.72	0.48
Project 2	D	13.85	0.01	2	134	1667	0.0473	2.3	30	0.59	0.10	0.11	0.90	0.34	1.60	0.29
Project 2	E	21.40	0.01	2	120	1710	0.0470	2.4	30	0.62	0.10	0.11	1.46	0.34	2.62	0.46
Project 2	F	13.24	0.01	2	134	995	0.0257	2.3	30	0.59	0.10	0.11	0.86	0.34	1.53	0.27
Project 2	G	18.44	0.01	2	120	1702	0.0449	2.4	30	0.61	0.10	0.11	1.24	0.34	2.22	0.39
Project 2	H	7.58	0.01	2	134	1040	0.0188	2.3	30	0.59	0.10	0.11	0.49	0.34	0.88	0.16
Project 2	I	4.84	0.01	2	134	470	0.0169	2.2	30	0.57	0.10	0.11	0.30	0.34	0.54	0.10
Project 2	J	22.34	0.01	2	120	1155	0.0328	2.4	30	0.61	0.10	0.11	1.50	0.34	2.69	0.48
Project 2	K	7.96	0.01	2	134	832	0.0313	2.3	30	0.59	0.10	0.11	0.52	0.34	0.92	0.16
Project 2	L	9.93	0.01	2	134	827	0.0269	2.2	30	0.57	0.10	0.11	0.62	0.34	1.11	0.20
Project 2	A	2.94	0.01	5	134	632	0.0363	3.5	30	0.90	0.10	0.11	0.29	0.34	0.54	0.09
Project 2	B	17.43	0.01	5	120	1196	0.0529	3.6	24	1.03	0.33	0.34	6.10	0.34	7.41	0.67
Project 2	C	22.59	0.01	5	134	1262	0.0346	3.6	30	0.92	0.10	0.11	2.29	0.34	4.28	0.73
Project 2	D	13.85	0.01	5	134	1667	0.0473	3.4	30	0.89	0.10	0.11	1.36	0.34	2.53	0.43
Project 2	E	21.40	0.01	5	120	1710	0.0470	3.6	30	0.93	0.28	0.29	5.77	0.34	7.30	0.80
Project 2	F	13.24	0.01	5	134	995	0.0257	3.4	30	0.89	0.10	0.11	1.30	0.34	2.42	0.41
Project 2	G	18.44	0.01	5	120	1702	0.0449	3.6	30	0.92	0.27	0.28	4.75	0.34	6.07	0.67
Project 2	H	7.58	0.01	5	134	1040	0.0188	3.4	30	0.89	0.10	0.11	0.74	0.34	1.38	0.24
Project 2	I	4.84	0.01	5	134	470	0.0169	3.3	30	0.86	0.10	0.11	0.46	0.34	0.85	0.15
Project 2	J	22.34	0.01	5	120	1155	0.0328	3.6	29	0.93	0.28	0.29	6.03	0.34	7.62	0.82
Project 2	K	7.96	0.01	5	134	832	0.0313	3.4	30	0.89	0.10	0.11	0.78	0.34	1.45	0.25
Project 2	L	9.93	0.01	5	134	827	0.0269	3.3	30	0.86	0.10	0.11	0.94	0.34	1.75	0.30
Project 2	A	2.94	0.01	10	134	632	0.0363	4.3	30	1.10	0.10	0.11	0.36	0.34	0.68	0.11
Project 2	B	17.43	0.01	10	120	1196	0.0529	4.4	17	1.49	0.46	0.46	11.95	0.34	13.61	0.91
Project 2	C	22.59	0.01	10	134	1262	0.0346	4.4	30	1.12	0.10	0.11	2.78	0.34	5.31	0.89
Project 2	D	13.85	0.01	10	134	1667	0.0473	4.2	30	1.08	0.10	0.11	1.65	0.34	3.13	0.53
Project 2	E	21.40	0.01	10	120	1710	0.0470	4.4	24	1.26	0.40	0.41	11.06	0.34	12.88	1.09
Project 2	F	13.24	0.01	10	134	995	0.0257	4.2	30	1.08	0.10	0.11	1.57	0.34	2.99	0.50
Project 2	G	18.44	0.01	10	120	1702	0.0449	4.4	25	1.22	0.38	0.39	8.77	0.34	10.34	0.91
Project 2	H	7.58	0.01	10	134	1040	0.0188	4.2	30	1.08	0.10	0.11	0.90	0.34	1.71	0.29
Project 2	I	4.84	0.01	10	134	470	0.0169	4.1	30	1.05	0.10	0.11	0.56	0.34	1.06	0.18
Project 2	J	22.34	0.01	10	120	1155	0.0328	4.4	19	1.39	0.43	0.43	13.35	0.34	15.43	1.13
Project 2	K	7.96	0.01	10	134	832	0.0313	4.2	30	1.08	0.10	0.11	0.95	0.34	1.80	0.30
Project 2	L	9.93	0.01	10	134	827	0.0269	4.1	30	1.05	0.10	0.11	1.15	0.34	2.18	0.37
Project 2	A	2.94	0.01	25	134	632	0.0363	5.3	14	1.94	0.30	0.31	1.77	0.34	2.26	0.16
Project 2	B	17.43	0.01	25	120	1196	0.0529	5.4	13	2.07	0.55	0.55	19.84	0.34	21.89	1.22
Project 2	C	22.59	0.01	25	134	1262	0.0346	5.4	30	1.38	0.15	0.16	4.99	0.34	8.05	1.13
Project 2	D	13.85	0.01	25	134	1667	0.0473	5.2	30	1.33	0.14	0.15	2.76	0.34	4.58	0.66
Project 2	E	21.40	0.01	25	120	1710	0.0470	5.4	18	1.78	0.51	0.51	19.43	0.34	21.72	1.47
Project 2	F	13.24	0.01	25	134	995	0.0257	5.2	30	1.33	0.14	0.15	2.64	0.34	4.38	0.63
Project 2	G	18.44	0.01	25	120	1702	0.0449	5.4	18	1.75	0.50	0.50	16.14	0.34	18.11	1.25
Project 2	H	7.58	0.01	25	134	1040	0.0188	5.2	30	1.33	0.14	0.15	1.51	0.34	2.51	0.36
Project 2	I	4.84	0.01	25	134	470	0.0169	5.0	15	1.78	0.27	0.28	2.41	0.34	3.17	0.24
Project 2	J	22.34	0.01	25	120	1155	0.0328	5.4	15	1.91	0.53	0.53	22.61	0.34	25.11	1.50
Project 2	K	7.96	0.01	25	134	832	0.0313	5.2	26	1.42	0.17	0.18	2.03	0.34	3.13	0.39
Project 2	L	9.93	0.01	25	134	827	0.0269	5.0	30	1.29	0.13	0.14	1.79	0.34	3.07	0.45
Project 2	A	2.94	0.01	50	134	632	0.0363	6.0	12	2.37	0.37	0.38	2.65	0.34	3.21	0.19
Project 2	B	17.43	0.01	50	120	1196	0.0529	6.2	12	2.45	0.60	0.60	25.62	0.34	27.84	1.46
Project 2	C	22.59	0.01	50	134	1262	0.0346	6.1	21	1.85	0.28	0.29	12.12	0.34	15.79	1.40
Project 2	D	13.85	0.01	50	134	1667	0.0473	5.9	30	1.52	0.20	0.21	4.42	0.34	6.40	0.78
Project 2	E	21.40	0.01	50	120	1710	0.0470	6.2	15	2.21	0.57	0.57	26.96	0.34	29.55	1.75
Project 2	F	13.24	0.01	50	134	995	0.0257	5.9	19	1.88	0.29	0.30	7.47	0.34	9.63	0.80
Project 2	G	18.44	0.01	50	120	1702	0.0449	6.1	16	2.11	0.56	0.56	21.79	0.34	23.95	1.47
Project 2	H	7.58	0.01	50	134	1040	0.0188	5.9	23	1.72	0.26	0.27	3.52	0.34	4.69	0.45
Project 2	I	4.84	0.01	50	134	470	0.0169	5.7	12	2.25	0.35	0.36	3.92	0.34	4.81	0.29
Project 2	J	22.34	0.01	50	120	1155	0.0328	6.1	12	2.41	0.59	0.59	31.77	0.34	34.62	1.83
Project 2	K	7.96	0.01	50	134	832	0.0313	5.9	15	2.10	0.33	0.34	5.68	0.34	7.08	0.49
Project 2	L	9.93	0.01	50	134	827	0.0269	5.7	17	1.91	0.29	0.30	5.69	0.34	7.34	0.58

ON-SITE HYDROLOGY (POST-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 2	A	2.94	0.10	2	134	632	0.0363	2.3	30	0.60	0.10	0.18	0.32	0.34	0.46	0.10
Project 2	B	17.43	0.03	2	120	1196	0.0529	2.4	30	0.62	0.10	0.12	1.30	0.34	2.23	0.41
Project 2	C	22.59	0.09	2	134	1262	0.0346	2.4	30	0.61	0.10	0.17	2.34	0.34	3.45	0.75
Project 2	D	13.85	0.10	2	134	1667	0.0473	2.3	30	0.59	0.10	0.18	1.47	0.34	2.11	0.47
Project 2	E	21.40	0.02	2	120	1710	0.0470	2.4	30	0.62	0.10	0.12	1.59	0.34	2.74	0.51
Project 2	F	13.24	0.06	2	134	995	0.0257	2.3	30	0.59	0.10	0.15	1.17	0.34	1.81	0.37
Project 2	G	18.44	0.10	2	120	1702	0.0449	2.4	30	0.61	0.10	0.18	2.02	0.34	2.92	0.64
Project 2	H	7.58	0.09	2	134	1040	0.0188	2.3	30	0.59	0.10	0.17	0.76	0.34	1.12	0.24
Project 2	I	4.84	0.10	2	134	470	0.0169	2.2	30	0.57	0.10	0.18	0.50	0.34	0.71	0.16
Project 2	J	22.34	0.05	2	120	1155	0.0328	2.4	30	0.61	0.10	0.14	1.91	0.34	3.05	0.61
Project 2	K	7.96	0.09	2	134	832	0.0313	2.3	30	0.59	0.10	0.17	0.80	0.34	1.17	0.25
Project 2	L	9.93	0.10	2	134	827	0.0269	2.2	30	0.57	0.10	0.18	1.02	0.34	1.46	0.32
Project 2	A	2.94	0.10	5	134	632	0.0363	3.5	28	0.93	0.10	0.18	0.49	0.34	0.73	0.15
Project 2	B	17.43	0.03	5	120	1196	0.0529	3.6	23	1.05	0.34	0.36	6.59	0.34	7.88	0.73
Project 2	C	22.59	0.09	5	134	1262	0.0346	3.6	30	0.92	0.10	0.17	3.53	0.34	5.37	1.13
Project 2	D	13.85	0.10	5	134	1667	0.0473	3.4	30	0.89	0.10	0.18	2.22	0.34	3.29	0.71
Project 2	E	21.40	0.02	5	120	1710	0.0470	3.6	30	0.93	0.28	0.29	5.77	0.34	7.29	0.85
Project 2	F	13.24	0.06	5	134	995	0.0257	3.4	30	0.89	0.10	0.15	1.77	0.34	2.83	0.56
Project 2	G	18.44	0.10	5	120	1702	0.0449	3.6	30	0.92	0.27	0.33	5.60	0.34	6.81	1.04
Project 2	H	7.58	0.09	5	134	1040	0.0188	3.4	30	0.89	0.10	0.17	1.15	0.34	1.74	0.37
Project 2	I	4.84	0.10	5	134	470	0.0169	3.3	27	0.90	0.10	0.18	0.78	0.34	1.16	0.24
Project 2	J	22.34	0.05	5	120	1155	0.0328	3.6	26	0.98	0.31	0.34	7.44	0.34	9.01	1.02
Project 2	K	7.96	0.09	5	134	832	0.0313	3.4	30	0.89	0.10	0.17	1.20	0.34	1.83	0.38
Project 2	L	9.93	0.10	5	134	827	0.0269	3.3	30	0.86	0.10	0.18	1.54	0.34	2.27	0.49
Project 2	A	2.94	0.10	10	134	632	0.0363	4.3	23	1.25	0.12	0.20	0.74	0.34	1.07	0.19
Project 2	B	17.43	0.03	10	120	1196	0.0529	4.4	17	1.49	0.46	0.47	12.21	0.34	13.83	0.97
Project 2	C	22.59	0.09	10	134	1262	0.0346	4.4	30	1.12	0.10	0.17	4.30	0.34	6.64	1.38
Project 2	D	13.85	0.10	10	134	1667	0.0473	4.2	30	1.08	0.10	0.18	2.69	0.34	4.04	0.86
Project 2	E	21.40	0.02	10	120	1710	0.0470	4.4	24	1.26	0.40	0.41	11.06	0.34	12.88	1.16
Project 2	F	13.24	0.06	10	134	995	0.0257	4.2	30	1.08	0.10	0.15	2.14	0.34	3.49	0.69
Project 2	G	18.44	0.10	10	120	1702	0.0449	4.4	23	1.27	0.40	0.45	10.54	0.34	12.00	1.37
Project 2	H	7.58	0.09	10	134	1040	0.0188	4.2	30	1.08	0.10	0.17	1.39	0.34	2.14	0.45
Project 2	I	4.84	0.10	10	134	470	0.0169	4.1	24	1.16	0.10	0.18	1.01	0.34	1.53	0.29
Project 2	J	22.34	0.05	10	120	1155	0.0328	4.4	19	1.39	0.43	0.45	13.97	0.34	15.96	1.36
Project 2	K	7.96	0.09	10	134	832	0.0313	4.2	30	1.08	0.10	0.17	1.46	0.34	2.25	0.47
Project 2	L	9.93	0.10	10	134	827	0.0269	4.1	30	1.05	0.10	0.18	1.88	0.34	2.81	0.60
Project 2	A	2.94	0.10	25	134	632	0.0363	5.3	12	2.08	0.32	0.38	2.32	0.34	2.80	0.25
Project 2	B	17.43	0.03	25	120	1196	0.0529	5.4	13	2.07	0.55	0.56	20.20	0.34	22.20	1.30
Project 2	C	22.59	0.09	25	134	1262	0.0346	5.4	27	1.45	0.18	0.24	7.86	0.34	10.78	1.74
Project 2	D	13.85	0.10	25	134	1667	0.0473	5.2	30	1.33	0.14	0.22	4.05	0.34	5.70	1.08
Project 2	E	21.40	0.02	25	120	1710	0.0470	5.4	18	1.78	0.51	0.52	19.81	0.34	22.05	1.56
Project 2	F	13.24	0.06	25	134	995	0.0257	5.2	28	1.38	0.15	0.20	3.65	0.34	5.36	0.87
Project 2	G	18.44	0.10	25	120	1702	0.0449	5.4	17	1.80	0.51	0.55	18.26	0.34	20.06	1.79
Project 2	H	7.58	0.09	25	134	1040	0.0188	5.2	28	1.38	0.15	0.22	2.30	0.34	3.25	0.56
Project 2	I	4.84	0.10	25	134	470	0.0169	5.0	13	1.91	0.29	0.35	3.24	0.34	3.97	0.38
Project 2	J	22.34	0.05	25	120	1155	0.0328	5.4	14	1.97	0.54	0.56	24.65	0.34	27.04	1.79
Project 2	K	7.96	0.09	25	134	832	0.0313	5.2	17	1.74	0.26	0.32	4.43	0.34	5.57	0.61
Project 2	L	9.93	0.10	25	134	827	0.0269	5.0	20	1.56	0.21	0.28	4.34	0.34	5.66	0.76
Project 2	A	2.94	0.10	50	134	632	0.0363	6.0	10	2.58	0.40	0.45	3.41	0.34	3.95	0.29
Project 2	B	17.43	0.03	50	120	1196	0.0529	6.2	11	2.55	0.61	0.62	27.56	0.34	29.75	1.52
Project 2	C	22.59	0.09	50	134	1262	0.0346	6.1	19	1.94	0.30	0.35	15.34	0.34	18.85	2.09
Project 2	D	13.85	0.10	50	134	1667	0.0473	5.9	23	1.72	0.26	0.32	7.62	0.34	9.57	1.29
Project 2	E	21.40	0.02	50	120	1710	0.0470	6.2	15	2.21	0.57	0.58	27.43	0.34	29.96	1.86
Project 2	F	13.24	0.06	50	134	995	0.0257	5.9	18	1.93	0.30	0.34	8.69	0.34	10.77	1.06
Project 2	G	18.44	0.10	50	120	1702	0.0449	6.1	15	2.17	0.57	0.60	24.01	0.34	26.00	2.09
Project 2	H	7.58	0.09	50	134	1040	0.0188	5.9	19	1.88	0.29	0.34	4.85	0.34	6.00	0.68
Project 2	I	4.84	0.10	50	134	470	0.0169	5.7	11	2.35	0.37	0.42	4.78	0.34	5.61	0.44
Project 2	J	22.34	0.05	50	120	1155	0.0328	6.1	12	2.41	0.59	0.61	32.84	0.34	35.53	2.15
Project 2	K	7.96	0.09	50	134	832	0.0313	5.9	14	2.17	0.34	0.39	6.74	0.34	8.06	0.72
Project 2	L	9.93	0.10	50	134	827	0.0269	5.7	15	2.03	0.31	0.37	7.46	0.34	9.03	0.90
Project 2	A	2.94	0.10	MIT.	134	632	0.0363	0.75	30	0.19	0.10	0.18	0.10	0.34	0.13	0.03
Project 2	B	17.43	0.03	MIT.	120	1196	0.0529	0.75	30	0.19	0.10	0.12	0.40	0.34	0.59	0.13
Project 2	C	22.59	0.09	MIT.	134	1262	0.0346	0.75	30	0.19	0.10	0.17	0.73	0.34	0.97	0.24
Project 2	D	13.85	0.10	MIT.	134	1667	0.0473	0.75	30	0.19	0.10	0.18	0.47	0.34	0.62	0.15
Project 2	E	21.40	0.02	MIT.	120	1710	0.0470	0.75	30	0.19	0.10	0.12	0.49	0.34	0.73	0.16
Project 2	F	13.24	0.06	MIT.	134	995	0.0257	0.75	30	0.19	0.10	0.15	0.38	0.34	0.52	0.12
Project 2	G	18.44	0.10	MIT.	120	1702	0.0449	0.75	30	0.19	0.10	0.18	0.63	0.34	0.82	0.20
Project 2	H	7.58	0.09	MIT.	134	1040	0.0188	0.75	30	0.19	0.10	0.17	0.24	0.34	0.32	0.08
Project 2	I	4.84	0.10	MIT.	134	470	0.0169	0.75	30	0.19	0.10	0.18	0.17	0.34	0.22	0.05
Project 2	J	22.34	0.05	MIT.	120	1155	0.0328	0.75	30	0.19	0.10	0.14	0.59	0.34	0.84	0.19
Project 2	K	7.96	0.09	MIT.	134	832	0.0313	0.75	30	0.19	0.10	0.17	0.26	0.34	0.34	0.08
Project 2	L	9.93	0.10	MIT.	134	827	0.0269	0.75	30	0.19	0.10	0.18	0.34	0.34	0.44	0.11

Incremental Flow and Volume Increase for Various Storm Events

Storm Event	Pre-Q (cfs)	Post-Q (cfs)	Delta-Q (cfs)	Pre-V (acre-ft)	Post-V (acre-ft	Delta-V (acre-ft)
2	10.79	15.2	4.41	3.43	4.83	1.40
5	30.81	38.08	7.27	5.56	7.67	2.11
10	55.05	63.39	8.34	7.21	9.79	2.58
25	97.92	115.11	17.19	9.46	12.69	3.23
50	151.61	170.73	19.12	11.49	15.09	3.60

NOTE: FOR INFILTRATION BASIN MITIGATION VOLUME, SUM MIT. FREQUENCY VOLUMES UNDER POST-DEVELOPMENT TABLE. V_{PM}=1.54 AC*FT.

DELTA QUANTITIES FOR DRAINAGE AREA A:
ΔQ25 = 2.32 - 1.77 = 0.55 CFS
ΔV25 = 0.25 - 0.16 = 0.09 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA B:
ΔQ25 = 20.20 - 19.84 = 0.36 CFS
ΔV25 = 1.30 - 1.22 = 0.08 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA C
ΔQ25 = 7.86 - 4.99 = 2.87 CFS
ΔV25 = 1.74 - 1.13 = 0.61 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA D
ΔQ25 = 4.05 - 2.76 = 1.29 CFS
ΔV25 = 1.08 - 0.66 = 0.42 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA E
ΔQ25 = 19.81 - 19.43 = 0.38 CFS
ΔV25 = 1.56 - 1.47 = 0.09 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA F
ΔQ25 = 3.65 - 2.64 = 1.01 CFS
ΔV25 = 0.87 - 0.63 = 0.24 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA G
ΔQ25 = 18.26 - 16.14 = 2.12 CFS
ΔV25 = 1.79 - 1.25 = 0.54 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA H
ΔQ25 = 2.30 - 1.51 = 0.79 CFS
ΔV25 = 0.56 - 0.36 = 0.20 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA I
ΔQ25 = 3.24 - 2.41 = 0.83 CFS
ΔV25 = 0.38 - 0.24 = 0.14 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA J
ΔQ25 = 24.65 - 22.61 = 2.04 CFS
ΔV25 = 1.79 - 1.50 = 0.29 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA K
ΔQ25 = 4.43 - 2.03 = 2.40 CFS
ΔV25 = 0.61 - 0.39 = 0.22 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA L
ΔQ25 = 4.34 - 1.79 = 2.55 CFS
ΔV25 = 0.76 - 0.45 = 0.31 AC*FT

TOTAL DELTA QUANTITIES
ΔQ25 = 17.19 CFS
ΔV25 = 3.23 AC*FT

NOTE: DUE TO THE LID Δ QUANTITIES ABOVE BEING GREATER THAN THE MITIGATION QUANTITIES (Q_{PM} AND V_{PM}) THEY REPRESENT THE WORST CASE SCENARIO BETWEEN THE PRE-/POST DEVELOPMENT CONDITIONS AND THEREFORE SHALL BE USED FOR SIZING THE INFILTRATION BASINS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:__________RCE NO:__________DATE__________
CHECKED BY:__________DATE__________
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00798 (RCUP201100070) | C-05

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER
JOSEPH E. DIETZ
No. 67032
EXP: 9-30-14
CIVIL
STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System
APN: 3267-015-001
SCH # 2012061068

Project Name: Project 2 Western Antelope Blue Sky Ranch
Project Address: 110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100070 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE
BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\04546\135-04546-12001\SUPPORTDOCS\CALCS\HYDROLOGY\7\FINAL DESIGN\ONSITE HYDROLOGY C05.DWG
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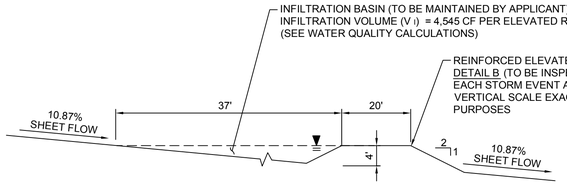
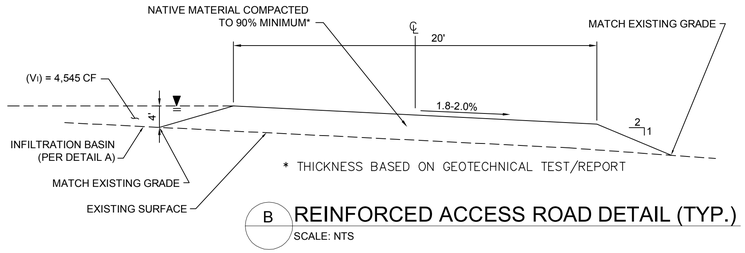


A INFILTRATION BASIN DETAIL
SCALE: NTS



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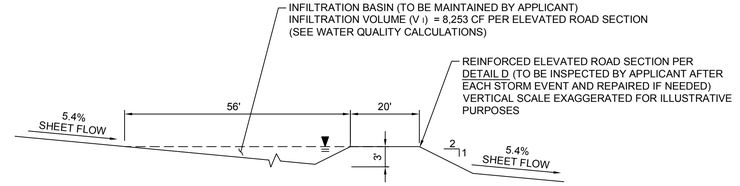

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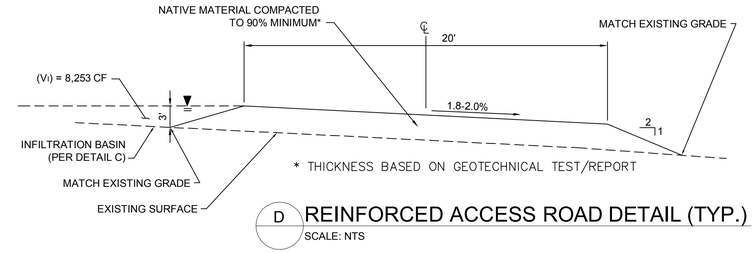

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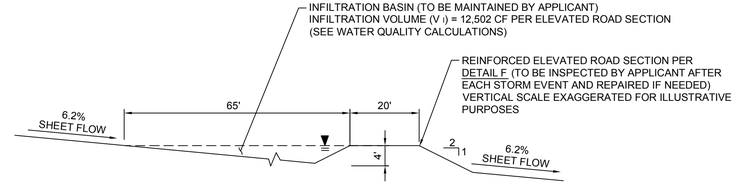

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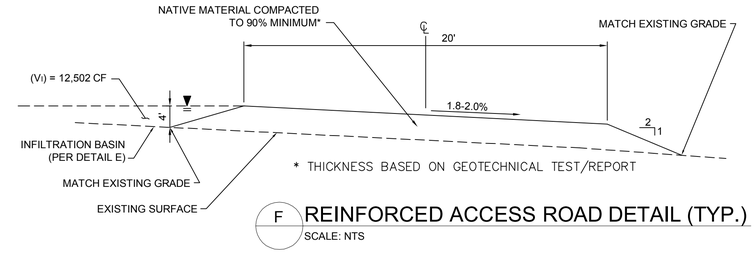

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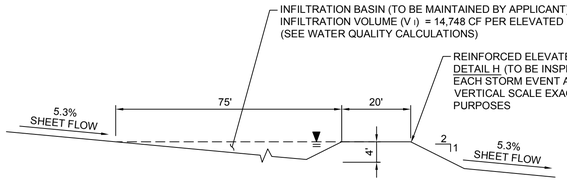

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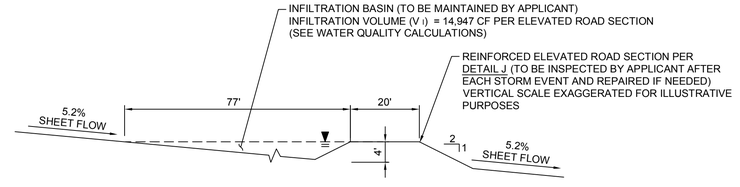
SCALE: NTS



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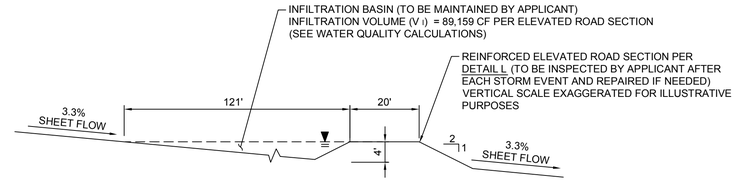

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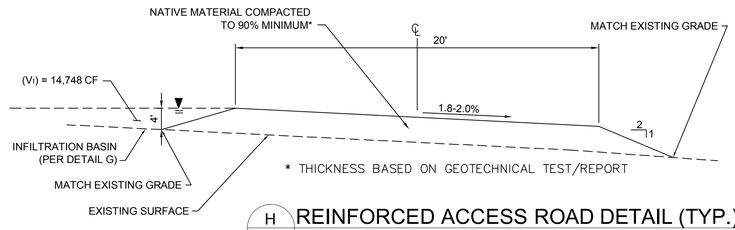

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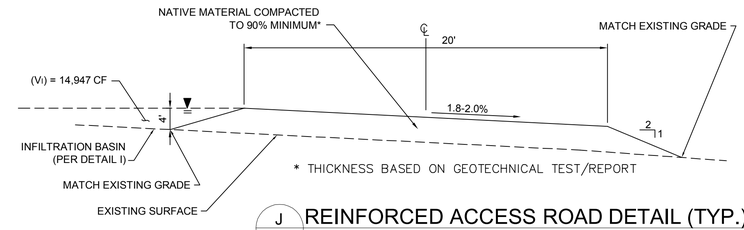

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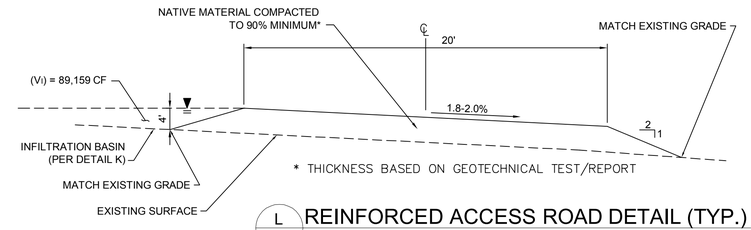

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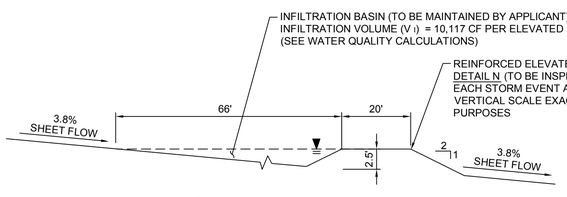

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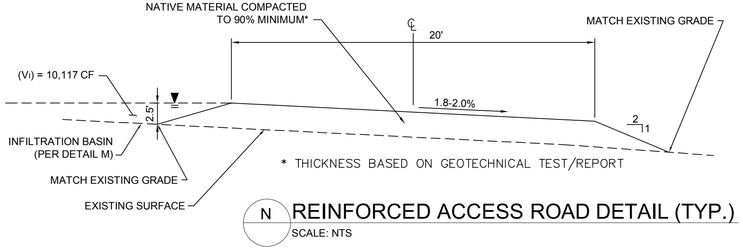

N REINFORCED ACCESS ROAD DETAIL (TYP.)
SCALE: NTS

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY: _____ RCE NO: _____ DATE _____
CHECKED BY: _____ DATE _____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00798 (RCUP201100070) C-06

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER
JOSEPH E. DIETZ
No. 67032
EXP: 9-30-14
CIVIL
STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100070
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE
BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\04544\125-04546-12001\SUPPORTDOCS\CALCS\HYDROLOGY\FINAL DESIGN\ONSITE HYDROLOGY C06.DWG
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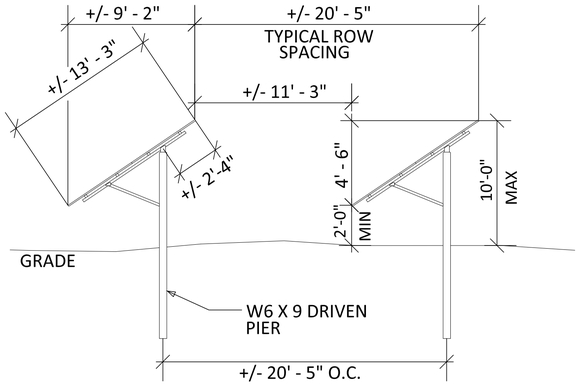
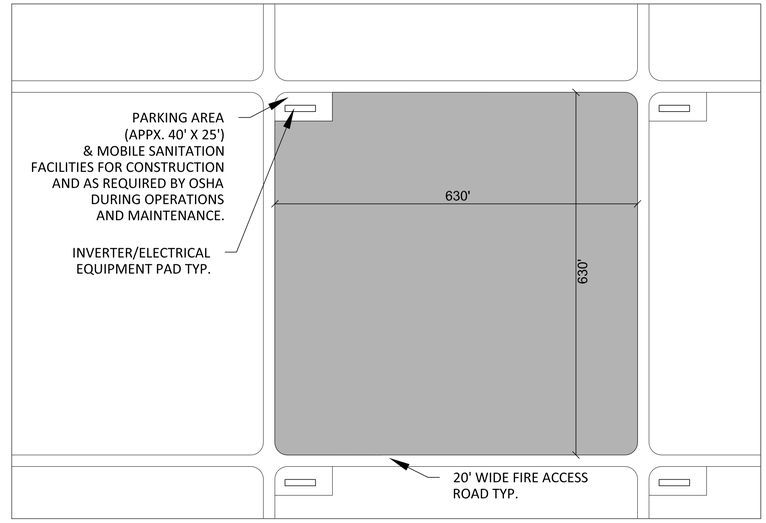


TYPICAL SOLAR ARRAY RACK DETAIL AND END ELEVATION

NOT TO SCALE



ARRAY BLOCK DETAIL (TYPICAL)

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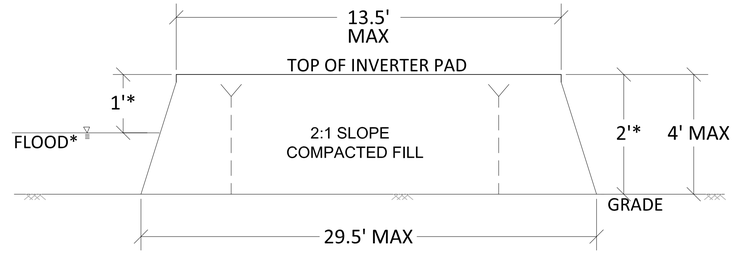
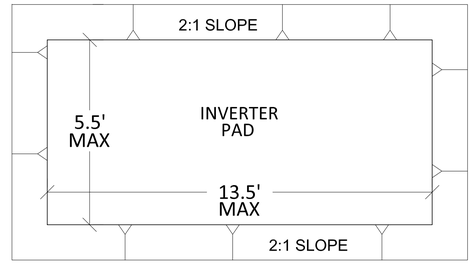


*TOP OF INVERTER PAD TO BE 1' MINIMUM ABOVE FLOOD WATER ELEVATION AS DETERMINED IN FINAL HYDROLOGY REPORT AND 2' ABOVE GRADE IN FEMA ZONE A.

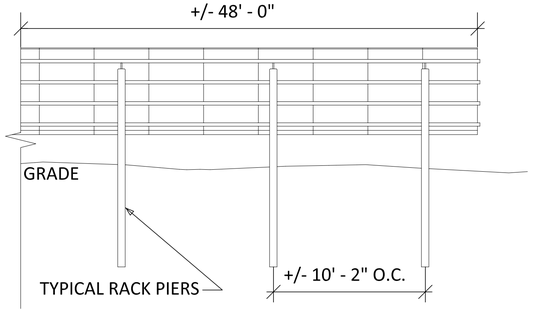
ELEVATION VIEW



PLAN VIEW

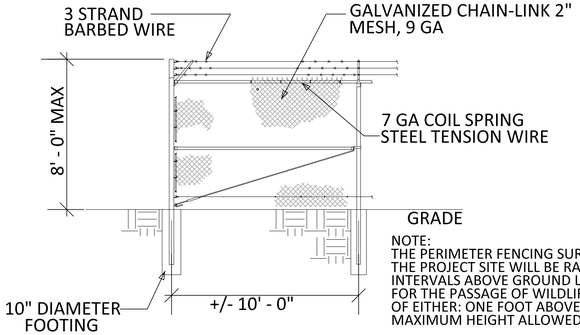
RAISED INVERTER PAD DETAILS FOR FLOOD AREAS AS NEEDED

NOT TO SCALE



SOLAR ARRAY RACK DETAIL ELEVATION

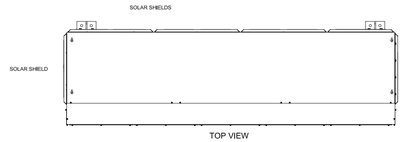
NOT TO SCALE

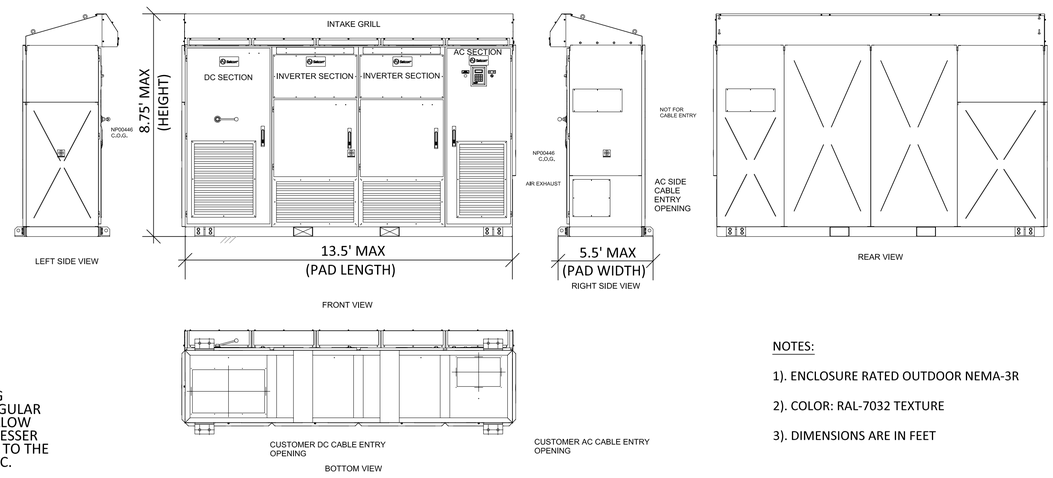


NOTE:
THE PERIMETER FENCING SURROUNDING THE PROJECT SITE WILL BE RAISED AT REGULAR INTERVALS ABOVE GROUND LEVEL TO ALLOW FOR THE PASSAGE OF WILDLIFE TO THE LESSER OF EITHER: ONE FOOT ABOVE GRADE OR TO THE MAXIMUM HEIGHT ALLOWED BY THE PUC.

CHAIN LINK SECURITY FENCE ELEVATION

NOT TO SCALE





NOTES:

1). ENCLOSURE RATED OUTDOOR NEMA-3R

2). COLOR: RAL-7032 TEXTURE

3). DIMENSIONS ARE IN FEET

INVERTER PAD DETAILS (TYPICAL)

NOT TO SCALE

C-07

R2011-00798 (RCUP201100070)

C:\USERS\JULIE.DELANEY\DESKTOP\SP_LAY2-7VC-08-IBTAIL-7-8.DWG
Dec 22, 2013 - 7:38:55 AM

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/22/13	REVISIONS FOR AGENCY	JD	SP
B	09/05/13	REVISION	JD	SP
A	08/29/12	ADDED NEW SHEET	JD	SP

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

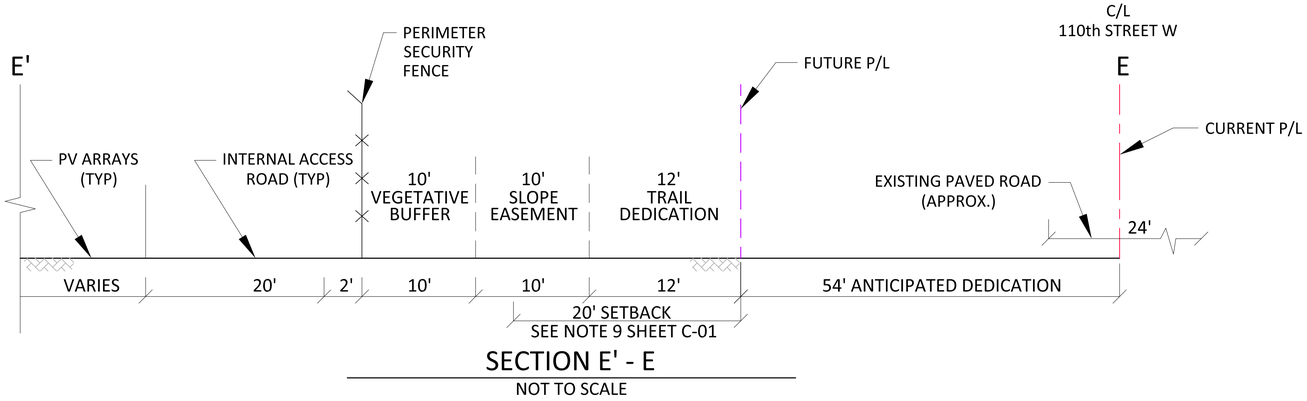
DRAWING: DETAIL SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



SECTION E' - E

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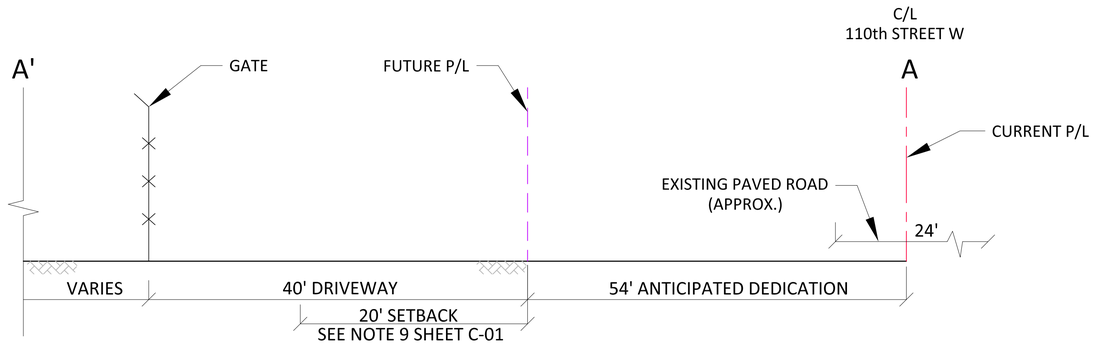
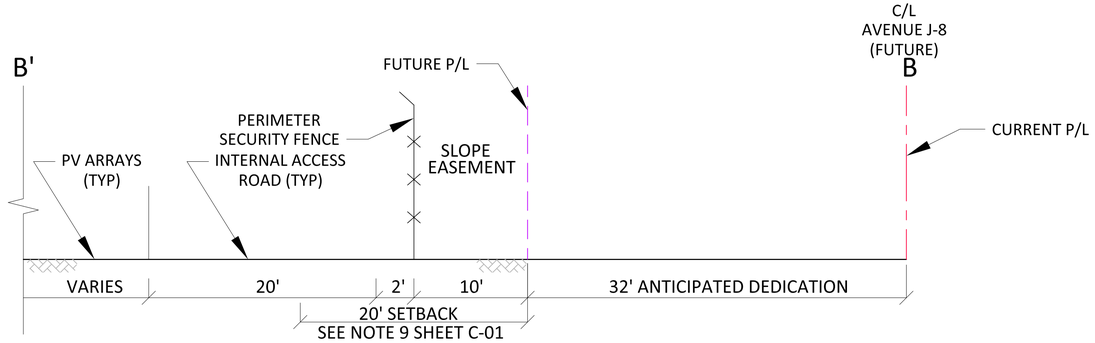


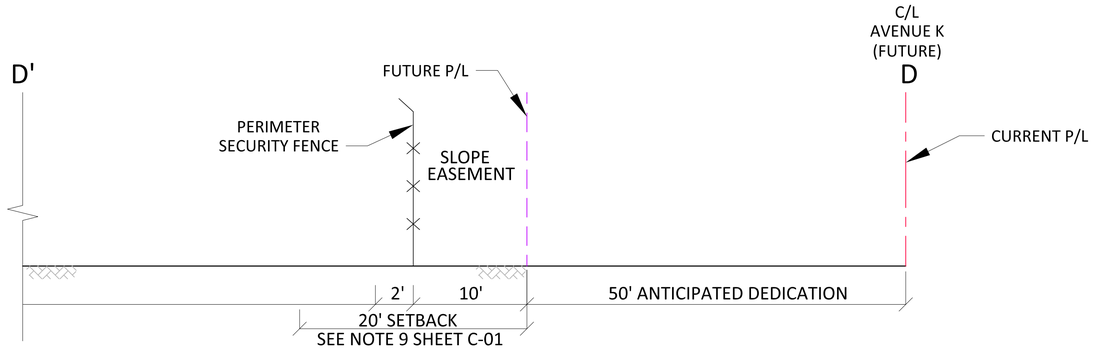
SECTION A' - A

NOT TO SCALE



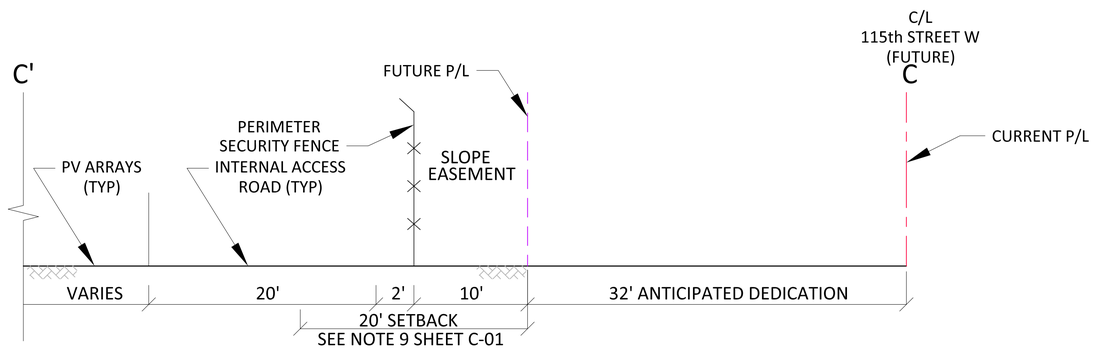
SECTION B' - B

NOT TO SCALE



SECTION D' - D

NOT TO SCALE



SECTION C' - C

NOT TO SCALE

C-08

R2011-00798 (RCUP201100070)

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELAREY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
B	12/22/13	REVISIONS PER AGENCY	JD	SP
A	09/05/13	ADDED SHEET	JD	SP

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

DRAWING: SECTION SHEET

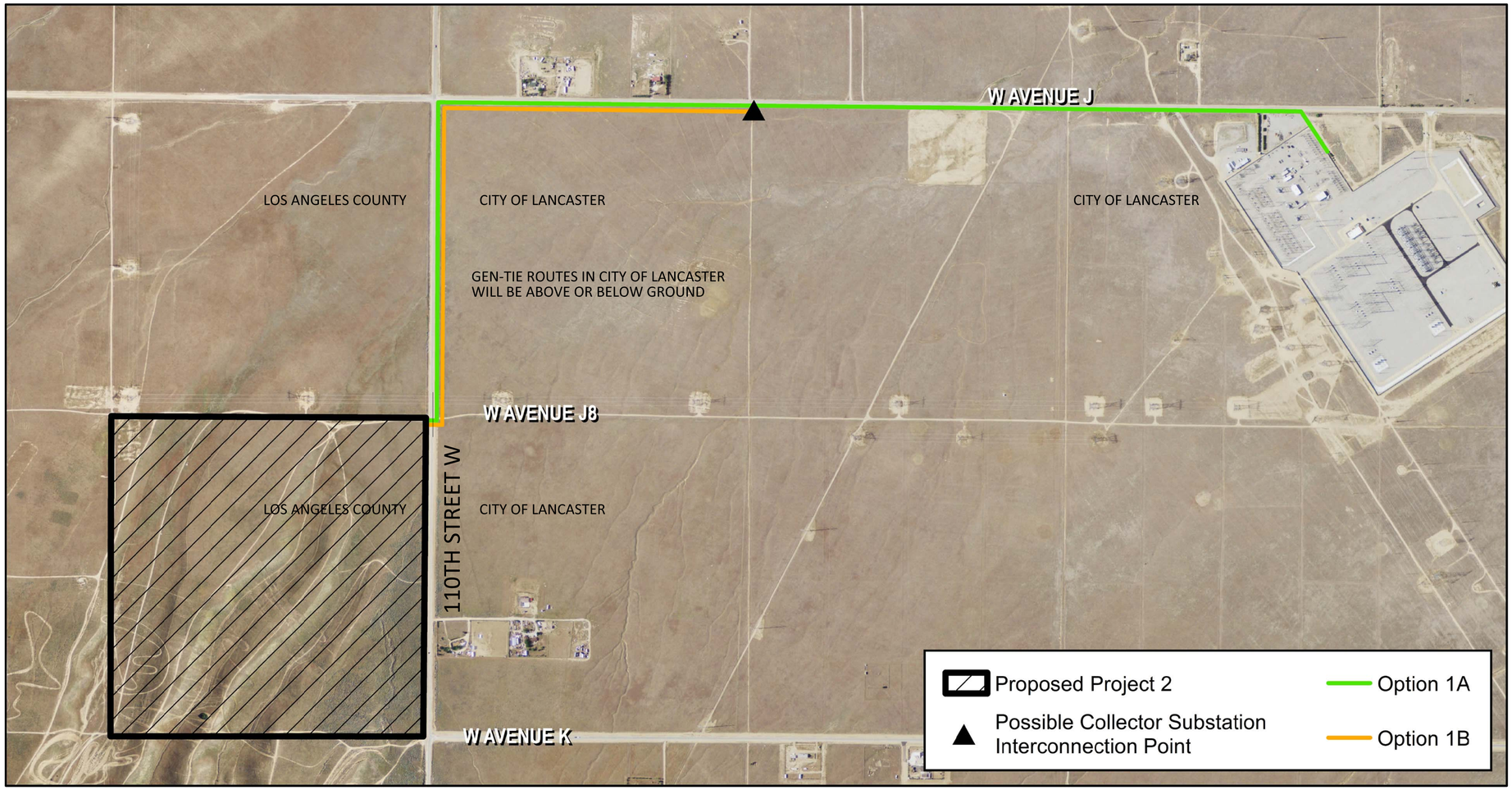
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE
BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

C:\SP_LA\P2-7\C-07-SECTIONS-7-8.DWG
PLOT/PRINTED: Dec 20, 2013 - 7:37:04 PM



NOTES:

1. ALL GEN-TIE OPTIONS SHOWN ARE NEW, WITH NO TIE-INS TO EXISTING GEN-TIES.
2. GEN-TIE OPTIONS WITHIN LOS ANGELES COUNTY LIMITS/JURISDICTION WILL BE UNDERGROUND.
3. GEN-TIE OPTIONS WITHIN CITY OF LANCASTER LIMITS/JURISDICTION WILL BE UNDERGROUND OR ABOVE GROUND.

GEN-TIE ROUTE OPTIONS

NOT TO SCALE

C-09

R2011-00798 (RCUP201100070)

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
B	12/22/13	REVISIONS PER AGENCY	JD	SP
A	09/05/13	ADDED SHEET	JD	SP

Solar PV System Summary

40MW AC Solar Photovoltaic Generation System

APN:
3267-015-001

SCH # 2012061068

Project Name:
Project 2 Western Antelope Blue Sky Ranch
Project Address:
110th Street West & West Ave K
Lancaster, CA 93536-7703
Los Angeles County, CA

DRAWING: GEN-TIE ROUTE OPTIONS

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 2
WESTERN ANTELOPE
BLUE SKY RANCH
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

C:\SP LAYZ~1\C-09-GEN-TIE-7-8.DWG
PLOTTED: Dec 29, 2013 - 9:58 PM

APPENDIX B-14.3

PROJECT 3 AMERICAN SOLAR GREENWORKS SITE PLANS

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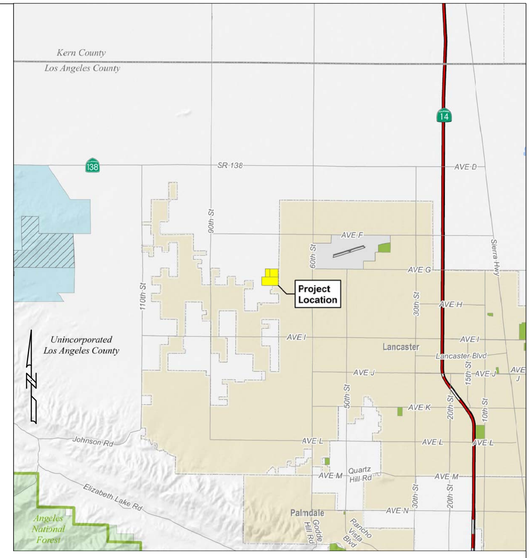
LOCATION MAP
NOT TO SCALE

PROJECT 3
AMERICAN SOLAR GREENWORKS
LOS ANGELES COUNTY, CALIFORNIA



VICINITY MAP
NOT TO SCALE

DRAWING INDEX

DRAWING NO.	TITLE	REVISION
T-01	TITLE SHEET	C
G-01	TOPOGRAPHIC MAP	A
G-02	TOPOGRAPHIC MAP	A
C-01	SITE PLAN	D
C-02	GRADING PLAN	C
C-03	ON-SITE DRAINAGE MAP	C
C-04	ON-SITE DRAINAGE MAP	C
C-05	ON-SITE DRAINAGE MAP	C
C-06	DETAIL SHEET	D
C-07	SECTION SHEET	C

SURVEY INFORMATION:

TOPOGRAPHIC MAP AND 1' CONTOURING PREPARED BY ALL VALLEY SURVEYING.
BENCHMARK AND BASIS OF BEARINGS SHOWN ON TOPOGRAPHIC MAP, DRAWING G-01 & G-02.

SURVEYOR:

LARRY E. JERNIGAN, PLS #5924
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA 93534
(661) 942-3639

T-01
R2011-00799 (RCUP201100071)

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/22/13	REVISIONS FOR AGENCY	JD	SP
B	09/05/13	ARRAY BLOCK REVISIONS	JD	SP
A	08/07/12	ADDED NEW SHEET	JD	SP

Solar PV System Summary

35MW AC Solar Photovoltaic Generation System
APNs 3268-018-002
3268-018-035
SCH # 2012061068

Project Name:
Project 3 American Solar Greenworks
Project Address:
W Ave. G & 70th St. W
Los Angeles County, CA

DRAWING: TITLE SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power
PROJECT 3
AMERICAN SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

C:\USERS\JULIE.DELANEY\DESKTOP\SP_LA\P3-9\T-01-TITLE-9.DWG
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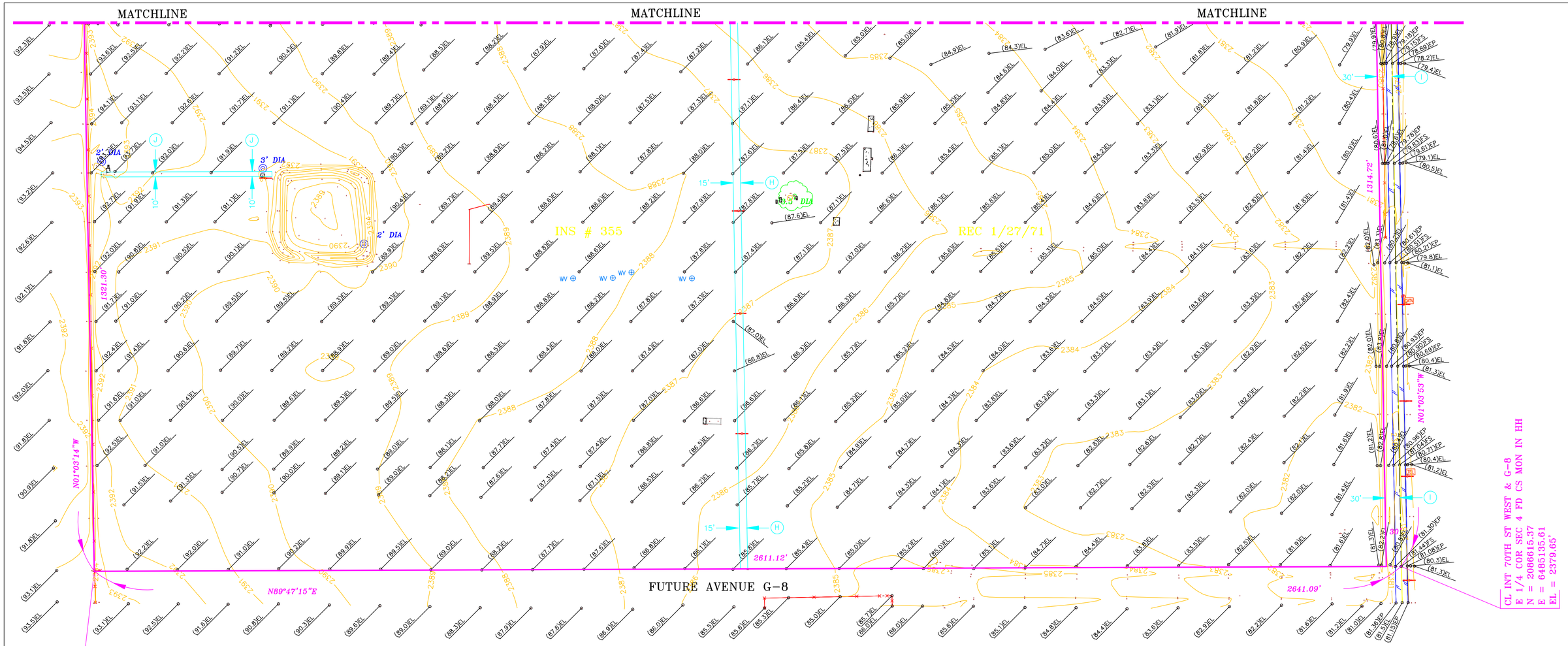


SYMBOL LEGEND

TELE	TELEPHONE BOX	SLB	STREET LIGHT BOX
CATV	CABLE TV BOX		STREET LIGHT
	POWER POLE	TSB	TRAFFIC SIGNAL BOX
	GUY ANCHOR	STREET	STREET SIGN
ELEC	ELECTRIC BOX	STOP	STOP SIGN
GP	GUARD POST	SPEED	SPEED LIMIT SIGN
WV	WATER VALVE	EP	EDGE OF PAVEMENT
	CONCRETE STANDPIPE	CLF	CHAIN-LINK FENCE
TEL	TELEPHONE BOX	PL	PROPERTY LINE
MB	MAILBOX	CL	CENTER LINE
	FENCE	R/W	RIGHT OF WAY LINE
	EDGE OF PAVEMENT	FS	FINISH SURFACE
	WALL		
	CONCRETE		
	TREE		

DATUM STATEMENT
COORDINATES SHOWN ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, (CCS83) ZONE V, 1983 NORTH AMERICAN DATUM, 1991.35 EPOCH ADJUSTMENT. COORDINATES SHOWN ARE IN U.S. SURVEY FEET. ALL DISTANCES SHOWN ARE GRID DISTANCES. TO OBTAIN A GROUND DISTANCE, DIVIDE THE GRID DISTANCE BY 0.999847886. COMBINATION FACTOR IS PROJECT BASED.

(A) – 5' ELECTRIC LINE EASEMENT BK 6063 PG 32 OF DEEDS
(B) – 30' ROAD EASEMENT (70TH ST W) TO THE COUNTY OF LOS ANGELES BK 4738, PG 306 O.R.
(C) – 10' ROAD EASEMENT (AVE "G" & 70TH ST W) TO THE COUNTY OF LOS ANGELES INS 87-1178477
(D) – OFFER TO DEDICATE 32' ROAD EASEMENT (AVE "G" & 75TH ST W) TO THE COUNTY OF LOS ANGELES INS# 87-1178478
(E) – 40' ROAD EASEMENT (AVE G) TO THE COUNTY OF LOS ANGELES INS# 3716, REC 2/17/55 O.R.
(F) – ELECTRIC LINE EASEMENT WITHIN ROAD R/W NEAR INTERSECTION OF AVE G & 70TH ST WEST INS# 4118, REC 4/24/56 O.R.
(G) – DRAINAGE ACCEPTANCE INS# 82-1178487
(H) – 5' AND 15' ELECTRIC LINE EASEMENT, BK 6057 PG 25 OF DEEDS
(I) – 30' ROAD EASEMENT (70TH ST WEST) TO THE COUNTY OF LOS ANGELES, BK 6187, PG 65, O.R.
(J) – 10' ELECTRIC LINE EASEMENT, BK 42274, PG 90 O.R.

EASEMENT INFORMATION FROM :
FIRST AMERICAN TITLE COMPANY
TITLE REPORTS:
NCS-454444-ONT1(9/8/10)
NCS-454425-ONT1(9/5/10)
NCS-468215-SD(12/17/10)

BASIS OF BEARING	BENCH MARK
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE V, NAD 83, EPOCH 1991.35, AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING STATIONS (CGPS), EW7110 AND EW7125, BEING NORTH 00°10'12" EAST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE NATIONAL GEODETIC SURVEY	LOS ANGELES COUNTY BENCHMARK L2273, LANCASTER 1998 ADJUSTMENT, NAVD 1988, ELEVATION= 2387.380 FEET CS MON IN WELL 450MM DN @ C/L INT 75TH ST W & AVE G MKD (1/4 COR 33, 4, R13W, T8N, R7N)

SCALE
HORIZ: 1"= 100'

PROFESSIONAL LAND SURVEYOR
LARRY E JERNIGAN
No. 5924
EXP 12-31-12
STATE OF CALIFORNIA

ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA. 93534
(661) 942-3639

NO.	REVISION	BY	APPR.	DATE
1				
2				
3				

SHEET 1/2 | SHEET G-01

TOPOGRAPHIC MAP
AVENUE G & 70TH STREET WEST
ANTELOPE VALLEY
COUNTY OF LOS ANGELES
STATE OF CALIFORNIA

DATE OF SURVEY
4/20/12

COUNTY PLAN CHECK NUMBER
2011-00833(RCUP201100079)

AVENUE G

CL INT 75TH ST WEST & AVE G
N 1/4 COR SEC 4 FD CS MON IN HH
N = 2089224.61
E = 6482446.36
EL = 2387.38'

N89°55'41"E

660.17'

2640.70'

CL INT 70TH ST WEST & AVE G
NE COR SEC 4 FD CS MON HH
N = 2089227.93
E = 6485087.06
EL = 2373.87'

C1 △ = 89°00'26"
R = 27'
L = 41.94'
T = 26.54'

2619.47'

1298.17'

1296.96'

1246.95'

1235.60'

2613.01'

FUTURE 75TH STREET WEST

70TH STREET WEST

INS # 85-190679

INS # 04-2696323

N01°03'24"W

N89°49'21"E

660.22'

DIA

N89°49'29"E 10.00'

MATCHLINE

MATCHLINE

MATCHLINE

DATUM STATEMENT
COORDINATES SHOWN ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, (CCS83) ZONE V, 1983 NORTH AMERICAN DATUM, 1991.35 EPOCH ADJUSTMENT. COORDINATES SHOWN ARE IN U.S. SURVEY FEET. ALL DISTANCES SHOWN ARE GRID DISTANCES. TO OBTAIN A GROUND DISTANCE, DIVIDE THE GRID DISTANCE BY 0.999847886. COMBINATION FACTOR IS PROJECT BASED.

BASIS OF BEARING	BENCH MARK
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE V, NAD 83, EPOCH 1991.35, AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING STATIONS (CGPS), EW7110 AND EW7125, BEING NORTH 00°10'12" EAST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE NATIONAL GEODETIC SURVEY	LOS ANGELES COUNTY BENCHMARK L2273, LANCASTER 1998 ADJUSTMENT, NAVD 1988, ELEVATION= 2387.380 FEET CS MON IN WELL 450MM DN @ C/L INT 75TH ST W & AVE G MKD (1/4 COR 33, 4, R13W, T8N, R7N)

SCALE
HORIZ: 1"= 100'

PROFESSIONAL LAND SURVEYOR
LARRY E JERNIGAN
No. 5924
EXP 12-31-12
STATE OF CALIFORNIA

ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA. 93534
(661) 942-3639

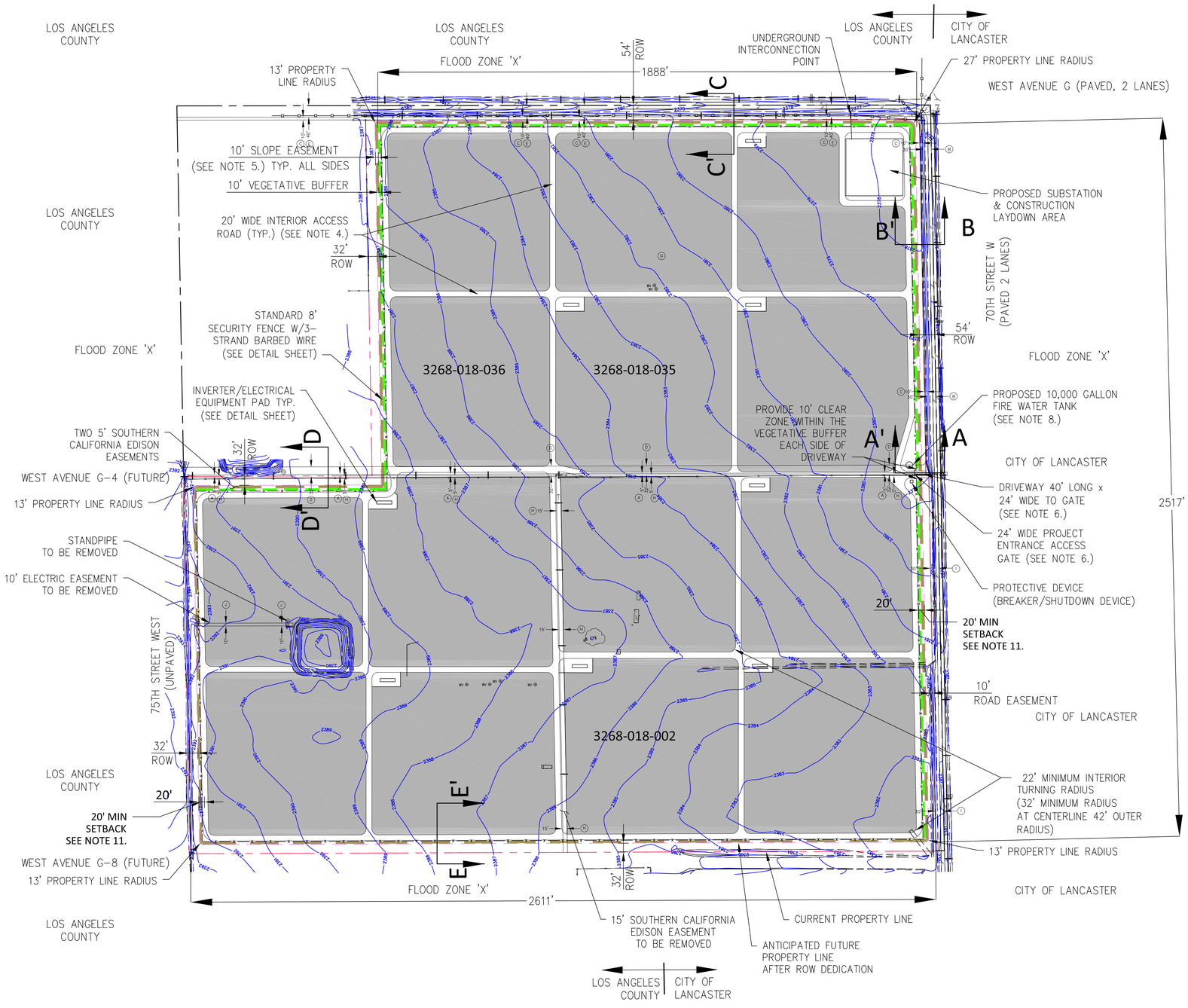
NO.	REVISION	BY	APPR.	DATE
1				
2				
3				

SHEET 2/2 | SHEET G-02

TOPOGRAPHIC MAP
AVENUE G & 70TH STREET WEST
ANTELOPE VALLEY
COUNTY OF LOS ANGELES
STATE OF CALIFORNIA

DATE OF SURVEY 4/20/12

COUNTY PLAN CHECK NUMBER 2011-00833(RCUP201100079)



PROJECT SITE:

PROJECT SITE IS 134.6 ACRES (NET)

NOTES:

1. 'ZONE X' AS SHOWN ON PANEL 0400F OF FLOOD INSURANCE RATE MAP NO. 06037C0400F. ZONE "X" DESIGNATED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

2. FIRE DEPARTMENT ACCESS DEVICE AND EMERGENCY CONTACT PLACARD LOCATED AT ALL ENTRANCE GATES.

3. MOBILE SANITATION FACILITY, AS DEFINED BY THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH, CAN BE LOCATED AT ALL PARKING LOCATIONS AND WILL BE LOCATED AT THE NEAREST LOCATION TO CONSTRUCTION AND OPERATIONAL WORKERS ACTIVITY. THE FACILITIES WILL BE KEPT TO LOS ANGELES COUNTY CODE, TITLE 11 - HEALTH & SAFETY, AND CAL-OSHA SANITATION STANDARDS IN SECTION 3360, TITLE 8, CALIFORNIA CODE OF REGULATIONS. MOBILE SANITATION FACILITIES WILL BE MADE AVAILABLE DURING CONSTRUCTION AND AS REQUIRED BY OSHA DURING OPERATIONS AND MAINTENANCE. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-06.

4. INTERIOR ACCESS ROADS WILL BE 20' WIDE, COMPACTED TO 90%, WITH 32 FOOT TURNING RADIUS AT CENTER LINE. THE INNER RADIUS WILL BE 22' AND THE OUTER RADIUS WILL BE 42'. INTERIOR ACCESS ROADS WILL BE PROVIDED TO INVERTER/ELECTRICAL EQUIPMENT PADS AND AROUND THE PERIMETER OF THE PROJECT. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-06.

5. 10 FOOT WIDE SLOPE EASEMENT WILL BE PROVIDED AROUND PERIMETER.

6. DRIVEWAY ACCESS GATES TO BE SET 40 FEET BACK FROM EDGE OF PROPERTY. DRIVEWAY WILL BE 24 FEET WIDE.

7. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION DURING DETAILED DESIGN.

8. TANK CONNECTIONS PER LOS ANGELES COUNTY FIRE DEPARTMENT.

9. ANTICIPATED ROW SETBACK/DEDICATION FOR FUTURE ROAD DEVELOPMENT. REFER TO SHEET C-06 FOR SECTIONS AND ROW DETAILS.

10. CONTOURS SHOWN ON SITE PLAN, C-01, ARE BASED ON SURVEY BY ALL VALLEY SURVEYING.

11. A 20' MINIMUM SETBACK FROM PROPERTY LINE (AFTER DEDICATIONS) TO ARRAYS OR EQUIPMENT TO BE MAINTAINED ON SITE. PROJECT FENCE, FIRE ROADS, EASEMENTS, AND VEGETATION ARE OK WITHIN THE SETBACK.

BENCHMARK:

LOS ANGELES COUNTY BENCHMARK L2273, LANCASTER 1998 ADJUSTMENT, NAVD 1988,
ELEVATION=2387.380 FEET
CS MON IN WELL 450MM DN @ C/L INT 75TH ST W & AVE G
MKD (1/4 COR 33, 4, R13W, T8N, R7N)

LEGEND:

MIN	MINIMUM
ROW	RIGHT OF WAY
℄	CENTERLINE
x — x	FENCE LINE
	OVERHEAD LINE
	UNDERGROUND LINE
	PROPERTY LINE (AFTER DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
2383	CONTOUR LINE (1' INTERVAL FROM SURVEY)
	SOLAR ARRAY FIELD
	10' WIDE VEGETATIVE BUFFER
	10' WIDE SLOPE EASEMENT

200 0 200 400
SCALE IN FEET

1'=200'
WHEN PRINTED TO SCALE ON 22"x34" SHEET

C-01
R2011-00799 (RCUP201100071)

C:\SP_LAYP3~P\C~01~SITE~9~C.DWG
PLOT/UPDATE: Dec 29, 2013 10:43:34 PM

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
D	12/22/13	REVISIONS PER AGENCY	JD	SP
C	09/05/13	ARRAY BLOCK REVISION	JD	SP
B	8/06/12	REVISIONS FOR COUNTY	JD	SP
A	5/26/12	INITIAL ISSUE	JD	SP

Solar PV System Summary

35MW AC Solar Photovoltaic Generation System
APNs 3268-018-002
3268-018-035
SCH # 2012061068

Project Name:
Project 3 American Solar Greenworks

Project Address:
W Ave. G & 70th St. W
Los Angeles County, CA

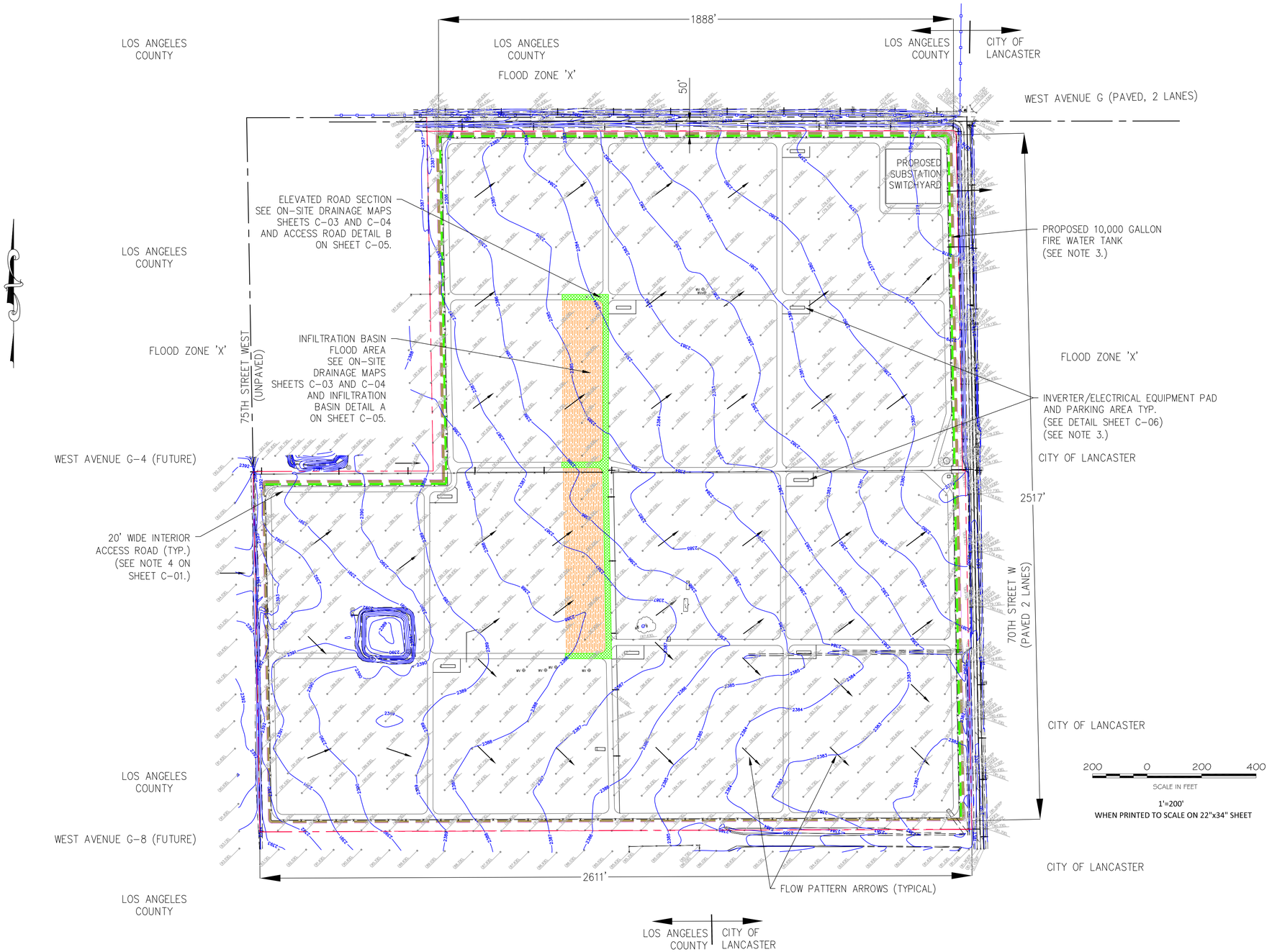
DRAWING: Site Plan

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 3
AMERICAN SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



NOTES:

1. DRAINAGE ACROSS SITE IS CURRENTLY FROM THE WEST TO THE EAST, AS SHOWN ON THE SURFACE CONTOURS. TOPOGRAPHY/CONTOURS ARE BASED ON SURVEY DATA PROVIDED BY ALL VALLEY SURVEYING.

2. OVERALL EXISTING GRADING AND DRAINAGE PATTERN TO REMAIN UNCHANGED DURING AND AFTER CONSTRUCTION WITH THE EXCEPTION OF AREAS USED FOR DRAINAGE FEATURES. ELEVATED ROAD SECTIONS WILL BE USED TO CREATE INFILTRATION BASINS. FLOOD AREAS AND FLOW PATTERN ARROWS ARE SHOWN ON THIS SHEET AND SHEETS C-03 AND C-04.

3. EQUIPMENT PADS WILL BE GRADED AS REQUIRED PER MANUFACTURER SPECIFICATIONS.

LEGEND:

- TELEPHONE BOX
- CABLE TV BOX
- POWER POLE
- GUY ANCHOR
- ELECTRIC BOX
- GUARD POST
- WATER VALVE
- CONCRETE STANDPIPE
- TELEPHONE BOX
- MAILBOX
- FENCE
- EDGE OF PAVEMENT
- WALL
- STREET LIGHT BOX
- STREET LIGHT
- TRAFFIC SIGNAL BOX
- STREET SIGN
- STOP SIGN
- SPEED LIMIT SIGN
- EDGE OF PAVEMENT
- CHAIN-LINK FENCE
- PROPERTY LINE
- CENTER LINE
- RIGHT OF WAY LINE
- FINISH SURFACE
- TREE
- CONCRETE

- CENTERLINE
- CMP CORRUGATED METAL PIPE
- L.F. LINEAR FEET
- TBD TO BE DETERMINED
- TYP. TYPICAL
- PROPOSED FENCE LINE
- UNDERGROUND LINE
- PROPERTY LINE (AFTER DEDICATIONS)
- PROPERTY LINE (CURRENT)
- PARCEL LINE
- INFILTRATION BASIN FLOOD AREA
- ELEVATED ROAD SECTION
- CONTOUR LINE (1' INTERVAL FROM ALL VALLEY SURVEYING)

EARTHWORK QUANTITIES:

OVEREXCAVATION	=	25,500 CUBIC YARDS
CUT	=	1,000 CUBIC YARDS
FILL	=	1,000 CUBIC YARDS

CUT & FILL QUANTITIES INCLUDE INVERTER PADS, SUBSTATION, BASINS, AND ELEVATED ROAD BED FOR DRAINAGE FEATURES.

OVEREXCAVATION QUANTITY INCLUDES ACCESSIBLE FIRE ROAD.

200 0 200 400
SCALE IN FEET

1"=200'
WHEN PRINTED TO SCALE ON 22"x34" SHEET

SURVEY INFORMATION:

TOPOGRAPHIC MAP AND 1' CONTOURING PREPARED BY ALL VALLEY SURVEYING, SEE TOPOGRAPHIC MAP SHEETS.

SURVEYOR:

LARRY E. JERNIGAN, PLS #5924
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA 93534
(661) 942-3639

BASIS OF BEARINGS:

SEE TOPOGRAPHIC MAP SHEETS.

BENCHMARK:

SEE TOPOGRAPHIC MAP SHEETS.

EASEMENTS:

SEE TOPOGRAPHIC MAP SHEETS.

C-02

R2011-00799 (RCUP201100071)

C:\SP_LAYP3~P\C~02~GRAD~9~A.DWG
PLOT/UPDATE: Dec 29, 2013 10:51:13 PM

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

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B	09/05/13	ARRAY BLOCK REVISION	JD	SP
A	8/06/12	ADDED NEW SHEET	JD	SP

Solar PV System Summary

35MW AC Solar Photovoltaic Generation System
APNs 3268-018-002
3268-018-035
SCH # 2012061068

Project Name:
Project 3 American Solar Greenworks

Project Address:
W Ave. G & 70th St. W
Los Angeles County, CA

DRAWING:
Preliminary Grading & Drainage Plan

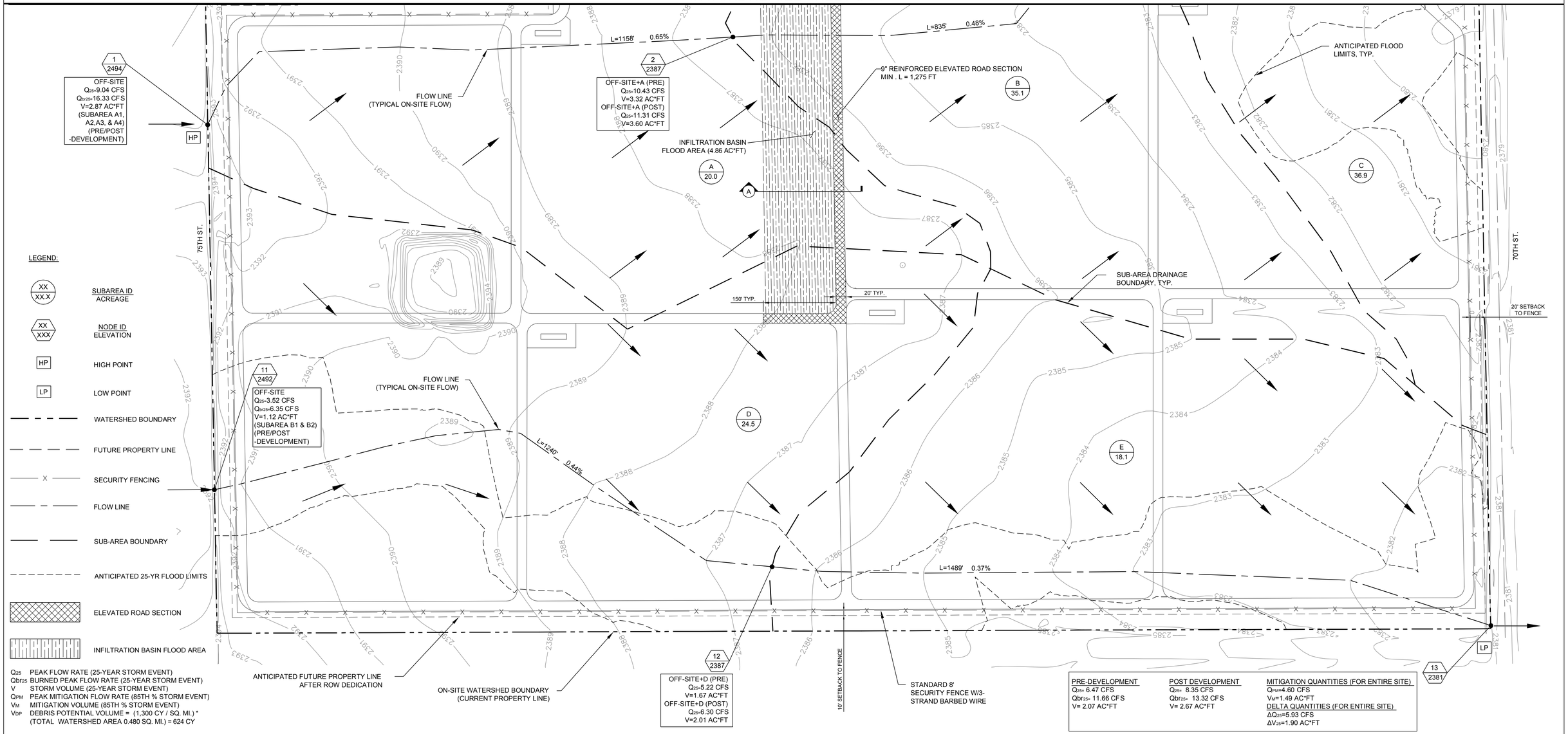
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 3
AMERICAN SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

MATCHLINE: SEE SHEET C-04



LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- X — SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.480 SQ. MI.) = 624 CY

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION QUANTITIES (FOR ENTIRE SITE)
Q_{25}= 6.47 CFS	Q_{25}= 8.35 CFS	Q_{PM}=4.60 CFS
Q_{br25}= 11.66 CFS	Q_{br25}= 13.32 CFS	V_M=1.49 AC*FT
V= 2.07 AC*FT	V= 2.67 AC*FT	DELTA QUANTITIES (FOR ENTIRE SITE)
		ΔQ_{25}=5.93 CFS
		ΔV_{25}=1.90 AC*FT

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) NOT WITHIN A FEMA ZONE A. WITHIN FEMA ZONE X, UNSHADED.
9) NOT WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATE (Q_{50}) INCREASED BY 9.9%, THE VOLUME (V_{50}) INCREASED BY 3.4%, THE DEPTH INCREASED BY 4.8%, AND THE VELOCITY INCREASED BY 0.0%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N

0 50' 100' 200'
SCALE: 1" = 100'

R2011-00799 (RCUP201100071) C-03

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

35MW AC Solar Photovoltaic Generation System
APNs 3268-018-002
3268-018-035
SCH # 2012061068

Project Name:
Project 3 American Solar Greenworks

Project Address:
W Ave. G & 70th St. W
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100071 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 3
AMERICAN SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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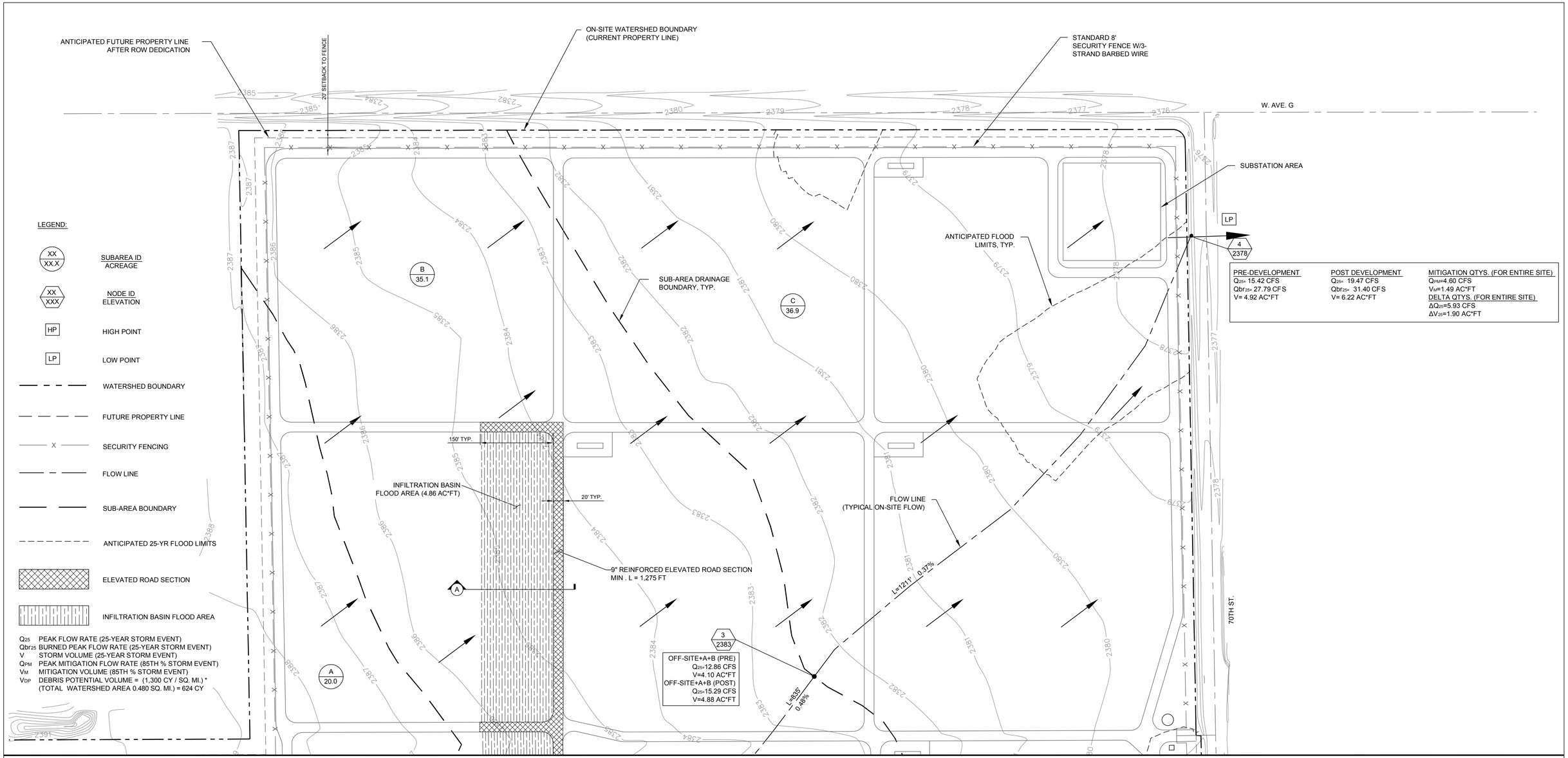
PLOT/UPDATE: Dec 6, 2013 11:46:22 AM



PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION QTYS. (FOR ENTIRE SITE)
Q_{25}= 15.42 CFS	Q_{25}= 19.47 CFS	Q_{PM}=4.60 CFS
Qbr_{25}= 27.79 CFS	Qbr_{25}= 31.40 CFS	V_M=1.49 AC*FT
V= 4.92 AC*FT	V= 6.22 AC*FT	DELTA QTYS. (FOR ENTIRE SITE)
		ΔQ_{25}=5.93 CFS
		ΔV_{25}=1.90 AC*FT

DRAINAGE CONCEPT NOTES:
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MATCHLINE: SEE SHEET C-03

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY: _____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N
0 50' 100' 200'
SCALE: 1"=100'

R2011-00799 (RCUP201100071) C-04

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

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HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100071 ON-SITE DRAINAGE MAP

APPLICANT:
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2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power
PROJECT 3
AMERICAN SOLAR GREENWORKS
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PLOT/UPDATE: Dec 6, 2013 11:46:44 AM

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

ON-SITE HYDROLOGY (PRE DEVELOPMENT)

Project	Subarea	Area (acres)	%Imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 3	A	20.0	0.01	2	120	1158	0.0065	1.1	30	0.28	0.10	0.11	0.62	0.34	1.00	0.20
Project 3	B	35.1	0.01	2	120	835	0.0048	1.1	30	0.28	0.10	0.11	1.08	0.34	1.76	0.34
Project 3	C	36.9	0.01	2	120	1211	0.0037	1.1	30	0.28	0.10	0.11	1.14	0.34	1.85	0.36
Project 3	D	24.5	0.01	2	120	1240	0.0044	1.1	30	0.28	0.10	0.11	0.75	0.34	1.23	0.24
Project 3	E	18.1	0.01	2	120	1489	0.0037	1.1	30	0.28	0.10	0.11	0.56	0.34	0.91	0.18
Project 3	A	20.0	0.01	5	120	1158	0.0065	1.6	30	0.42	0.10	0.11	0.92	0.34	1.59	0.30
Project 3	B	35.1	0.01	5	120	835	0.0048	1.6	30	0.42	0.10	0.11	1.62	0.34	2.78	0.52
Project 3	C	36.9	0.01	5	120	1211	0.0037	1.6	30	0.42	0.10	0.11	1.70	0.34	2.92	0.55
Project 3	D	24.5	0.01	5	120	1240	0.0044	1.6	30	0.42	0.10	0.11	1.13	0.34	1.94	0.36
Project 3	E	18.1	0.01	5	120	1489	0.0037	1.6	30	0.42	0.10	0.11	0.84	0.34	1.43	0.27
Project 3	A	20.0	0.01	10	120	1158	0.0065	2.0	30	0.51	0.10	0.11	1.12	0.34	1.97	0.36
Project 3	B	35.1	0.01	10	120	835	0.0048	2.0	30	0.51	0.10	0.11	1.97	0.34	3.46	0.64
Project 3	C	36.9	0.01	10	120	1211	0.0037	2.0	30	0.51	0.10	0.11	2.07	0.34	3.63	0.67
Project 3	D	24.5	0.01	10	120	1240	0.0044	2.0	30	0.51	0.10	0.11	1.37	0.34	2.41	0.44
Project 3	E	18.1	0.01	10	120	1489	0.0037	2.0	30	0.51	0.10	0.11	1.02	0.34	1.78	0.33
Project 3	A	20.0	0.01	25	120	1158	0.0065	2.5	30	0.63	0.10	0.11	1.39	0.34	2.49	0.45
Project 3	B	35.1	0.01	25	120	835	0.0048	2.5	30	0.63	0.10	0.11	2.43	0.34	4.37	0.78
Project 3	C	36.9	0.01	25	120	1211	0.0037	2.5	30	0.63	0.10	0.11	2.56	0.34	4.60	0.82
Project 3	D	24.5	0.01	25	120	1240	0.0044	2.5	30	0.63	0.10	0.11	1.70	0.34	3.05	0.55
Project 3	E	18.1	0.01	25	120	1489	0.0037	2.5	30	0.63	0.10	0.11	1.25	0.34	2.26	0.40
Project 3	A	20.0	0.01	50	120	1158	0.0065	2.8	30	0.72	0.14	0.15	2.16	0.34	3.41	0.52
Project 3	B	35.1	0.01	50	120	835	0.0048	2.8	30	0.72	0.14	0.15	3.79	0.34	5.98	0.91
Project 3	C	36.9	0.01	50	120	1211	0.0037	2.8	30	0.72	0.14	0.15	3.99	0.34	6.29	0.95
Project 3	D	24.5	0.01	50	120	1240	0.0044	2.8	30	0.72	0.14	0.15	2.65	0.34	4.17	0.63
Project 3	E	18.1	0.01	50	120	1489	0.0037	2.8	30	0.72	0.14	0.15	1.95	0.34	3.08	0.47
Project 3	A	20.0	0.01	MIT.	120	1158	0.0065	0.75	30	0.19	0.10	0.11	0.42	0.34	0.65	0.14
Project 3	B	35.1	0.01	MIT.	120	835	0.0048	0.75	30	0.19	0.10	0.11	0.73	0.34	1.13	0.24
Project 3	C	36.9	0.01	MIT.	120	1211	0.0037	0.75	30	0.19	0.10	0.11	0.77	0.34	1.19	0.25
Project 3	D	24.5	0.01	MIT.	120	1240	0.0044	0.75	30	0.19	0.10	0.11	0.51	0.34	0.79	0.17
Project 3	E	18.1	0.01	MIT.	120	1489	0.0037	0.75	30	0.19	0.10	0.11	0.38	0.34	0.58	0.12

ON-SITE HYDROLOGY (POST DEVELOPMENT)

Project	Subarea	Area (acres)	%Imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 3	A	20.0	0.1	2	120	1158	0.0065	1.1	30	0.28	0.10	0.18	1.01	0.34	1.36	0.32
Project 3	B	35.1	0.1	2	120	835	0.0048	1.1	30	0.28	0.10	0.18	1.77	0.34	2.39	0.56
Project 3	C	36.9	0.1	2	120	1211	0.0037	1.1	30	0.28	0.10	0.18	1.86	0.34	2.51	0.59
Project 3	D	24.5	0.1	2	120	1240	0.0044	1.1	30	0.28	0.10	0.18	1.23	0.34	1.67	0.39
Project 3	E	18.1	0.1	2	120	1489	0.0037	1.1	30	0.28	0.10	0.18	0.91	0.34	1.23	0.29
Project 3	A	20.0	0.1	5	120	1158	0.0065	1.6	30	0.42	0.10	0.18	1.51	0.34	2.11	0.49
Project 3	B	35.1	0.1	5	120	835	0.0048	1.6	30	0.42	0.10	0.18	2.65	0.34	3.71	0.85
Project 3	C	36.9	0.1	5	120	1211	0.0037	1.6	30	0.42	0.10	0.18	2.79	0.34	3.90	0.90
Project 3	D	24.5	0.1	5	120	1240	0.0044	1.6	30	0.42	0.10	0.18	1.85	0.34	2.59	0.59
Project 3	E	18.1	0.1	5	120	1489	0.0037	1.6	30	0.42	0.10	0.18	1.37	0.34	1.91	0.44
Project 3	A	20.0	0.1	10	120	1158	0.0065	2.0	30	0.51	0.10	0.18	1.84	0.34	2.61	0.59
Project 3	B	35.1	0.1	10	120	835	0.0048	2.0	30	0.51	0.10	0.18	3.22	0.34	4.58	1.04
Project 3	C	36.9	0.1	10	120	1211	0.0037	2.0	30	0.51	0.10	0.18	3.39	0.34	4.81	1.09
Project 3	D	24.5	0.1	10	120	1240	0.0044	2.0	30	0.51	0.10	0.18	2.25	0.34	3.19	0.73
Project 3	E	18.1	0.1	10	120	1489	0.0037	2.0	30	0.51	0.10	0.18	1.66	0.34	2.36	0.54
Project 3	A	20.0	0.1	25	120	1158	0.0065	2.5	30	0.63	0.10	0.18	2.27	0.34	3.28	0.73
Project 3	B	35.1	0.1	25	120	835	0.0048	2.5	30	0.63	0.10	0.18	3.98	0.34	5.75	1.28
Project 3	C	36.9	0.1	25	120	1211	0.0037	2.5	30	0.63	0.10	0.18	4.18	0.34	6.04	1.34
Project 3	D	24.5	0.1	25	120	1240	0.0044	2.5	30	0.63	0.10	0.18	2.78	0.34	4.01	0.89
Project 3	E	18.1	0.1	25	120	1489	0.0037	2.5	30	0.63	0.10	0.18	2.05	0.34	2.96	0.66
Project 3	A	20.0	0.1	50	120	1158	0.0065	2.8	30	0.72	0.14	0.22	3.17	0.34	4.30	0.84
Project 3	B	35.1	0.1	50	120	835	0.0048	2.8	30	0.72	0.14	0.22	5.56	0.34	7.54	1.47
Project 3	C	36.9	0.1	50	120	1211	0.0037	2.8	30	0.72	0.14	0.22	5.84	0.34	7.93	1.55
Project 3	D	24.5	0.1	50	120	1240	0.0044	2.8	30	0.72	0.14	0.22	3.88	0.34	5.27	1.03
Project 3	E	18.1	0.1	50	120	1489	0.0037	2.8	30	0.72	0.14	0.22	2.87	0.34	3.89	0.76
Project 3	A	20.0	0.1	MIT.	120	1158	0.0065	0.75	30	0.19	0.10	0.18	0.68	0.34	0.89	0.22
Project 3	B	35.1	0.1	MIT.	120	835	0.0048	0.75	30	0.19	0.10	0.18	1.20	0.34	1.56	0.39
Project 3	C	36.9	0.1	MIT.	120	1211	0.0037	0.75	30	0.19	0.10	0.18	1.26	0.34	1.64	0.41
Project 3	D	24.5	0.1	MIT.	120	1240	0.0044	0.75	30	0.19	0.10	0.18	0.84	0.34	1.09	0.27
Project 3	E	18.1	0.1	MIT.	120	1489	0.0037	0.75	30	0.19	0.10	0.18	0.62	0.34	0.81	0.20

Incremental Flow and Volume Increase for Various Storm Events

Storm Event	Pre-Q (cfs)	Post-Q (cfs)	Delta-Q (cfs)	Pre-V (acre-ft)	Post-V (acre-ft	Delta-V (acre-ft)
2.00	4.15	6.78	2.63	1.32	2.15	0.83
5.00	6.21	10.17	3.96	2.00	3.27	1.27
10.00	7.55	12.36	4.81	2.44	3.99	1.55
25.00	9.33	15.26	5.93	3.00	4.90	1.90
50.00	14.54	21.32	6.78	3.48	5.65	2.17

NOTE: FOR INFILTRATION BASIN MITIGATION VOLUME, SUM MIT. FREQUENCY VOLUMES UNDER POST-DEVELOPMENT TABLE. V_{PM}=1.49 AC*FT.

DELTA QUANTITIES FOR DRAINAGE AREA A:
ΔQ25 = 2.27 - 1.39 = 0.88 CFS
ΔV25 = 0.73 - 0.45 = 0.28 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA B:
ΔQ25 = 3.98 - 2.43 = 1.55 CFS
ΔV25 = 1.28 - 0.78 = 0.50 AC*FT

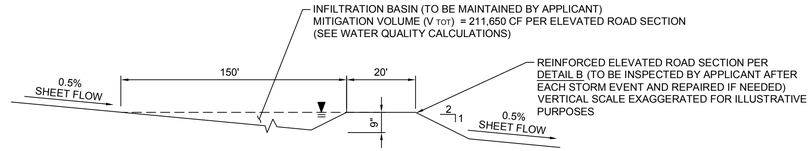
DELTA QUANTITIES FOR DRAINAGE AREA C
ΔQ25 = 4.18 - 2.56 = 1.62 CFS
ΔV25 = 1.34 - 0.82 = 0.52 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA D
ΔQ25 = 2.78 - 1.70 = 1.08 CFS
ΔV25 = 0.89 - 0.55 = 0.34 AC*FT

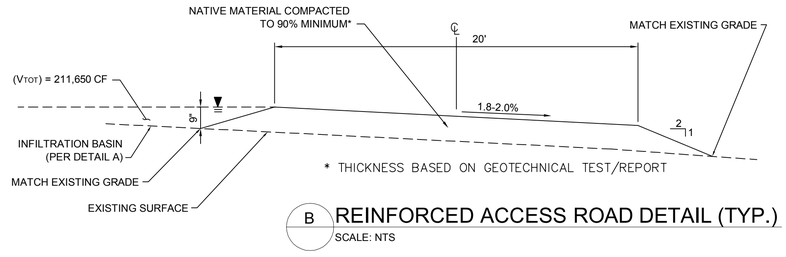
DELTA QUANTITIES FOR DRAINAGE AREA E
ΔQ25 = 2.05 - 1.25 = 0.80 CFS
ΔV25 = 0.66 - 0.40 = 0.26 AC*FT

TOTAL DELTA QUANTITIES
ΔQ25 = 5.93 CFS
ΔV25 = 1.90 AC*FT

NOTE: DUE TO THE LID Δ QUANTITIES ABOVE BEING GREATER THAN THE MITIGATION QUANTITIES (Q_{PM} AND V_{PM}) THEY REPRESENT THE WORST CASE SCENARIO BETWEEN THE PRE-/POST DEVELOPMENT CONDITIONS AND THEREFORE SHALL BE USED FOR SIZING THE INFILTRATION BASINS.



A INFILTRATION BASIN DETAIL
SCALE: NTS



B REINFORCED ACCESS ROAD DETAIL (TYP.)
SCALE: NTS

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00799 (RCUP201100071) C-05

PREPARED UNDER THE SUPERVISION OF:
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APNs 3268-018-002
3268-018-035
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Los Angeles County, CA

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FOR CUP 201100071
ON-SITE DRAINAGE MAP

APPLICANT:
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San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 3
AMERICAN SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

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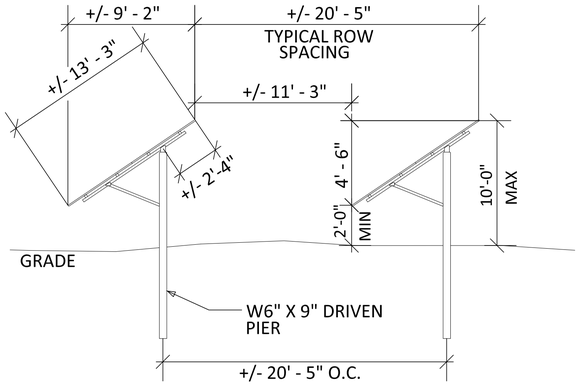
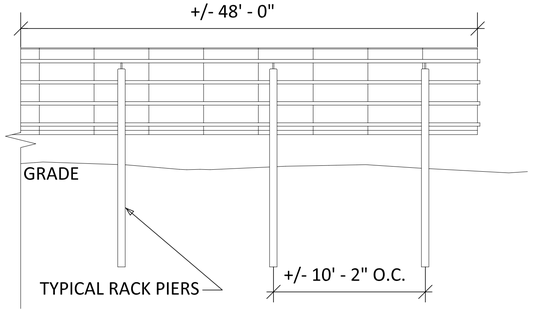
PLOT/UPDATE: Dec 2, 2013 8:58:41 AM



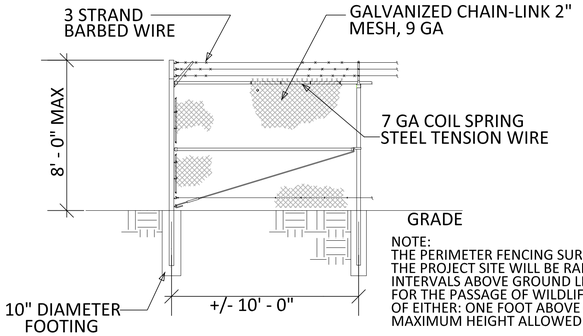
TYPICAL SOLAR ARRAY RACK DETAIL AND END ELEVATION

NOT TO SCALE



SOLAR ARRAY RACK DETAIL ELEVATION

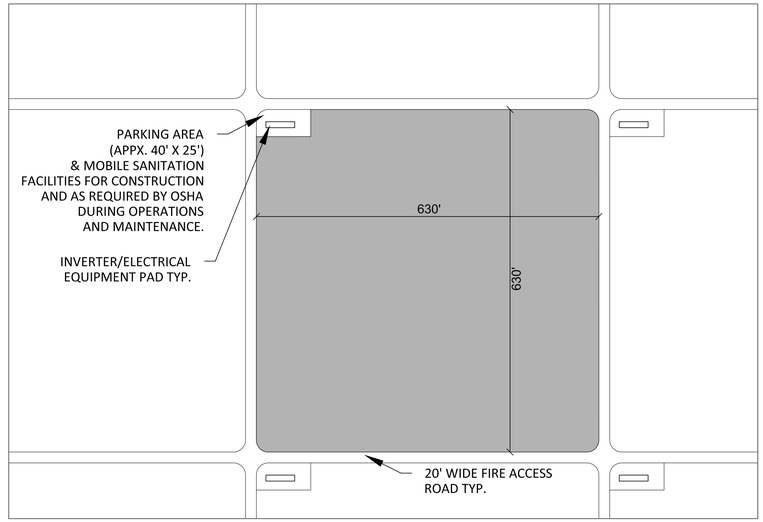
NOT TO SCALE



NOTE:
THE PERIMETER FENCING SURROUNDING THE PROJECT SITE WILL BE RAISED AT REGULAR INTERVALS ABOVE GROUND LEVEL TO ALLOW FOR THE PASSAGE OF WILDLIFE TO THE LESSER OF EITHER: ONE FOOT ABOVE GRADE OR TO THE MAXIMUM HEIGHT ALLOWED BY THE PUC.

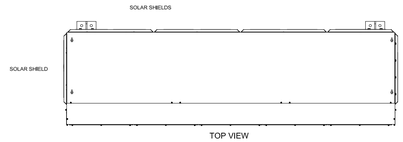
CHAIN LINK SECURITY FENCE ELEVATION

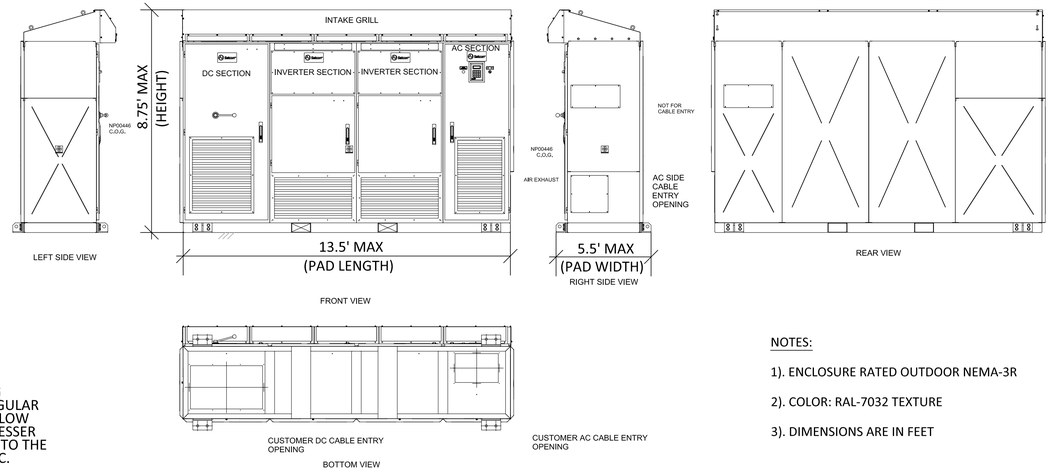
NOT TO SCALE



ARRAY BLOCK DETAIL (TYPICAL)

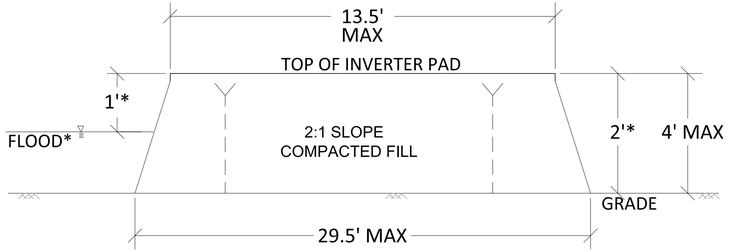
NOT TO SCALE





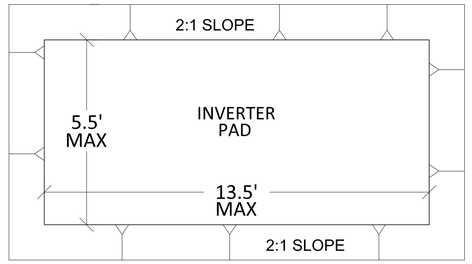
INVERTER PAD DETAILS (TYPICAL)

NOT TO SCALE



*TOP OF INVERTER PAD TO BE 1' MINIMUM ABOVE FLOOD WATER ELEVATION AS DETERMINED IN FINAL HYDROLOGY REPORT AND 2' ABOVE GRADE IN FEMA ZONE A.

ELEVATION VIEW



PLAN VIEW

RAISED INVERTER PAD DETAILS FOR FLOOD AREAS AS NEEDED

NOT TO SCALE

NOTES:

1). ENCLOSURE RATED OUTDOOR NEMA-3R

2). COLOR: RAL-7032 TEXTURE

3). DIMENSIONS ARE IN FEET

C-06

R2011-00799 (RCUP201100071)

REGISTERED PROFESSIONAL ENGINEER — JULIE ANN DELANEY — No.C54558 — CIVIL — STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/22/13	REVISION	JD	SP
B	09/05/13	REVISION	JD	SP
A	08/06/12	ADDED NEW SHEET	JD	SP

Solar PV System Summary

35MW AC Solar Photovoltaic Generation System
APNs 3268-018-002
3268-018-035
SCH # 2012061068

Project Name:
Project 3 American Solar Greenworks

Project Address:
W Ave. G & 70th St. W
Los Angeles County, CA

DRAWING: DETAIL SHEET

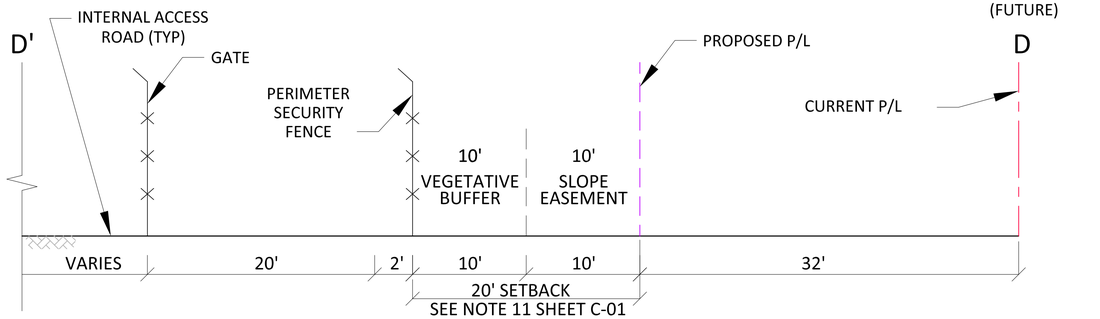
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 3
AMERICAN SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

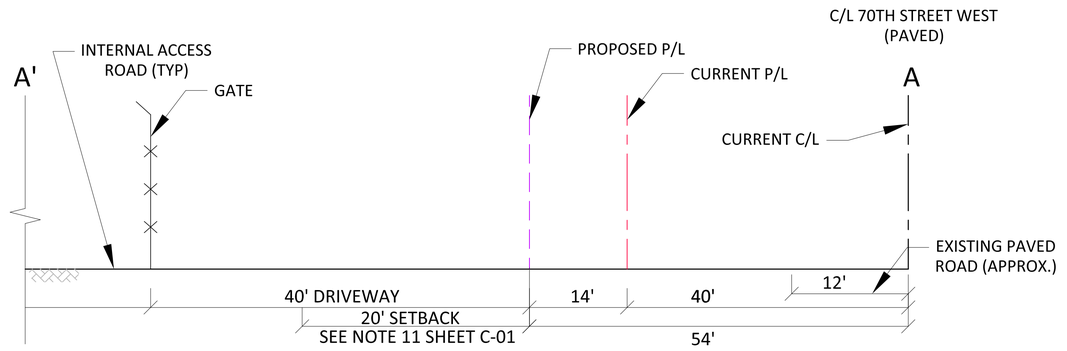
2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

C:\USERS\JULIE.DELANEY\DESKTOP\SP_LA\P3-9\C-06-DETAIL-9.DWG
PLOT/UPDATE: Dec 22, 2013 7:57:41 AM



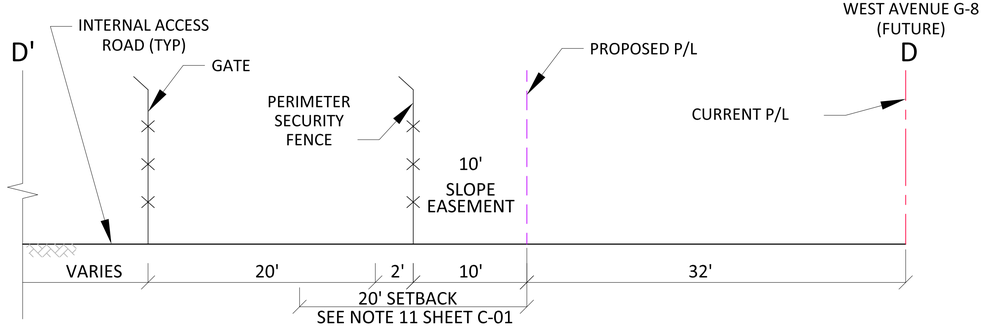
SECTION D' - D

NOT TO SCALE



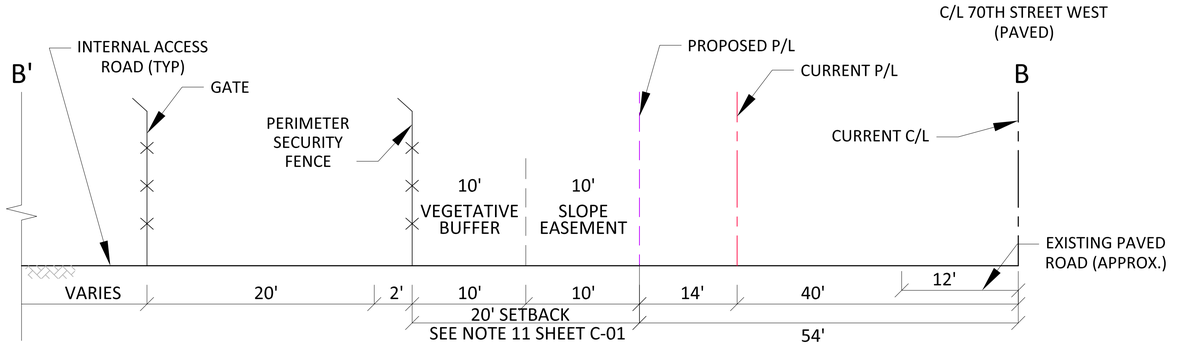
SECTION A' - A

NOT TO SCALE



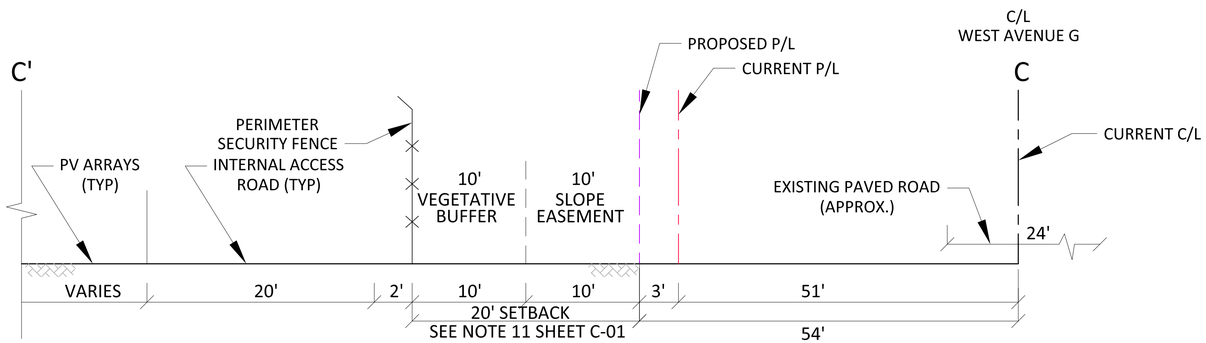
SECTION E' - E

NOT TO SCALE



SECTION B' - B

NOT TO SCALE



SECTION C' - C

NOT TO SCALE

C-07

R2011-00799 (RCUP201100071)

C:\SP LAYP3-PVC-07-SECTIONS-9.DWG
PLOT/UPDATE: Dec 29, 2013 - 9:41:46 PM

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
B	12/22/13	REVISED PER AGENCY	JD	SP
A	09/05/13	ADDED SHEET	JD	SP

Solar PV System Summary

35MW AC Solar Photovoltaic Generation System
APNs 3268-018-002
3268-018-035
SCH # 2012061068

Project Name:
Project 3 American Solar Greenworks

Project Address:
W Ave. G & 70th St. W
Los Angeles County, CA

DRAWING: SECTION SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 3
AMERICAN SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

APPENDIX B-14.4

PROJECT 4 ANTELOPE SOLAR GREENWORKS SITE PLANS

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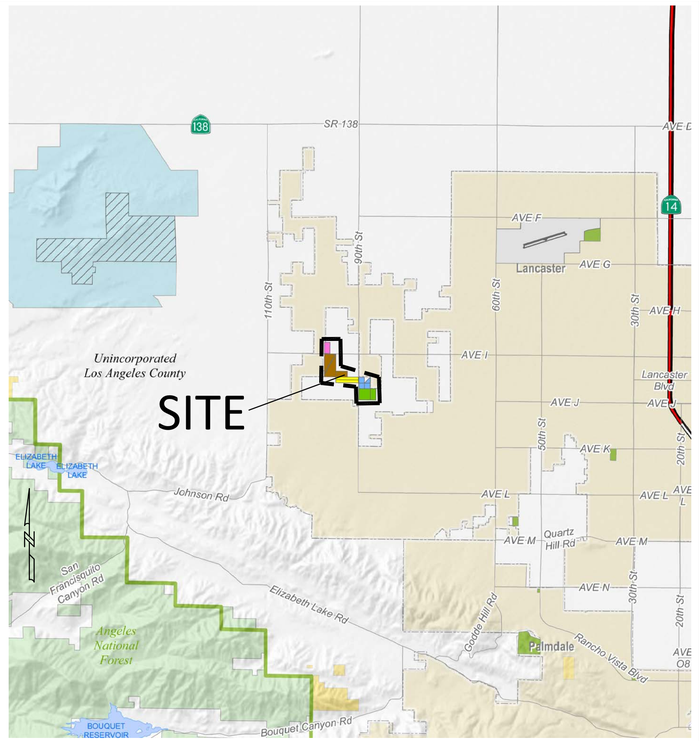
KEY MAP
NOT TO SCALE

PROJECT 4 ANTELOPE SOLAR GREENWORKS

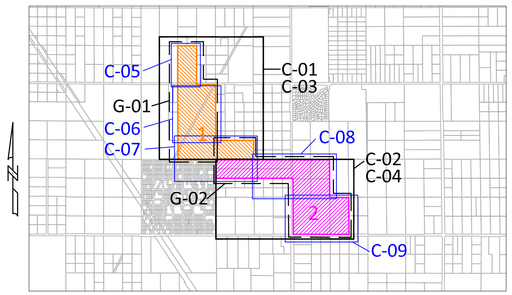
LOS ANGELES COUNTY, CALIFORNIA

DRAWING INDEX

DRAWING NO.	TITLE	REVISION
T-01	TITLE SHEET	D
G-01	SURVEY SHEET	A
G-02	SURVEY SHEET	A
C-01	SITE PLAN - NORTH	D
C-02	SITE PLAN - SOUTH	D
C-03	GRADING PLAN - NORTH	C
C-04	GRADING PLAN - SOUTH	C
C-05	ON-SITE DRAINAGE MAP	D
C-06	ON-SITE DRAINAGE MAP	D
C-07	ON-SITE DRAINAGE MAP	D
C-08	ON-SITE DRAINAGE MAP	D
C-09	ON-SITE DRAINAGE MAP	D
C-10	ON-SITE DRAINAGE MAP	D
C-11	DETAIL SHEET	D
C-12	SECTION SHEET	D
C-13	SECTION SHEET	D
C-14	SECTION SHEET	D



VICINITY MAP
NOT TO SCALE



LEGEND:

1 = NORTH PROJECT AREA
2 = SOUTH PROJECT AREA
C-01= DRAWING NUMBER

DRAWING REFERENCE MAP
NOT TO SCALE

SURVEY INFORMATION:

TOPOGRAPHIC MAP AND 1' CONTOURING PREPARED BY ALL VALLEY SURVEYING.
BENCHMARK AND BASIS OF BEARINGS SHOWN ON TOPOGRAPHIC MAPS, DRAWINGS G-01 & G-02.

SURVEYOR:

LARRY E. JERNIGAN, PLS #5924
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA 93534
(661) 942-3639

R2011-00807 (RCUP201100076) T-01

REGISTERED PROFESSIONAL ENGINEER — JULIE ANN DELANEY — No.C54558 — CIVIL — STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
D	12/22/13	REVISIONS PER AGENCY	JD	SP
C	09/05/13	ARRAY BLOCK CHANGE	JD	SP
B	3/01/12	ADDED SHEETS & REVISIONS FOR COUNTY	JD	SP
A	5/19/11	INITIAL ISSUE	TWC	SP

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System

APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

SCH # 2012061068

DRAWING: TITLE SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

C:\USERS\JULIE.DELANEY\DESKTOP\SP_LA\P4-10A\T-01-TITLE_PAGE-10A.DWG
PLOT/APR/ATE: Dec 23, 2013 - 10:55:15 AM

EASEMENT REFERENCES

①	10-FOOT EASEMENT PER BOOK D-1499, PAGE 128 O.R.
②	10-FOOT EASEMENT PER BOOK 54001, PAGE 220 O.R.
③	30-FOOT EASEMENT PER MINUTE BOOK 184, PAGE 360 O.R.
④	30-FOOT EASEMENT PER BOOK 678, PAGE 368, BOOK 3385, PAGE 254, MINUTE BOOK 184, PAGE 360, AND RESERVED IN INST. NO. 20090120583
⑤	30-FOOT EASEMENT 2-4, PER PER BOOK 21183, PAGE 338 O.R.
⑥	13-FOOT CORNER CUT OFF, IRREVOCABLE OFFER TO DEDICATE, PART D, PER INST. NO. 82-770282
⑦	32-FOOT IRREVOCABLE OFFER TO DEDICATE, PART C, PER INST. NO. 82-770282
⑧	32-FOOT IRREVOCABLE OFFER TO DEDICATE, PART C, PER INST. NO. 82-761883
⑨	110-FOOT EASEMENT PER INST. NO. 88-186797
⑩	30-FOOT EASEMENT 2-6, PER PER BOOK 21183, PAGE 332 O.R.
⑪	30-FOOT IRREVOCABLE OFFER TO DEDICATE, PART B, PER INST. NO. 82-761883 AND A 30-FOOT EASEMENT PER DOCUMENT RECORDED MARCH 5TH, 1958 AS INST. NO. 477 OF O.R.
⑫	13-FOOT CORNER CUT OFF, IRREVOCABLE OFFER TO DEDICATE, PART D, PER INST. NO. 82-761883
⑬	32-FOOT IRREVOCABLE OFFER TO DEDICATE, PART B, PER INST. NO. 82-770282
⑭	30-FOOT STORM DRAIN EASEMENT SHOWN ON ASSESSORS BOOK 3218 PAGE 002, NOT RECORDED OF OFFICIAL RECORDS
⑮	13-FOOT CORNER CUT OFF, IRREVOCABLE OFFER TO DEDICATE, PART E, PER INST. NO. 82-770282
⑯	20-FOOT IRREVOCABLE OFFER TO DEDICATE, PART A, PER INST. NO. 82-770282
⑰	20-FOOT IRREVOCABLE OFFER TO DEDICATE, PART A, PER INST. NO. 82-761883
⑱	13-FOOT CORNER CUT OFF, IRREVOCABLE OFFER TO DEDICATE, PART E, PER INST. NO. 82-761883
⑲	32-FOOT EASEMENT RESERVED IN PARCEL IV, INST. NO. 97-1922638, PARCEL III A, INST. NO. 97-1922639, AND PARCEL 2 INST. NO. 04-1626977
⑳	32-FOOT EASEMENT PARCEL IV A, INST. NO. 97-1922638, PARCEL III, INST. NO. 97-1922639, AND PARCEL 4, INST. NO. 04-1626977
㉑	32-FOOT EASEMENT RESERVED IN PARCEL IV, INST. NO. 97-1922638, PARCEL III A, INST. NO. 97-1922639, AND PARCEL 2, INST. NO. 04-1626977
㉒	5-FOOT EASEMENT RESERVED IN BOOK 7078, PAGE 357 AND BOOK 6719, PAGE 218 O.R.
㉓	32-FOOT EASEMENT PARCEL IV A, INST. NO. 97-1922638, PARCEL III, INST. NO. 97-1922639, AND PARCEL 4, INST. NO. 04-1626977
㉔	5-FOOT EASEMENT RESERVED IN DEED RECORDED MARCH 25TH, 1930 AS INST. NO. 421 OF O.R.
㉕	5-FOOT EASEMENT RESERVED IN THE FOLLOWING DEEDS BOOK 8986, PAGE 368, BOOK 24226, PAGE 289, AND BOOK 40552, PAGE 801 ALL OF O.R.
㉖	6-FOOT EASEMENT RECORDED DEC. 21, 1951 AS INST. NO. 2020 OF O.R.

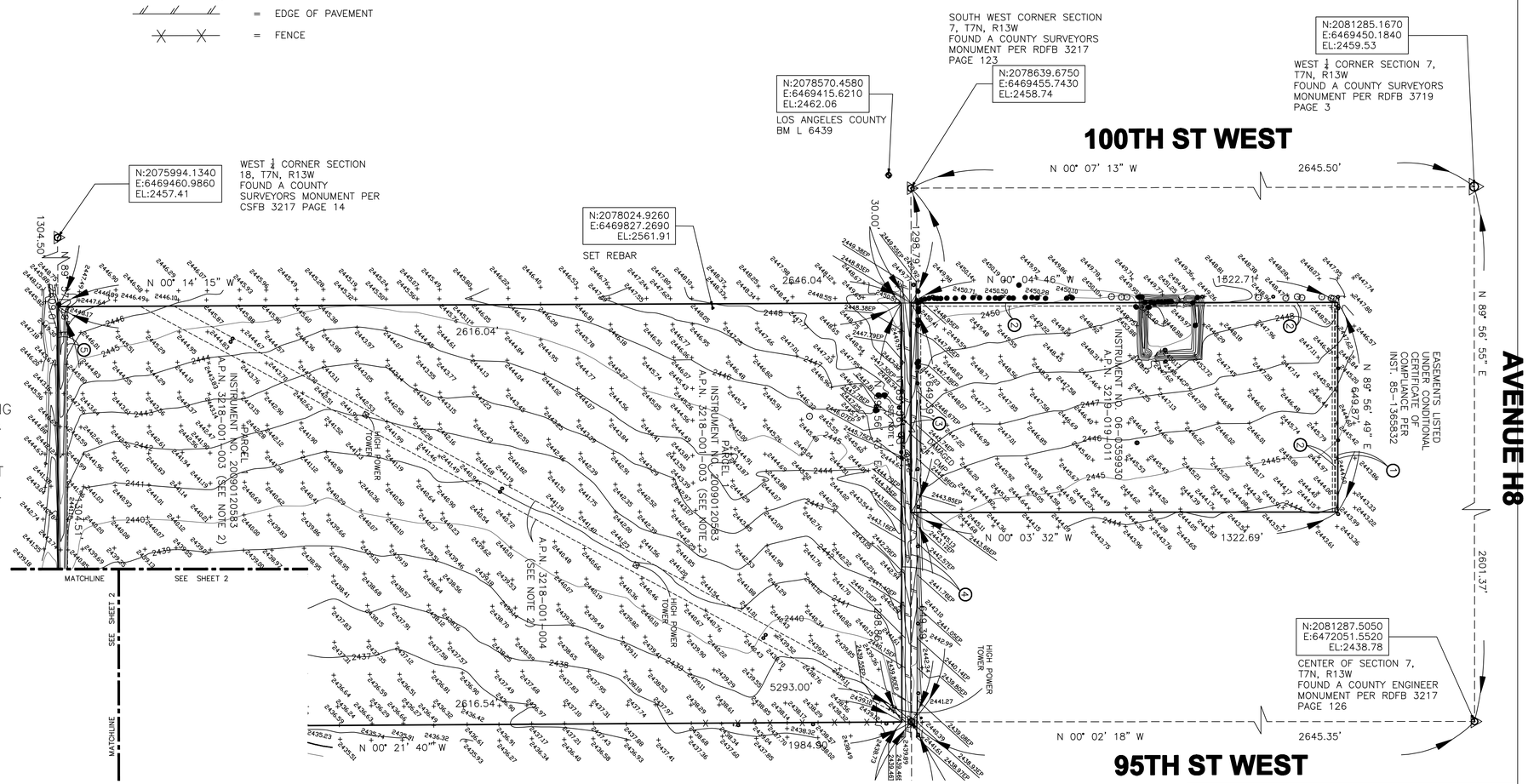
NOTE 1 – FOUND TWO APPARENT GAS LINES ORIGIN UNKNOWN

NOTE 2 – INST. NO. 20090120583 DESCRIBES AN ALIQUOT PART OF THE NORTHWEST QUARTER OF SECTION 18, T7N, R13W, AND MAKES NO EXCEPTION OF THE APPARENT EDISON EASEMENT CUTTING THROUGH THE LAND IN A NORTHEASTERLY DIRECTION AS SHOWN. A CURRENT TITLE SEARCH ALSO MAKES NO MENTION OF SAID EASEMENT. THE COUNTY ASSESOR SHOWS AN EASEMENT AS PARCEL 004. TRANSMISSION TOWERS AND POWER POLES DO EXIST WITHIN LINES AS SHOWN SCALED FROM THE LOS ANGELES COUNTY REGIONAL PLANNING GIS WEB SITE. A MORE THOROUGH SEARCH OF TITLE IS NECESSARY TO DETERMINE THE ORIGN OF THIS APPARENT EASEMENT.

LEGEND

- = SURVEY CONTROL MONUMENT AS NOTED
- = LOS ANGELES COUNTY BENCHMARK AS NOTED
- = TREE 12" & 24"
- = LARGE BUSH
- = PADDLE MARKER POST
- = POWER POLE
- = GUY WIRE
- = MAILBOX
- TW = TOP OF WALL
- EP = EDGE OF PAVEMENT
- ⑤ = EASEMENT IDENTIFIER
- = TELEPHONE RISER
- = POST
- = STANDPIPE
- = EDGE OF PAVEMENT
- = FENCE

DATUM STATEMENT
COORDINATES SHOWN ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, (CCS83) ZONE V, 1983 NORTH AMERICAN DATUM, 1991.35 EPOCH ADJUSTMENT. COORDINATES SHOWN ARE GRID IN U.S. SURVEY FEET. ALL DISTANCES SHOWN ARE GRID DISTANCES. TO OBTAIN A GROUND DISTANCE, DIVIDE THE GRID DISTANCE BY 0.99983621. COMBINATION FACTOR IS PROJECT BASED.



BASIS OF BEARING	BENCH MARK
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE V, NAD 83, EPOCH 1991.35, AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING STATIONS (CGPS), EW7123 AND EW7124, BEING NORTH 13°31'30" EAST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE NATIONAL GEODETIC SURVEY.	LOS ANGELES COUNTY BENCHMARK L 6439, LANCASTER 2004 ADJUSTMENT, NAVD 1988, ELEVATION = 2462.062 FEET C-NAIL IN CONC STANDPIPE @ SW COR AVE I & 100TH ST W 19.8M(65FT) S/O & 10.7M(35FT) W/O C/L INT

SCALE
HORIZ: 1"= 200'

PROFESSIONAL LAND SURVEYOR
LARRY E JERNIGAN
No. 5924
EXP 12-31-12
STATE OF CALIFORNIA

ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA. 93534
(661) 942-3639

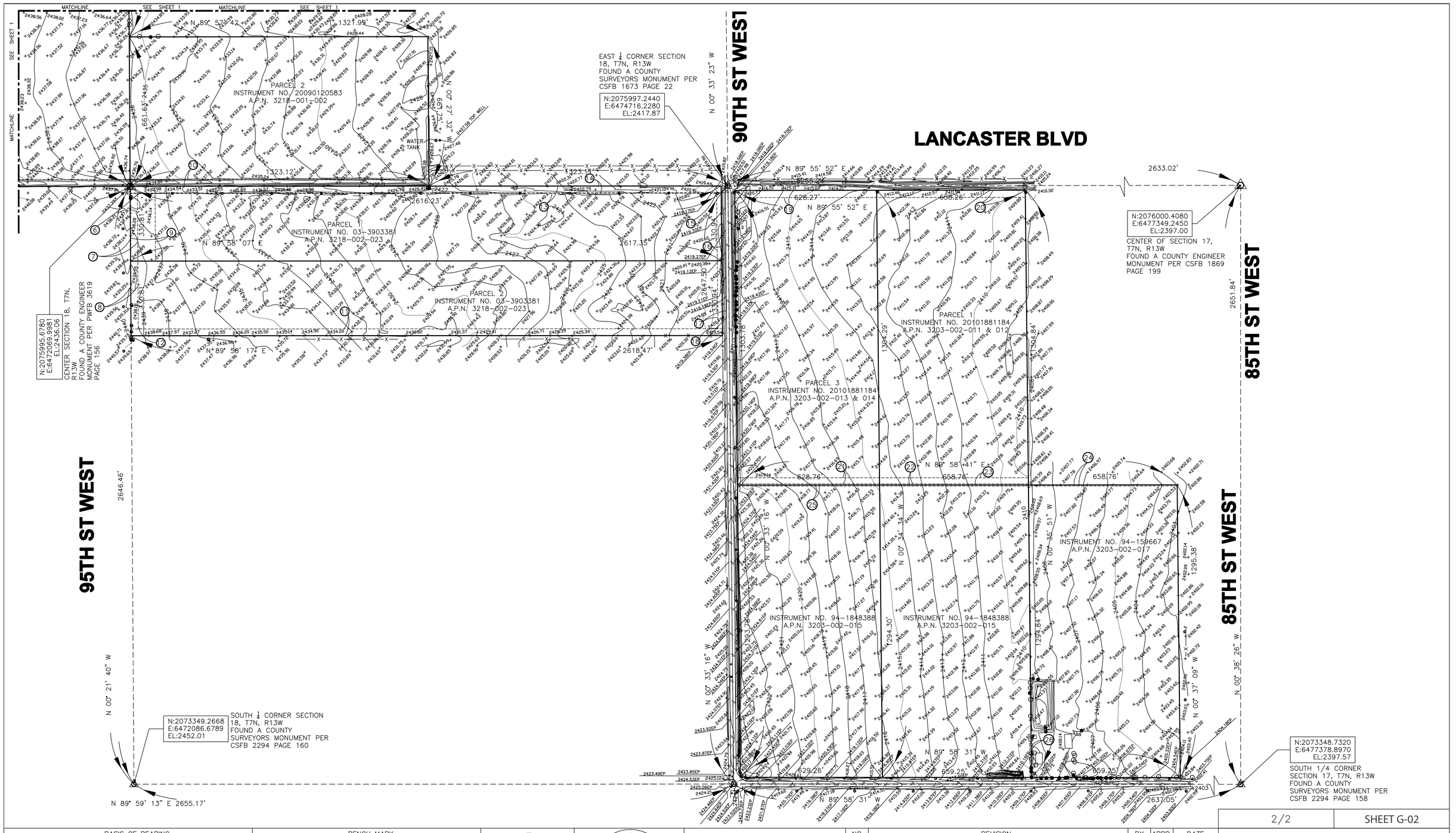
NO.	REVISION	BY	APPR.	DATE
1				
2				
3				

1/2 | SHEET G-01

TOPOGRAPHIC MAP
AVENUE I & 90TH STREET WEST
ANTELOPE VALLEY
COUNTY OF LOS ANGELES
STATE OF CALIFORNIA

DATE OF SURVEY 1/22/12

COUNTY PLAN CHECK NUMBER R2011-00807(RCUP2011-00076)



BASIS OF BEARING	BENCH MARK
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE V, NAD 83, EPOCH 1991.35, AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING STATIONS (CGPS), EW7123 AND EW7124, BEING NORTH 13°31'30" EAST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE NATIONAL GEODETIC SURVEY.	LOS ANGELES COUNTY BENCHMARK L 6439, LANCASTER 2004 ADJUSTMENT, NAVD 1988, ELEVATION = 2462.062 FEET C-NAIL IN CONC STANDPIPE @ SW COR AVE I & 100TH ST W 19.8M(65FT) S/O & 10.7M(35FT) W/O C/L INT

SCALE
HORIZ: 1"= 200'

PROFESSIONAL LAND SURVEYOR
LARRY E. JERNIGAN
No. 5924
EXP 12-31-12
STATE OF CALIFORNIA

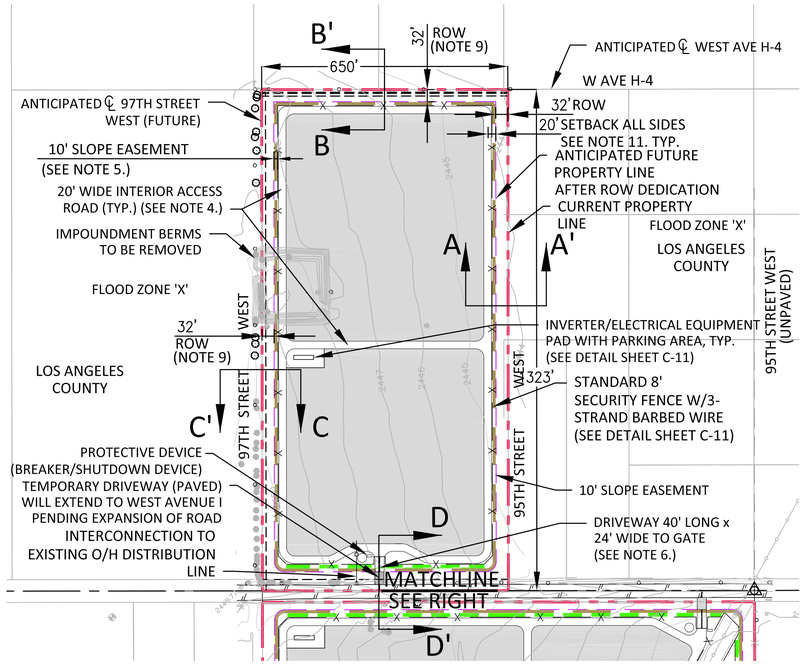
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA. 93534
(661) 942-3639

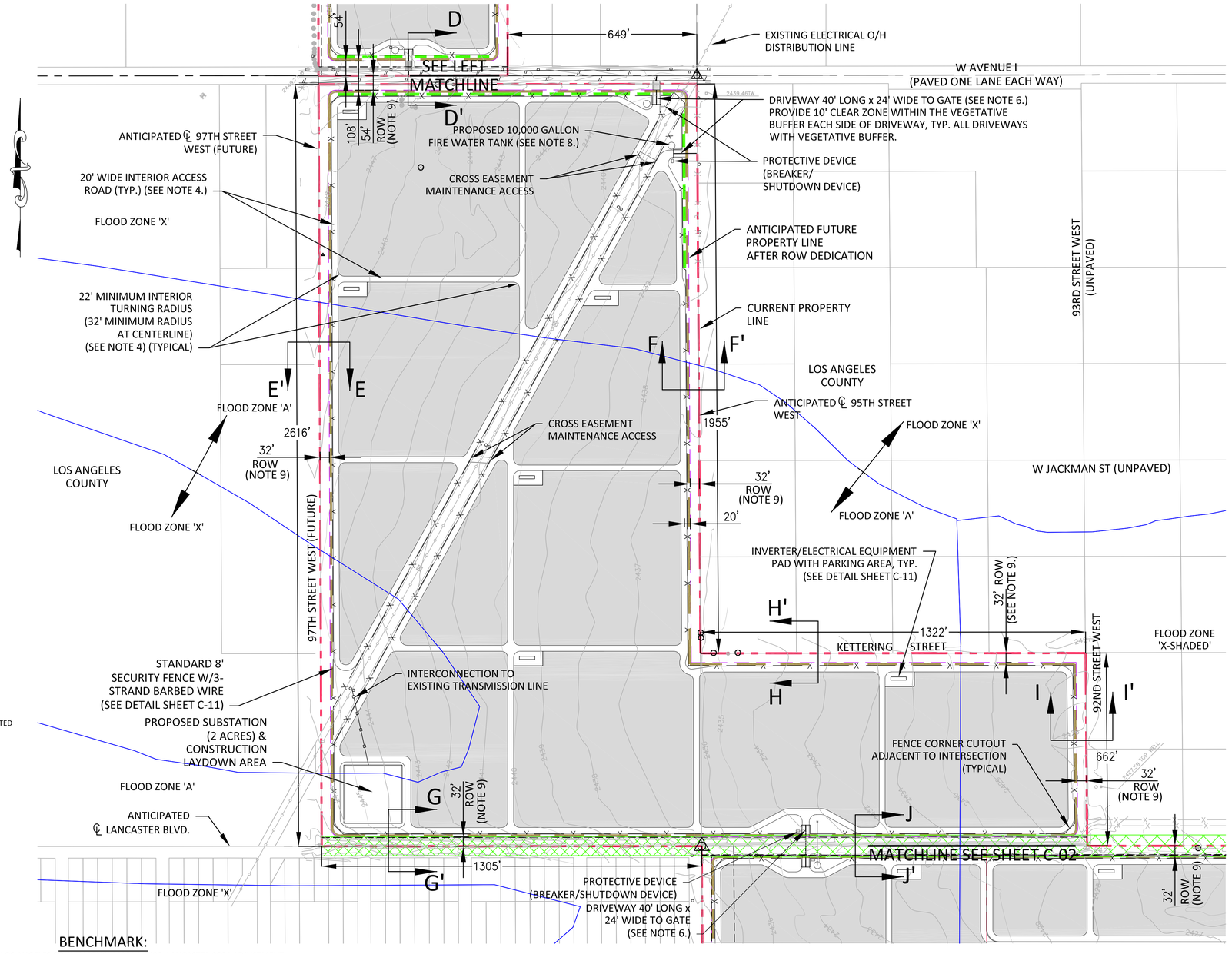
NO.	REVISION	BY	APPR.	DATE
1				
2				
3				

2/2 | SHEET G-02

TOPOGRAPHIC MAP
AVENUE I & 90TH STREET WEST
ANTELOPE VALLEY
COUNTY OF LOS ANGELES
STATE OF CALIFORNIA

DATE OF SURVEY	COUNTY PLAN CHECK NUMBER
1/22/12	R2011-00807(RCUP2011-00076)





SITE PLAN NOTES:

1. 'ZONE X' AS SHOWN ON PANEL 0150F OF FLOOD INSURANCE RATE MAP NO. 06037C0400F. ZONE "X" DESIGNATED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN. ZONE "A" DESIGNATED AS, "NO BASE FLOOD ELEVATIONS DETERMINED".

2. FIRE DEPARTMENT ACCESS DEVICE AND EMERGENCY CONTACT PLACARD LOCATED AT ALL ENTRANCE GATES.

3. MOBILE SANITATION FACILITY, AS DEFINED BY THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH, CAN BE LOCATED AT ALL PARKING LOCATIONS AND WILL BE LOCATED AT THE NEAREST LOCATION TO CONSTRUCTION AND OPERATIONAL WORKERS ACTIVITY. THE FACILITIES WILL BE KEPT TO LOS ANGELES COUNTY CODE, TITLE 11 - HEALTH & SAFETY, AND CAL-OSHA SANITATION STANDARDS IN SECTION 3360, TITLE 8, CALIFORNIA CODE OF REGULATIONS. MOBILE SANITATION FACILITIES WILL BE MADE AVAILABLE DURING CONSTRUCTION AND AS REQUIRED BY OSHA DURING OPERATIONS AND MAINTENANCE. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-11.

4. INTERIOR ACCESS ROADS WILL BE 20' WIDE, COMPACTED TO 90%, WITH 32 FOOT TURNING RADIUS AT CENTER LINE. THE INNER RADIUS WILL BE 22' AND THE OUTER RADIUS WILL BE 42'. INTERIOR ACCESS ROADS WILL BE PROVIDED TO INVERTER/ELECTRICAL EQUIPMENT PADS AND AROUND THE PERIMETER OF THE PROJECT. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-11.

5. 10 FOOT WIDE SLOPE EASEMENT WILL BE PROVIDED AROUND PERIMETER.

6. DRIVEWAY ACCESS GATES TO BE SET 40 FEET BACK FROM EDGE OF PROPERTY. DRIVEWAY WILL BE 24 FEET WIDE.

7. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION DURING DETAILED DESIGN.

8. TANK CONNECTIONS PER LOS ANGELES COUNTY FIRE DEPARTMENT.

9. ANTICIPATED ROW SETBACK/DEDICATION FOR FUTURE ROAD DEVELOPMENT. REFER TO SHEETS C-12, C-13, AND C-14 FOR SECTIONS AND ROW DETAILS.

10. CONTOURS SHOWN ARE BASED ON TOPOGRAPHIC MAP PREPARED BY ALL VALLEY SURVEYING.

11. A 20' MINIMUM SETBACK FROM PROPERTY LINE (AFTER DEDICATIONS) TO ARRAYS OR EQUIPMENT TO BE MAINTAINED ON SITE. PROJECT FENCE, FIRE ROADS, EASEMENTS, AND VEGETATION ARE OK WITHIN THE SETBACK.

200 0 200 400
SCALE IN FEET
1'=200'
WHEN PRINTED TO SCALE ON 22"x34" SHEET

SITE PLAN LEGEND:

TYP.		TYPICAL
MIN		MINIMUM
O/H		OVERHEAD LINES
ROW		RIGHT OF WAY
℄		CENTERLINE
x x		FENCE LINE
		OVERHEAD LINE
		UNDERGROUND LINE
		PROPERTY LINE (AFTER DEDICATIONS)
		PROPERTY LINE (CURRENT)
		PARCEL LINE
		FLOOD ZONE DESIGNATION
		CONTOUR LINE
		SOLAR ARRAY FIELD
	=	SURVEY CONTROL MONUMENT AS NOTED
	=	LOS ANGELES COUNTY BENCHMARK AS NOTED
	=	TREE 12" & 24"
	=	LARGE BUSH
	=	PADDLE MARKER POST
	=	POWER POLE
	=	GUY WIRE
	=	MAILBOX
	=	TELEPHONE RISER
	=	POST
	=	STANDPIPE
	=	EDGE OF PAVEMENT
x x	=	FENCE
TW	=	TOP OF WALL
EP	=	EDGE OF PAVEMENT
5	=	EASEMENT IDENTIFIER

BENCHMARK:

LOS ANGELES COUNTY BENCHMARK L 6439, LANCASTER 2004 ADJUSTMENT, NAVD 1988, ELEVATION = 2462.062 FEET

C-NAIL IN CONC STANDPIPE @ SW COR AVE I & 100TH ST W 19.8M(65FT) S/O & 10.7M(35FT) W/O C/L INT

R2011-00807 (RCUP201100076) C-01

REGISTERED PROFESSIONAL ENGINEER — JULIE ANN DELADEY — No.C54558 — CIVIL — STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
D	12/22/13	REVISIONS FOR AGENCY	JD	SP
C	09/05/13	ARRAY BLOCK REVISIONS	JD	SP
B	3/01/12	REVISIONS FOR COUNTY	JD	SP
A	5/19/11	INITIAL ISSUE	TWC	SP

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System

APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

SCH # 2012061068

DRAWING: SITE PLAN-NORTH

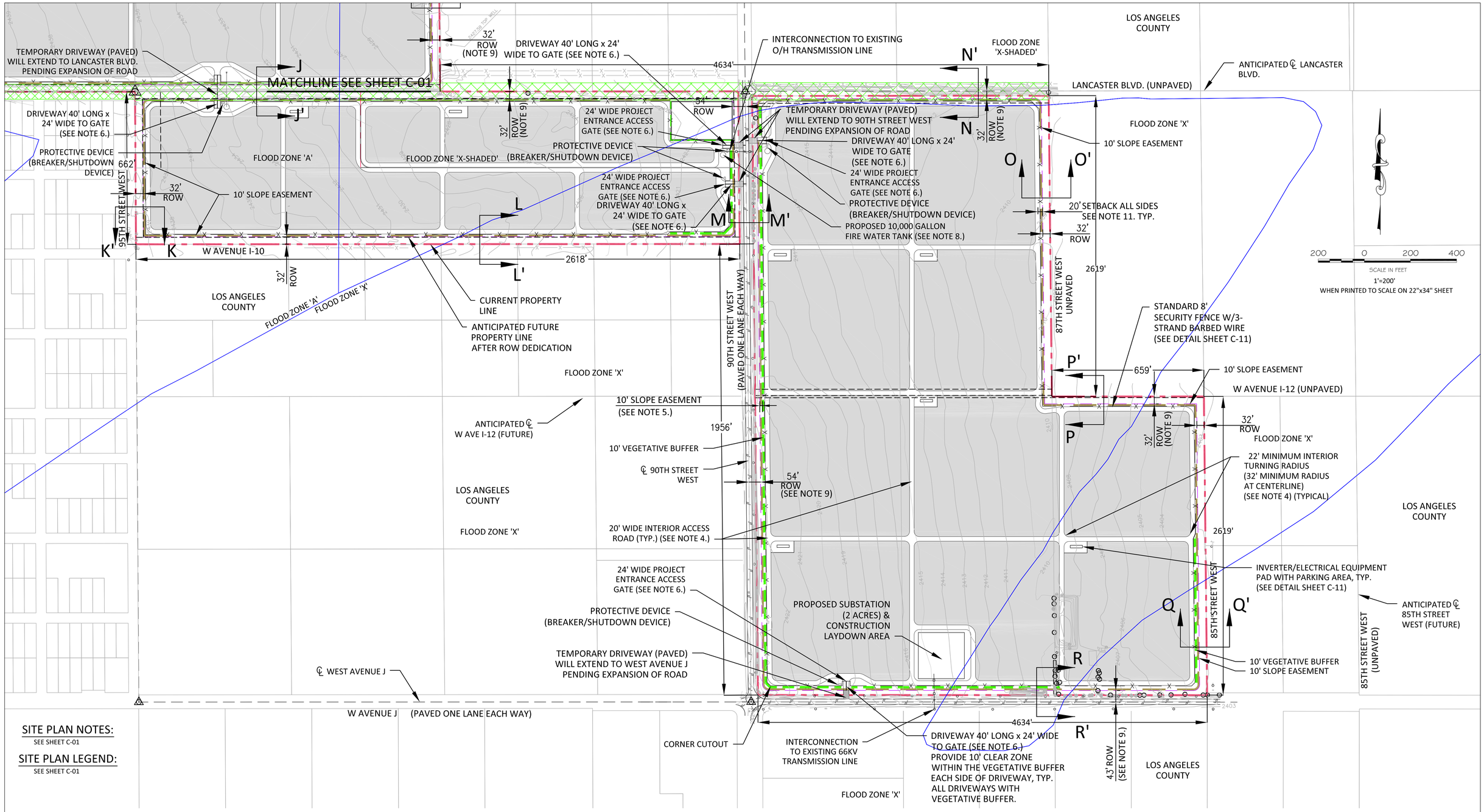
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

C:\SP_LA\P4-10A\C-01-SITE PLAN-10A.DWG
Dec 05, 2013 - 10:16:3 AM
PLOTSPACE



SITE PLAN NOTES:

SEE SHEET C-01

SITE PLAN LEGEND:

SEE SHEET C-01

R2011-00807 (RCUP201100076) C-02

REGISTERED PROFESSIONAL ENGINEER — JULIE ANN DELANEY — No.C54558 — CIVIL — STATE OF CALIFORNIA

C:\SP_LAYS\~10A\C-01-SITE PLAN~10A.DWG
PLOT/UPDATE: Dec 30, 2013 12:16:13 AM

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

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Solar PV System Summary

52MW AC Solar Photovoltaic Generation System

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3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

SCH # 2012061068

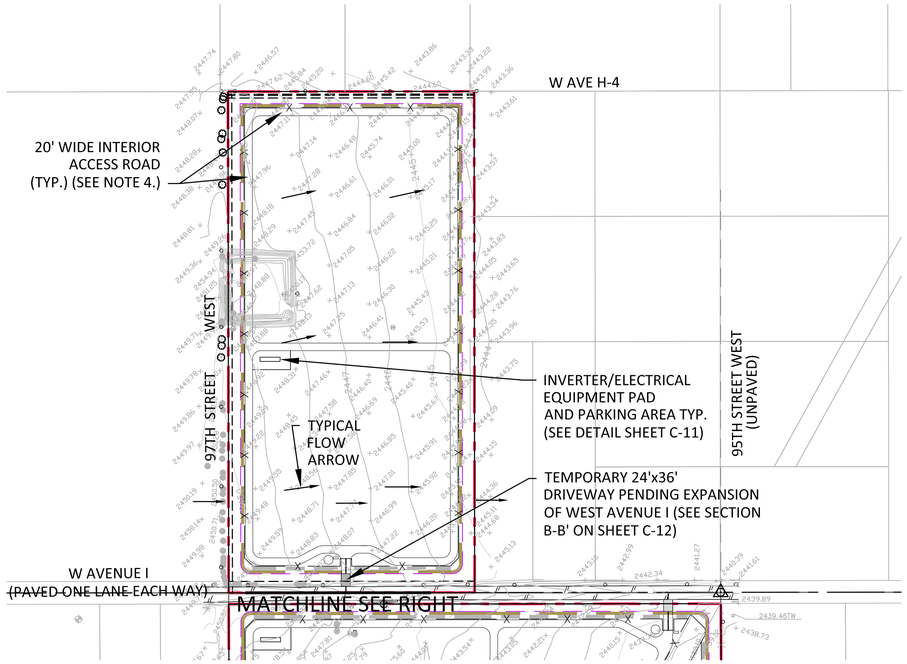
DRAWING: SITE PLAN-SOUTH

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



SURVEY INFORMATION:

TOPOGRAPHIC MAP AND 1' CONTOURING PREPARED BY ALL VALLEY SURVEYING, JANUARY 22, 2012

SURVEYOR:

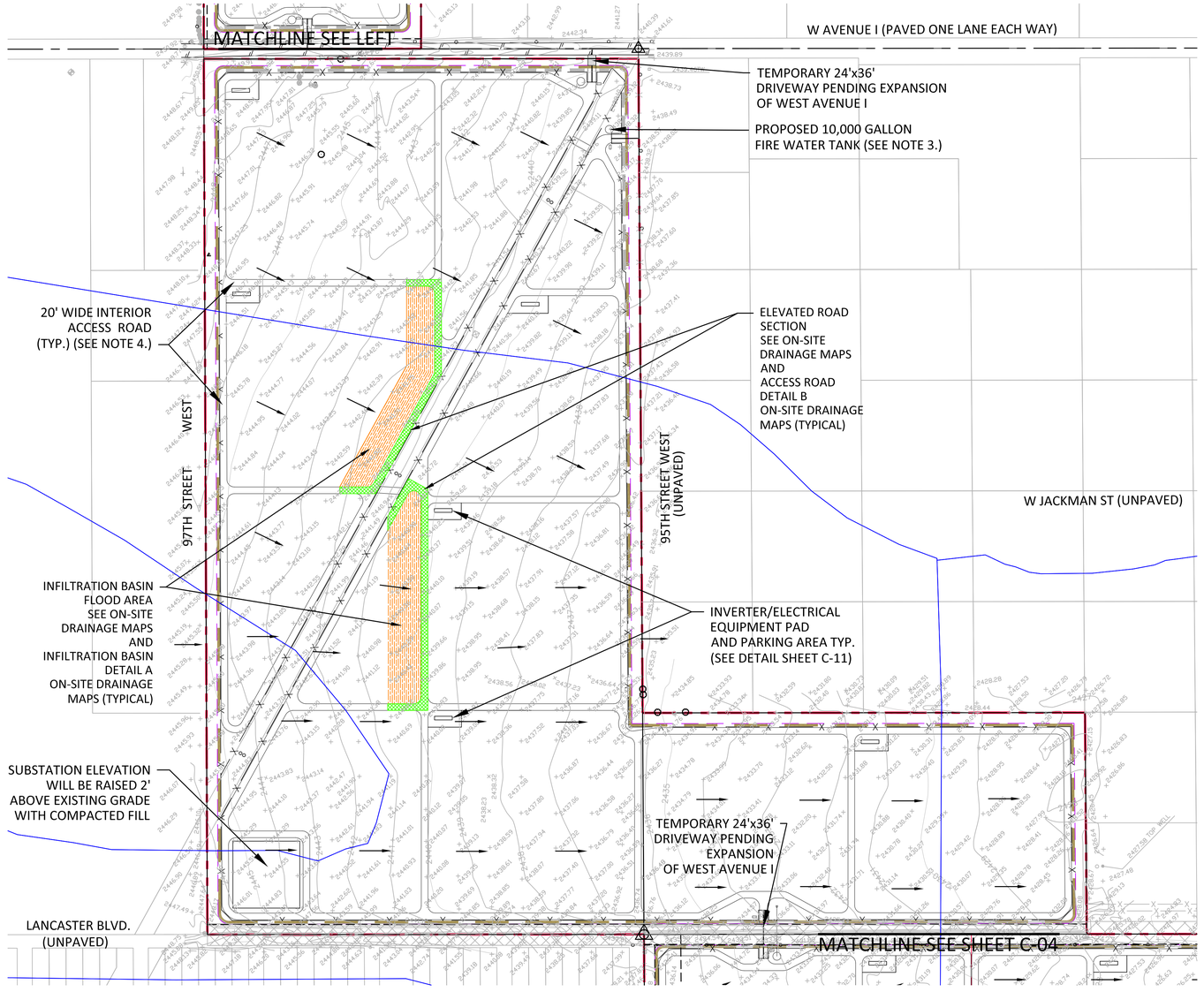
LARRY E. JERNIGAN, PLS #5924
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA 93534
(661) 942-3639

BASIS OF BEARINGS:

SEE TOPOGRAPHIC MAP SHEET G-01

BENCHMARK:

SEE TOPOGRAPHIC MAP SHEET G-01



EARTHWORK QUANTITIES:

OVEREXCAVATION	=	60,000 CUBIC YARDS
CUT	=	4,200 CUBIC YARDS
FILL	=	4,200 CUBIC YARDS

CUT & FILL QUANTITIES INCLUDE INVERTER PADS, SUBSTATIONS/SWITCHYARDS, BASINS, AND ELEVATED ROAD BED FOR DRAINAGE FEATURES.

OVEREXCAVATION QUANTITY INCLUDES ACCESSIBLE FIRE ROAD.

200 0 200 400
SCALE IN FEET

1'=200'
WHEN PRINTED TO SCALE ON 22"x34" SHEET

GRADING NOTES:

1. DRAINAGE ACROSS SITE IS CURRENTLY FROM THE WEST TO THE EAST, AS SHOWN ON THE SURFACE CONTOURS. TOPOGRAPHY/CONTOURS ARE BASED ON SURVEY DATA PROVIDED BY ALL VALLEY SURVEYING.

2. OVERALL EXISTING GRADING AND DRAINAGE PATTERN TO REMAIN UNCHANGED DURING AND AFTER CONSTRUCTION WITH THE EXCEPTION OF AREAS USED FOR DRAINAGE FEATURES. ELEVATED ROAD SECTIONS WILL BE USED TO CREATE INFILTRATION BASINS. FLOOD AREAS AND FLOW PATTERN ARROWS ARE SHOWN ON THIS SHEET AND SHEETS C-04 - C-10. LIMIT OF GRADING ACTIVITIES WILL BE AT PROPERTY LINE (AFTER DEDICATIONS) EXCEPT WHERE NOTED.

3. EQUIPMENT PADS WILL BE GRADED AS REQUIRED PER MANUFACTURER SPECIFICATIONS.

GRADING LEGEND:

TYP.	TYPICAL
MIN	MINIMUM
O/H	OVERHEAD LINES
ROW	RIGHT OF WAY
℄	CENTERLINE
x x	FENCE LINE
	PROPERTY LINE (AFTER DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
	FLOOD ZONE DESIGNATION
	CONTOUR LINE
	INFILTRATION BASIN FLOOD AREA
	ELEVATED ROAD SECTION

	=	SURVEY CONTROL MONUMENT AS NOTED
	=	LOS ANGELES COUNTY BENCHMARK AS NOTED
	=	TREE 12" & 24"
	=	LARGE BUSH
	=	PADDLE MARKER POST
	=	POWER POLE
	=	GUY WIRE
	=	MAILBOX
TW	=	TOP OF WALL
EP	=	EDGE OF PAVEMENT
Ⓢ	=	EASEMENT IDENTIFIER
	=	TELEPHONE RISER
	=	POST
	=	STANDPIPE
	=	EDGE OF PAVEMENT
	=	FENCE

R2011-00807 (RCUP201100076) **C-03**

REGISTERED PROFESSIONAL ENGINEER — JULIE ANN DELANEY — No.C54558 — CIVIL — STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

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Solar PV System Summary

52MW AC Solar Photovoltaic Generation System

APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

SCH # 2012061068

DRAWING: GRADING PLAN N

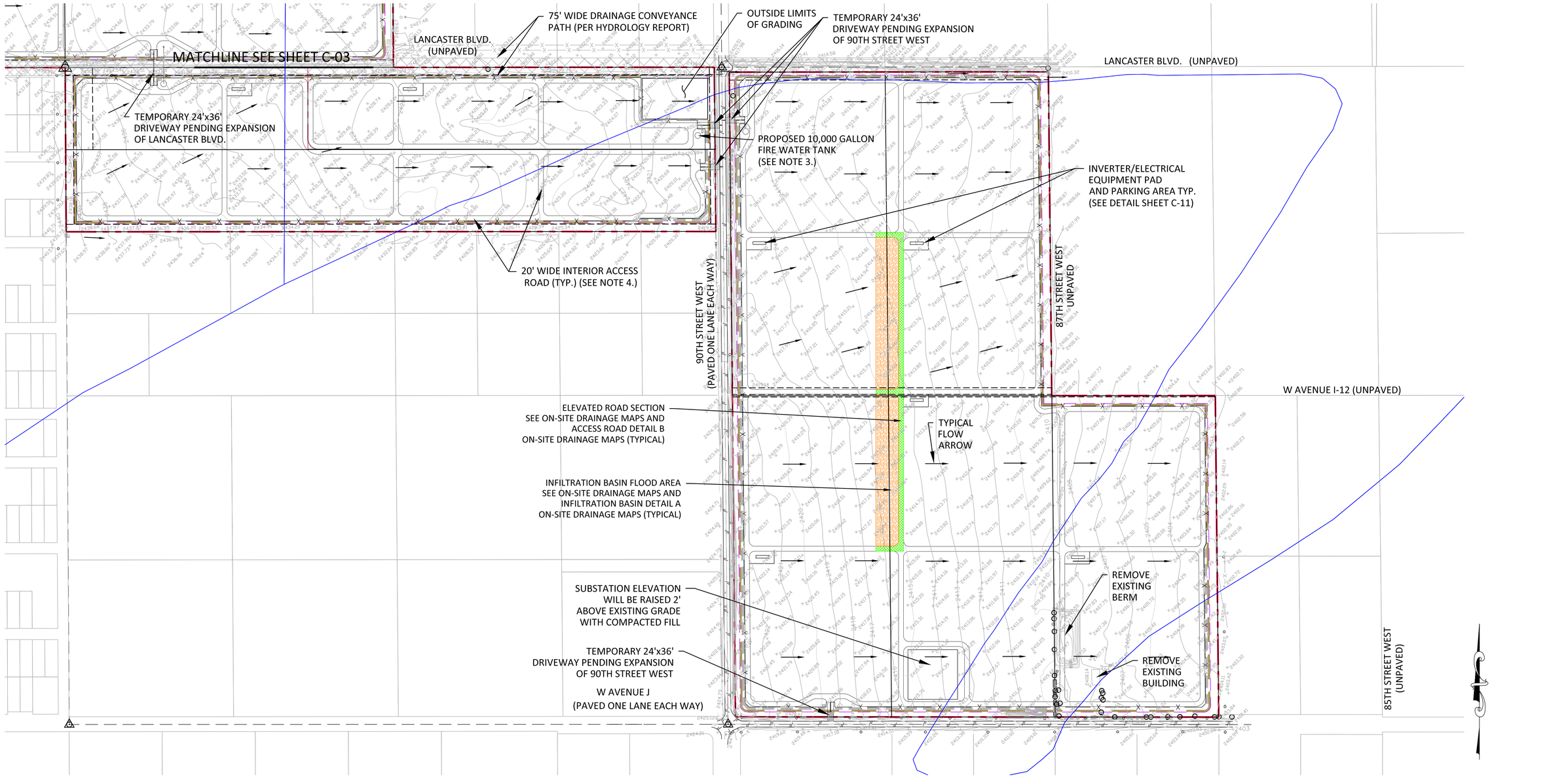
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

C:\SP LAYA~1\01\C~03~GRADE PLAN~10A.DWG
PLOT DATE: Dec 30, 2013 12:36:22 AM



GRADING NOTES:

SEE SHEET C-03

GRADING LEGEND:

SEE SHEET C-03

R2011-00807 (RCUP201100076) C-04

C:\SP LAYS-10A\C-03-GRADE PLAN-10A.DWG
PLOT/UPDATE: Dec. 30, 2013 12:36:22 AM

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

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Project Address:
90th St. W & W Ave. J
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SCH # 2012061068

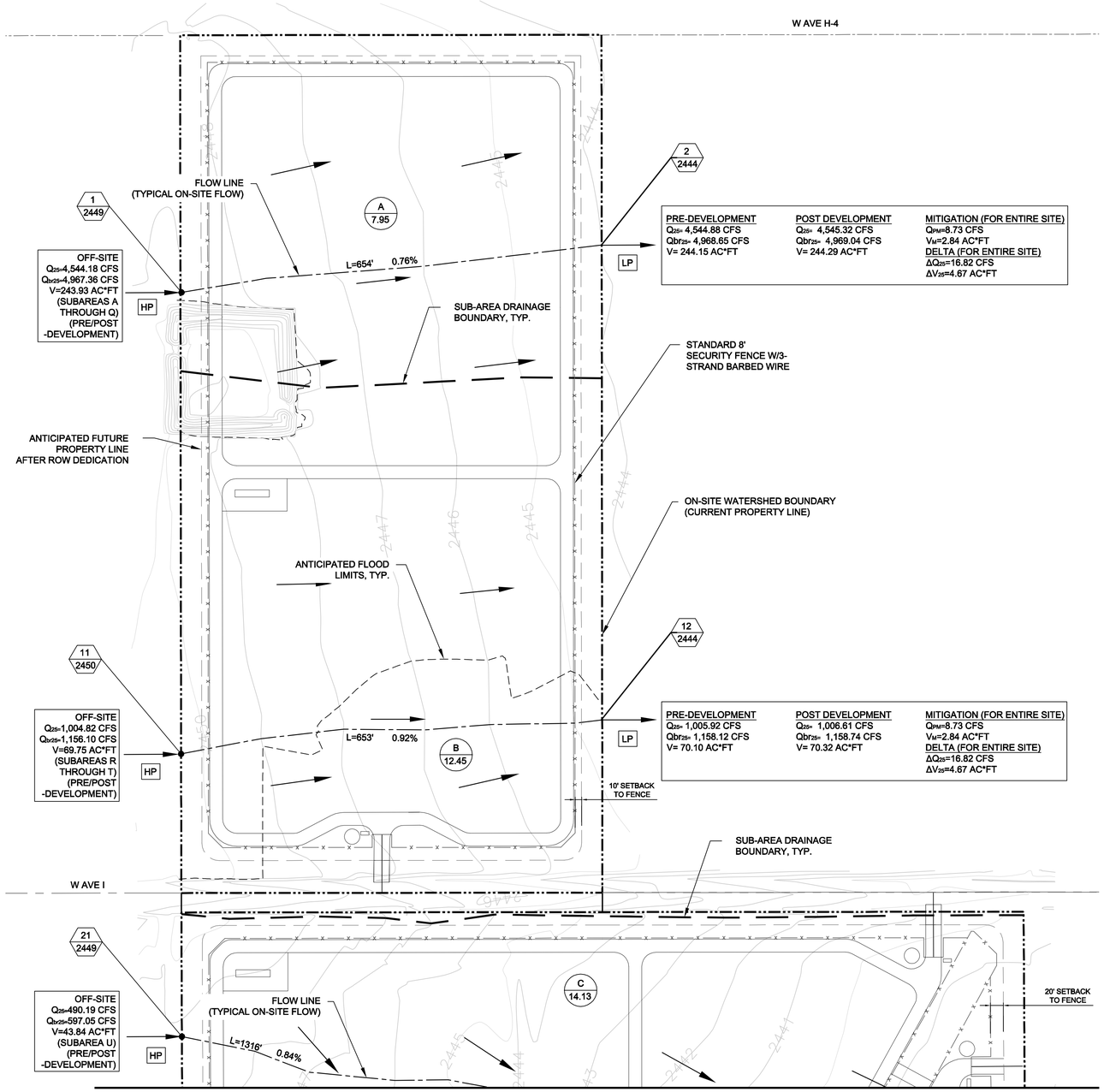
DRAWING: GRADING PLAN S

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



MATCHLINE: SEE SHEET C-06

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{bf25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = 112,283 CY

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) WITHIN A FEMA ZONE A, FEMA ZONE X - UNSHADED, AND FEMA ZONE X - SHADED.
9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 0.7%, AND THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 3.5%. SIMILAR INCREASES ARE ANTICIPATED FOR THE DEPTHS AND VELOCITIES DUE TO THE SMALL INCREASE IN PEAK FLOW RATES (<1%). THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. THE POST-DEVELOPMENT DOES NOT INCLUDE THE MITIGATION EFFECTS OF THE BASINS. SEE IMPACT ANALYSIS CALCULATIONS.

0 50 100 200
SCALE: 1"=100'

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY: _____ RCE NO: _____ DATE _____
CHECKED BY: _____ DATE _____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) C-05

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System
APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks
Project Address:
90th St. W & W Ave. J
Los Angeles County, CA
SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100076 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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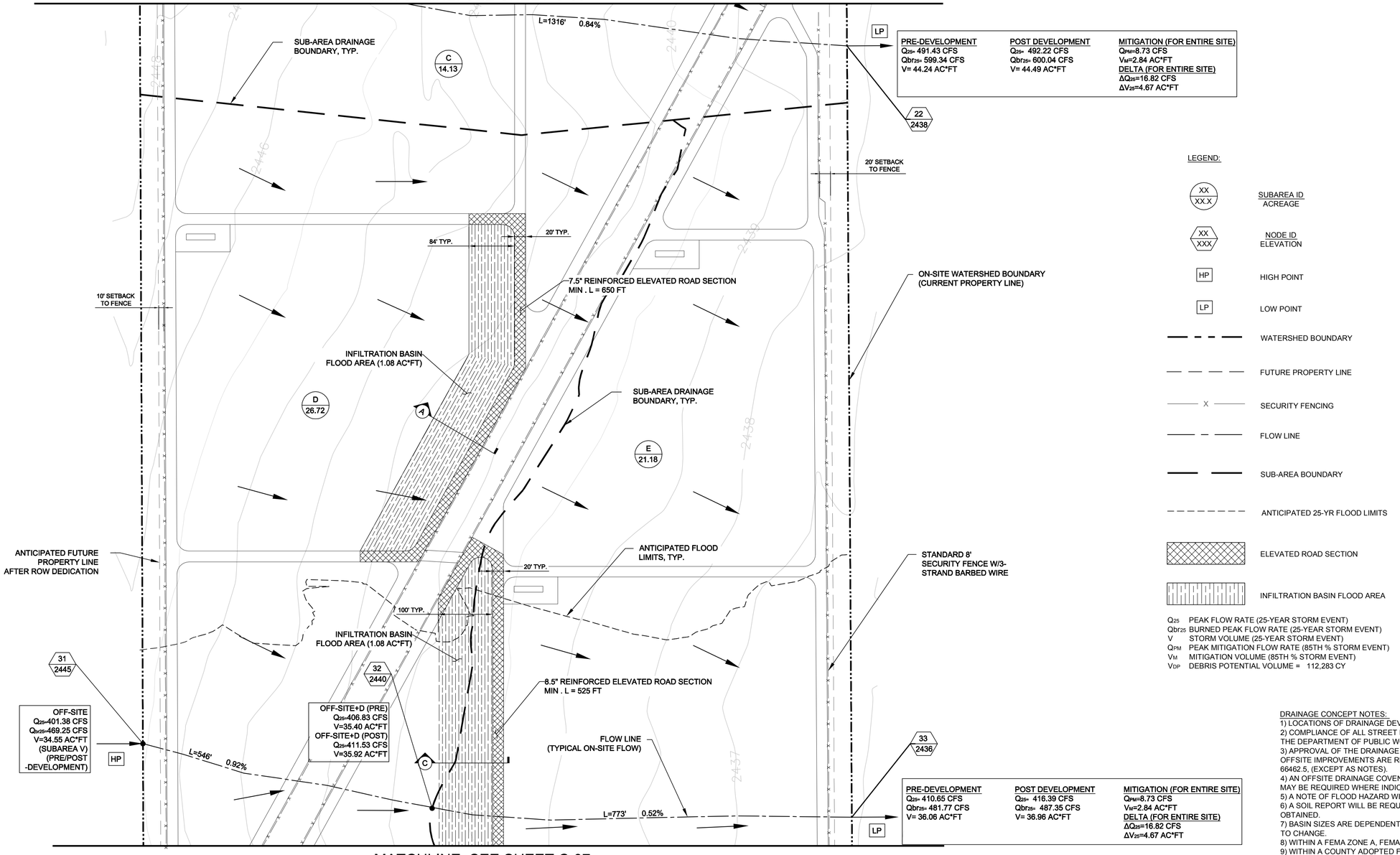
MATCHLINE: SEE SHEET C-05



MATCHLINE: SEE SHEET C-07

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Qbr_{25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
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V_{DP} DEBRIS POTENTIAL VOLUME = 112,283 CY

DRAINAGE CONCEPT NOTES:
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3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) WITHIN A FEMA ZONE A, FEMA ZONE X - UNSHADED, AND FEMA ZONE X - SHADED.
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0 50 100 200
SCALE: 1"=100'

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) C-06

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
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Solar PV System Summary

52MW AC Solar Photovoltaic Generation System

APNs 3218-002-018, 023
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3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100076
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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MATCHLINE: SEE SHEET C-06

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION (FOR ENTIRE SITE)
Q_{25}= 398.84 CFS	Q_{25}= 400.59 CFS	Q_{PM}=8.73 CFS
Q_{br25}= 475.26 CFS	Q_{br25}= 476.80 CFS	V_M=2.84 AC*FT
V= 35.42 AC*FT	V= 36.06 AC*FT	DELTA (FOR ENTIRE SITE)
		ΔQ_{25}=16.82 CFS
		ΔV_{25}=4.67 AC*FT

8.5" REINFORCED ELEVATED ROAD SECTION MIN . L = 525 FT

INFILTRATION BASIN FLOOD AREA (1.08 AC*FT)

100' TYP.

20' TYP.

C

D 26.72

E 21.18

F 35.55

G 30.77

SUB-AREA DRAINAGE BOUNDARY, TYP.

SUBSTATION AREA

ANTICIPATED FLOOD LIMITS, TYP.

FLOW LINE (TYPICAL ON-SITE FLOW)

L=2651' 0.75%

L=1797' 0.72%

42 2428

LP

41 2448

OFF-SITE
Q_{25}=392.43 CFS
Q_{br25}=466.46 CFS
V=34.31 AC*FT
(SUBAREA W)
(PRE/POST
-DEVELOPMENT)

HP

10' SETBACK TO FENCE

OFF-SITE
Q_{25}=471.20 CFS
Q_{br25}=551.31 CFS
V=37.28 AC*FT
(SUBAREA X)
(PRE/POST
-DEVELOPMENT)

51 2438

ANTICIPATED FUTURE PROPERTY LINE AFTER ROW DEDICATION

STANDARD 8' SECURITY FENCE W/3-STRAND BARBED WIRE

ON-SITE WATERSHED BOUNDARY (CURRENT PROPERTY LINE)

95TH STREET WEST

MATCHLINE: SEE SHEET C-08

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
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DRAINAGE CONCEPT NOTES:

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9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 0.7%, AND THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 3.5%. SIMILAR INCREASES ARE ANTICIPATED FOR THE DEPTHS AND VELOCITIES DUE TO THE SMALL INCREASE IN PEAK FLOW RATES (<1%). THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. THE POST-DEVELOPMENT DOES NOT INCLUDE THE MITIGATION EFFECTS OF THE BASINS. SEE IMPACT ANALYSIS CALCULATIONS.

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Q_{br25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = 112,283 CY

0 50 100 200
SCALE: 1"=100'

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) C-07

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System
APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100076
ON-SITE DRAINAGE MAP

APPLICANT:

Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\045461\135--04546-12001\SUPPORTDOCS\CALCS\HYDROLOGY\10A\FINAL DESIGN\ONSITE HYDROLOGY C-07,C-08.DWG
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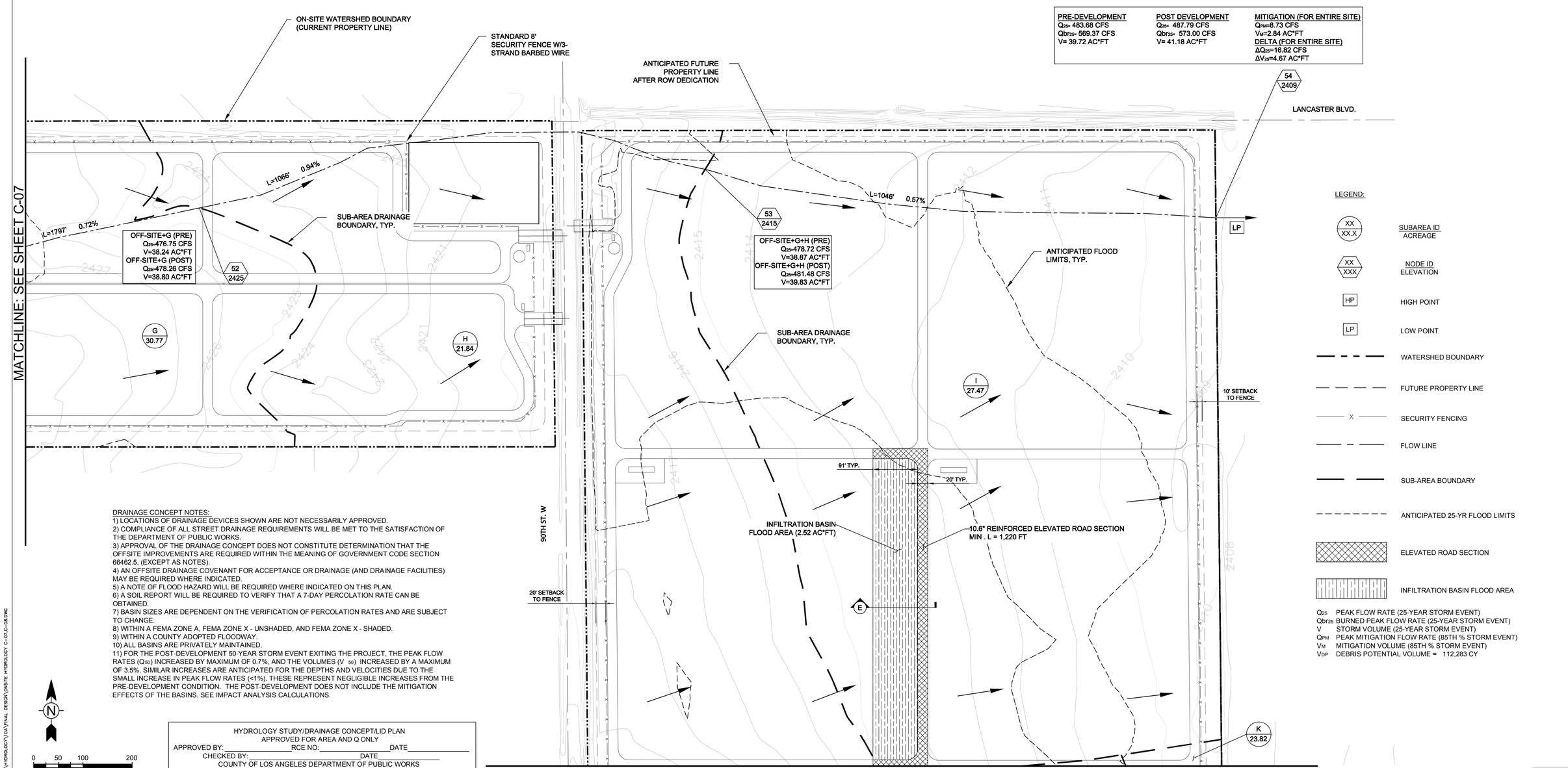

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) WITHIN A FEMA ZONE A, FEMA ZONE X - UNSHADED, AND FEMA ZONE X - SHADED.
9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 0.7%, AND THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 3.5%. SIMILAR INCREASES ARE ANTICIPATED FOR THE DEPTHS AND VELOCITIES DUE TO THE SMALL INCREASE IN PEAK FLOW RATES (<1%). THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. THE POST-DEVELOPMENT DOES NOT INCLUDE THE MITIGATION EFFECTS OF THE BASINS. SEE IMPACT ANALYSIS CALCULATIONS.

N

0 50 100 200
SCALE: 1"=100'

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY: _____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) C-08

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System
APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks
Project Address:
90th St. W & W Ave. J
Los Angeles County, CA
SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100076 - ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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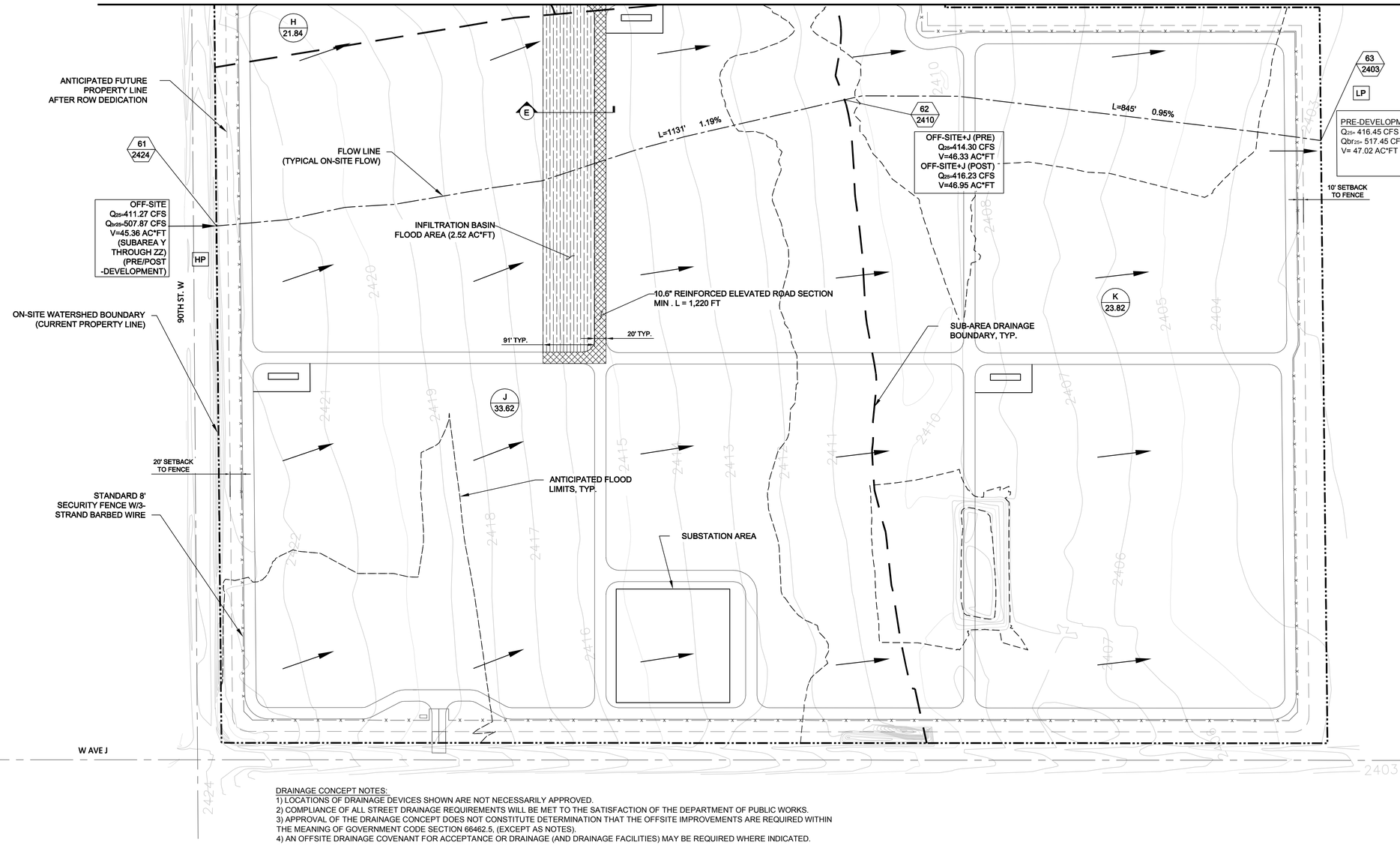
MATCHLINE: SEE SHEET C-08



PRE-DEVELOPMENT
Q_{25}= 416.45 CFS
Qbr_{25}= 517.45 CFS
V= 47.02 AC*FT

POST DEVELOPMENT
Q_{25}= 419.75 CFS
Qbr_{25}= 520.36 CFS
V= 48.08 AC*FT

MITIGATION (FOR ENTIRE SITE)
Q_{PM}=8.73 CFS
V_M=2.84 AC*FT
DELTA (FOR ENTIRE SITE)
ΔQ_{25}=16.82 CFS
ΔV_{25}=4.67 AC*FT

LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Qbr_{25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = 112,283 CY

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N
0 50 100 200
SCALE: 1"=100'

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) C-09

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER — JOSEPH E. DIETZ — No. 67032 — EXP: 9-30-14 — CIVIL — STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

52MW AC Solar Photovoltaic Generation System

APNs 3218-002-018, 023
3203-002-015, 017
3218-001-002, 003, 004
3203-002-011, 012, 013, 014
3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100076 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
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(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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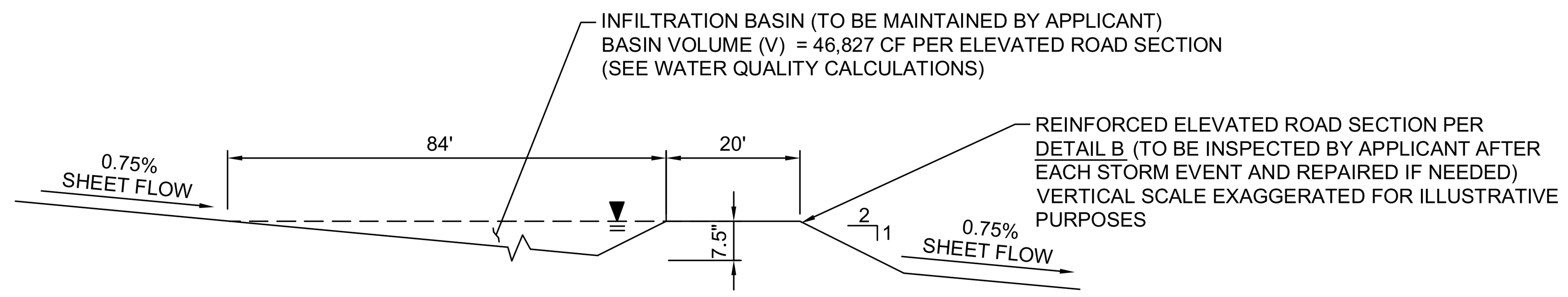
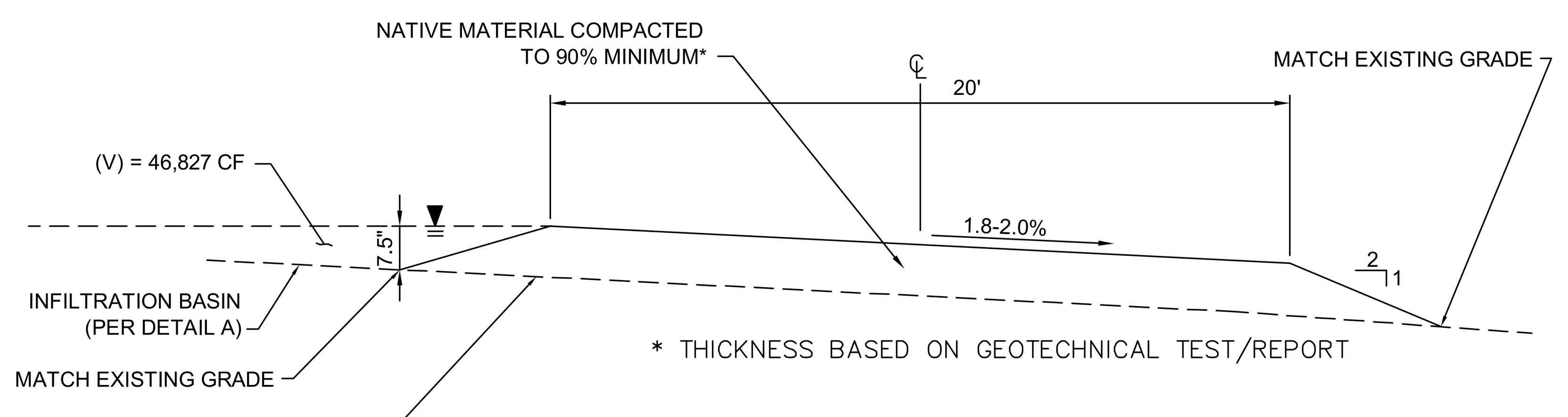


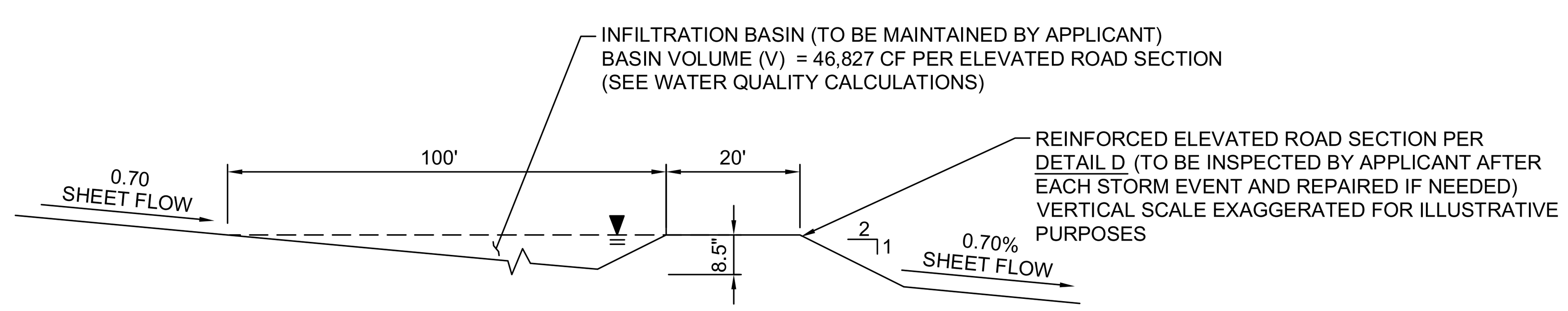
A INFILTRATION BASIN DETAIL

SCALE: NTS



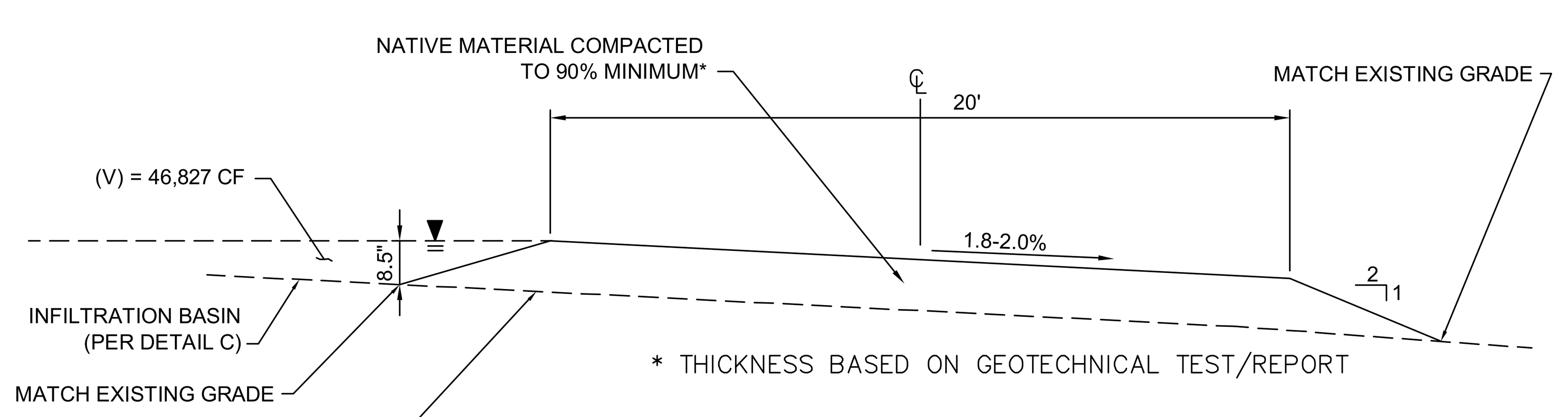
B REINFORCED ACCESS ROAD DETAIL (TYP.)

SCALE: NTS



C INFILTRATION BASIN DETAIL

SCALE: NTS



D REINFORCED ACCESS ROAD DETAIL (TYP.)

SCALE: NTS

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	A	7.95	0.01	25	134	654	0.0076	3.1	30	0.80	0.10	0.11	0.70	0.34	1.29	0.22
Project 4	B	12.45	0.01	25	134	653	0.0092	3.1	30	0.80	0.10	0.11	1.10	0.34	2.02	0.35
Project 4	C	14.13	0.01	25	134	1316	0.0084	3.1	30	0.80	0.10	0.11	1.24	0.34	2.29	0.40
Project 4	D	26.72	0.01	25	120	546	0.0092	3.2	28	0.85	0.23	0.24	5.45	0.34	7.28	0.85
Project 4	E	21.18	0.01	25	120	773	0.0052	3.2	30	0.82	0.21	0.22	3.82	0.34	5.24	0.66
Project 4	F	35.55	0.01	25	120	2651	0.0075	3.2	30	0.82	0.21	0.22	6.41	0.34	8.80	1.11
Project 4	G	30.77	0.01	25	120	1797	0.0072	3.2	30	0.82	0.21	0.22	5.55	0.34	7.62	0.96
Project 4	H	21.84	0.01	25	134	1066	0.0094	3.2	30	0.82	0.10	0.11	1.97	0.34	3.64	0.63
Project 4	I	27.47	0.01	25	120	1046	0.0057	3.2	30	0.82	0.21	0.22	4.96	0.34	6.80	0.85
Project 4	J	33.62	0.01	25	134	1131	0.0119	3.2	30	0.82	0.10	0.11	3.03	0.34	5.61	0.97
Project 4	K	23.82	0.01	25	134	845	0.0095	3.2	30	0.82	0.10	0.11	2.15	0.34	3.97	0.69
Project 4	A	7.95	0.01	50	134	654	0.0076	3.5	30	0.91	0.10	0.11	0.80	0.34	1.49	0.25
Project 4	B	12.45	0.01	50	134	653	0.0092	3.5	30	0.91	0.10	0.11	1.25	0.34	2.33	0.40
Project 4	C	14.13	0.01	50	134	1316	0.0084	3.5	30	0.91	0.10	0.11	1.41	0.34	2.64	0.45
Project 4	D	26.72	0.01	50	120	546	0.0092	3.6	18	1.19	0.38	0.39	12.40	0.34	14.61	1.08
Project 4	E	21.18	0.01	50	120	773	0.0052	3.6	30	0.94	0.29	0.30	5.97	0.34	7.48	0.79
Project 4	F	35.55	0.01	50	120	2651	0.0075	3.6	30	0.94	0.29	0.30	10.03	0.34	12.56	1.33
Project 4	G	30.77	0.01	50	120	1797	0.0072	3.6	30	0.94	0.29	0.30	8.68	0.34	10.87	1.15
Project 4	H	21.84	0.01	50	134	1066	0.0094	3.6	30	0.94	0.10	0.11	2.26	0.34	4.24	0.72
Project 4	I	27.47	0.01	50	120	1046	0.0057	3.6	30	0.94	0.29	0.30	7.75	0.34	9.70	1.03
Project 4	J	33.62	0.01	50	134	1131	0.0119	3.6	30	0.94	0.10	0.11	3.48	0.34	6.52	1.11
Project 4	K	23.82	0.01	50	134	845	0.0095	3.6	30	0.94	0.10	0.11	2.46	0.34	4.62	0.79

ON-SITE HYDROLOGY (POST-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 4	A	7.95	0.1	25	134	654	0.0076	3.1	30	0.80	0.10	0.18	1.14	0.34	1.68	0.36
Project 4	B	12.45	0.1	25	134	653	0.0092	3.1	30	0.80	0.10	0.18	1.79	0.34	2.64	0.57
Project 4	C	14.13	0.1	25	134	1316	0.0084	3.1	30	0.80	0.10	0.18	2.03	0.34	2.99	0.65
Project 4	D	26.72	0.1	25	120	546	0.0092	3.2	20	1.00	0.32	0.38	10.15	0.34	11.94	1.37
Project 4	E	21.18	0.1	25	120	773	0.0052	3.2	30	0.82	0.21	0.28	4.86	0.34	6.16	1.04
Project 4	F	35.55	0.1	25	120	2651	0.0075	3.2	30	0.82	0.21	0.28	8.16	0.34	10.34	1.75
Project 4	G	30.77	0.1	25	120	1797	0.0072	3.2	30	0.82	0.21	0.28	7.06	0.34	8.95	1.52
Project 4	H	21.84	0.1	25	134	1066	0.0094	3.2	30	0.82	0.10	0.18	3.22	0.34	4.75	1.03
Project 4	I	27.47	0.1	25	120	1046	0.0057	3.2	30	0.82	0.21	0.28	6.31	0.34	7.99	1.35
Project 4	J	33.62	0.1	25	134	1131	0.0119	3.2	30	0.82	0.10	0.18	4.96	0.34	7.31	1.59
Project 4	K	23.82	0.1	25	134	845	0.0095	3.2	30	0.82	0.10	0.18	3.52	0.34	5.18	1.13
Project 4	A	7.95	0.1	50	134	654	0.0076	3.5	30	0.91	0.10	0.18	1.30	0.34	1.93	0.42
Project 4	B	12.45	0.1	50	134	653	0.0092	3.5	30	0.91	0.10	0.18	2.04	0.34	3.03	0.65
Project 4	C	14.13	0.1	50	134	1316	0.0084	3.5	30	0.91	0.10	0.18	2.31	0.34	3.44	0.74
Project 4	D	26.72	0.1	50	120	546	0.0092	3.6	17	1.22	0.38	0.43	14.02	0.34	16.11	1.62
Project 4	E	21.18	0.1	50	120	773	0.0052	3.6	25	1.02	0.33	0.39	8.43	0.34	9.85	1.26
Project 4	F	35.55	0.1	50	120	2651	0.0075	3.6	30	0.94	0.29	0.35	11.70	0.34	14.01	2.06
Project 4	G	30.77	0.1	50	120	1797	0.0072	3.6	30	0.94	0.29	0.35	10.12	0.34	12.13	1.79
Project 4	H	21.84	0.1	50	134	1066	0.0094	3.6	30	0.94	0.10	0.18	3.70	0.34	5.50	1.18
Project 4	I	27.47	0.1	50	120	1046	0.0057	3.6	30	0.94	0.29	0.35	9.04	0.34	10.83	1.59
Project 4	J	33.62	0.1	50	134	1131	0.0119	3.6	30	0.94	0.10	0.18	5.69	0.34	8.46	1.81
Project 4	K	23.82	0.1	50	134	845	0.0095	3.6	30	0.94	0.10	0.18	4.03	0.34	6.00	1.29
Project 4	A	7.95	0.1	MIT.	134	654	0.0076	0.75	30	0.19	0.10	0.18	0.27	0.34	0.35	0.09
Project 4	B	12.45	0.1	MIT.	134	653	0.0092	0.75	30	0.19	0.10	0.18	0.43	0.34	0.55	0.14
Project 4	C	14.13	0.1	MIT.	134	1316	0.0084	0.75	30	0.19	0.10	0.18	0.48	0.34	0.63	0.16
Project 4	D	26.72	0.1	MIT.	120	546	0.0092	0.75	30	0.19	0.10	0.18	0.91	0.34	1.19	0.30
Project 4	E	21.18	0.1	MIT.	120	773	0.0052	0.75	30	0.19	0.10	0.18	0.72	0.34	0.94	0.24
Project 4	F	35.55	0.1	MIT.	120	2651	0.0075	0.75	30	0.19	0.10	0.18	1.22	0.34	1.58	0.39
Project 4	G	30.77	0.1	MIT.	120	1797	0.0072	0.75	30	0.19	0.10	0.18	1.05	0.34	1.37	0.34
Project 4	H	21.84	0.1	MIT.	134	1066	0.0094	0.75	30	0.19	0.10	0.18	0.75	0.34	0.97	0.24
Project 4	I	27.47	0.1	MIT.	120	1046	0.0057	0.75	30	0.19	0.10	0.18	0.94	0.34	1.22	0.31
Project 4	J	33.62	0.1	MIT.	134	1131	0.0119	0.75	30	0.19	0.10	0.18	1.15	0.34	1.50	0.37
Project 4	K	23.82	0.1	MIT.	134	845	0.0095	0.75	30	0.19	0.10	0.18	0.81	0.34	1.06	0.26

NOTE: FOR INFILTRATION BASIN MITIGATION VOLUME, SUM MIT. FREQUENCY VOLUMES UNDER POST-DEVELOPMENT TABLE. V_{PM}=2.84 AC*FT.

DELTA QUANTITIES FOR DRAINAGE AREA A:
ΔQ25 = 1.14 - 0.70 = 0.44 CFS
ΔV25 = 0.36 - 0.22 = 0.14 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA B:
ΔQ25 = 1.79 - 1.10 = 0.69 CFS
ΔV25 = 0.57 - 0.35 = 0.22 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA C
ΔQ25 = 2.03 - 1.24 = 0.79 CFS
ΔV25 = 0.65 - 0.40 = 0.25 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA D
ΔQ25 = 10.15 - 5.45 = 4.70 CFS
ΔV25 = 1.37 - 0.85 = 0.52 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA E
ΔQ25 = 4.86 - 3.82 = 1.04 CFS
ΔV25 = 1.04 - 0.66 = 0.38 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA F
ΔQ25 = 8.16 - 6.41 = 1.75 CFS
ΔV25 = 1.75 - 1.11 = 0.64 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA G
ΔQ25 = 7.06 - 5.55 = 1.51 CFS
ΔV25 = 1.52 - 0.96 = 0.56 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA H
ΔQ25 = 3.22 - 1.97 = 1.25 CFS
ΔV25 = 1.03 - 0.63 = 0.40 AC*FT

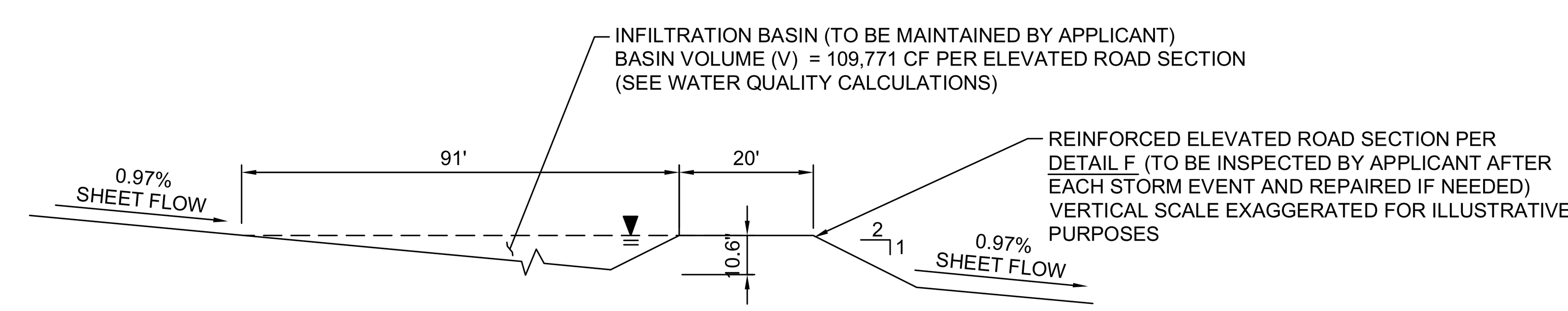
DELTA QUANTITIES FOR DRAINAGE AREA I
ΔQ25 = 6.31 - 4.96 = 1.35 CFS
ΔV25 = 1.35 - 0.85 = 0.50 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA J
ΔQ25 = 4.96 - 3.03 = 1.93 CFS
ΔV25 = 1.59 - 0.97 = 0.62 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA K
ΔQ25 = 3.52 - 2.15 = 1.37 CFS
ΔV25 = 1.13 - 0.69 = 0.44 AC*FT

TOTAL DELTA QUANTITIES
ΔQ25 = 16.82 CFS
ΔV25 = 4.67 AC*FT

NOTE: DUE TO THE LID Δ QUANTITIES ABOVE BEING GREATER THAN THE MITIGATION QUANTITIES (Q_{PM} AND V_{PM}) THEY REPRESENT THE WORST CASE SCENARIO BETWEEN THE PRE-/POST DEVELOPMENT CONDITIONS AND THEREFORE SHALL BE USED FOR SIZING THE INFILTRATION BASINS.



E INFILTRATION BASIN DETAIL

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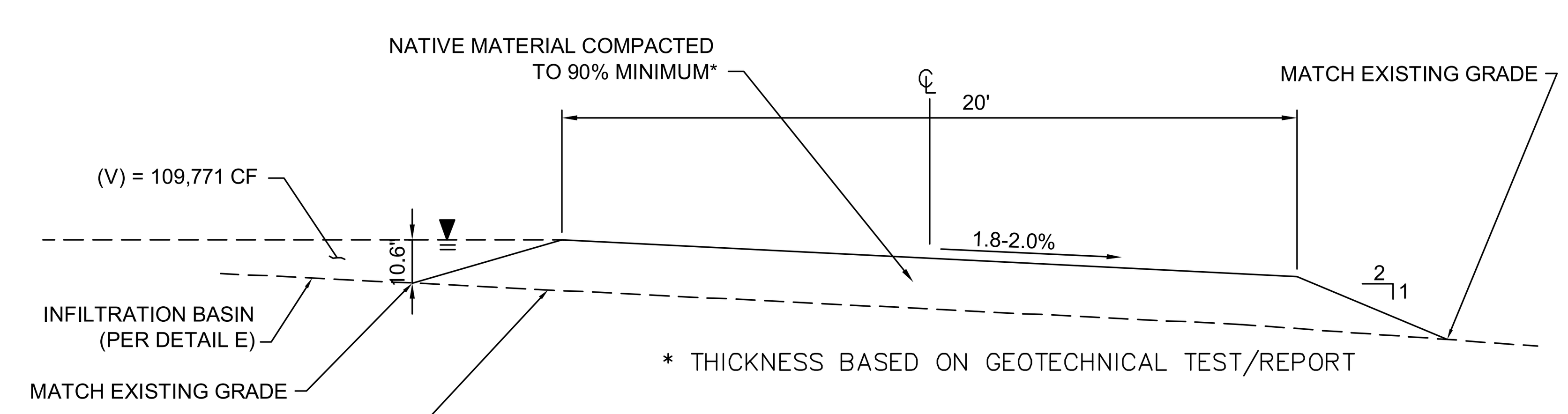

F REINFORCED ACCESS ROAD DETAIL (TYP.)

SCALE: NTS

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:______________RCE NO:______________DATE______________
CHECKED BY:______________________DATE______________
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00807 (RCUP201100076) C-10

PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER
JOSEPH E. DIETZ
No. 67032
EXP: 9-30-14
CIVIL
STATE OF CALIFORNIA

JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

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Solar PV System Summary

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Project Name:
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90th St. W & W Ave. J
Los Angeles County, CA
SCH # 2012061068

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100076 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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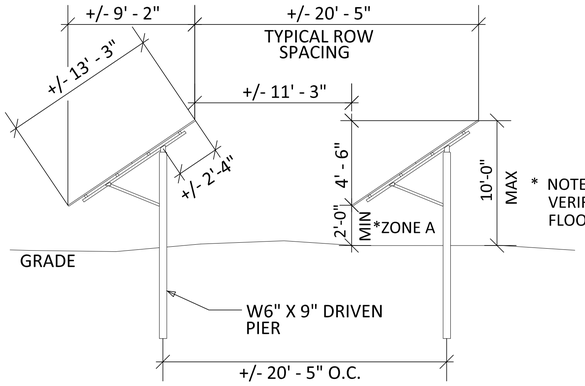
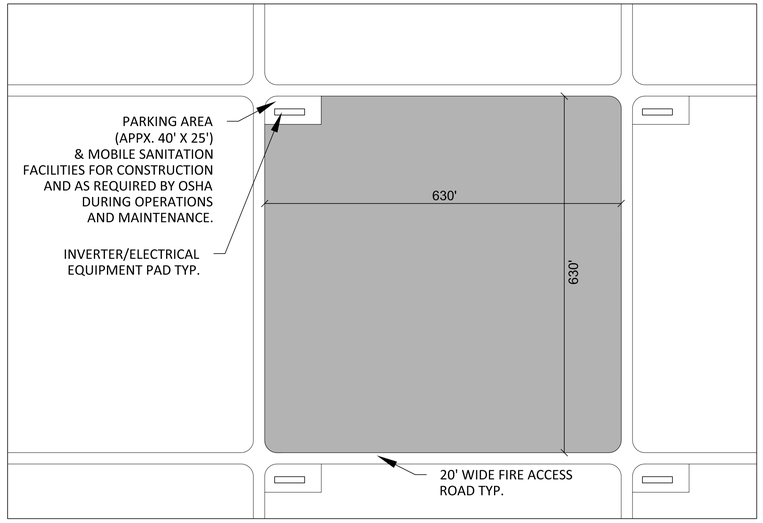


* NOTE: 2' MINIMUM TO BE VERIFIED WITH ANTICIPATED FLOODWATER DEPTH.

TYPICAL SOLAR ARRAY RACK DETAIL AND END ELEVATION

NOT TO SCALE



ARRAY BLOCK DETAIL (TYPICAL)

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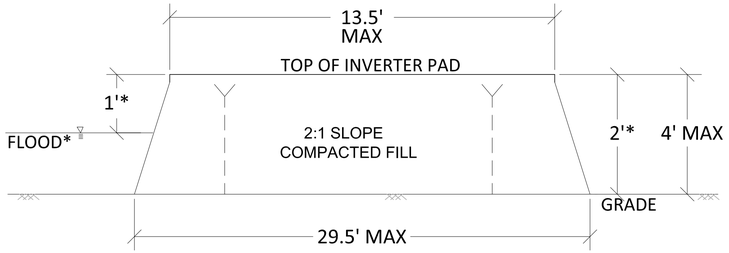
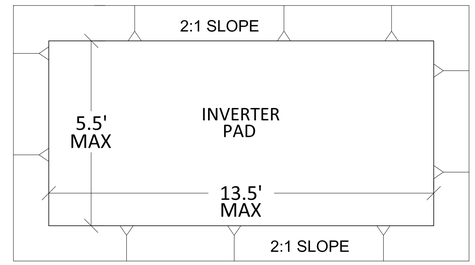


*TOP OF INVERTER PAD TO BE 1' MINIMUM ABOVE FLOOD WATER ELEVATION AS DETERMINED IN FINAL HYDROLOGY REPORT AND 2' ABOVE GRADE IN FEMA ZONE A.

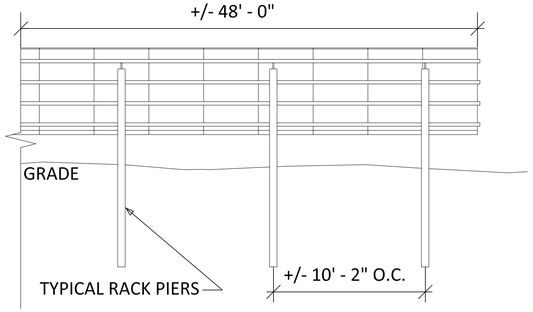
ELEVATION VIEW



PLAN VIEW

RAISED INVERTER PAD DETAILS FOR FLOOD AREAS AS NEEDED

NOT TO SCALE



SOLAR ARRAY RACK DETAIL ELEVATION

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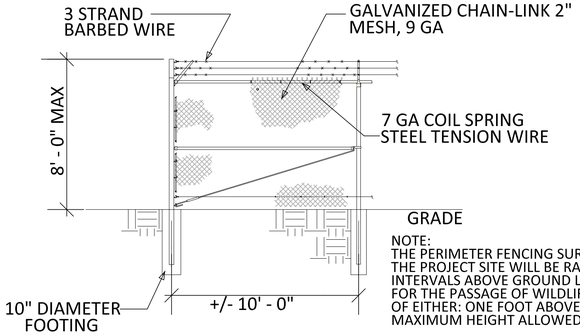
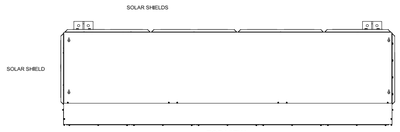
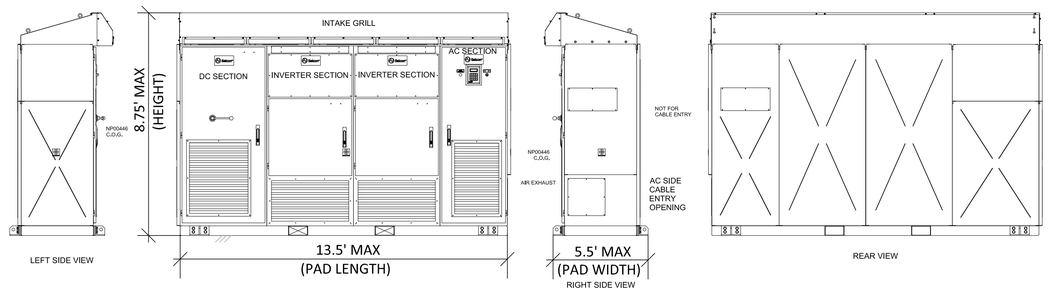


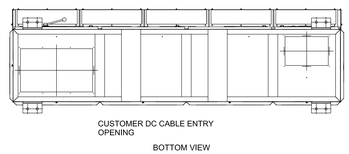
NOTE:
THE PERIMETER FENCING SURROUNDING THE PROJECT SITE WILL BE RAISED AT REGULAR INTERVALS ABOVE GROUND LEVEL TO ALLOW FOR THE PASSAGE OF WILDLIFE TO THE LESSER OF EITHER: ONE FOOT ABOVE GRADE OR TO THE MAXIMUM HEIGHT ALLOWED BY THE PUC.

CHAIN LINK SECURITY FENCE ELEVATION

NOT TO SCALE







INVERTER PAD DETAILS (TYPICAL)

NOT TO SCALE

NOTES:

1). ENCLOSURE RATED OUTDOOR NEMA-3R

2). COLOR: RAL-7032 TEXTURE

3). DIMENSIONS ARE IN FEET

R2011-00807 (RCUP201100076) C-11

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PLOT/UPDATE:

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

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D	12/22/13	REVISIONS FOR AGENCY	JD	SP
C	09/05/13	ARRAY BLOCK REVISION	JD	SP
B	3/01/12	ADDED SHEET	JD	SP

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3219-019-011

Project Name:
Project 4 Antelope Solar Greenworks

Project Address:
90th St. W & W Ave. J
Los Angeles County, CA

SCH # 2012061068

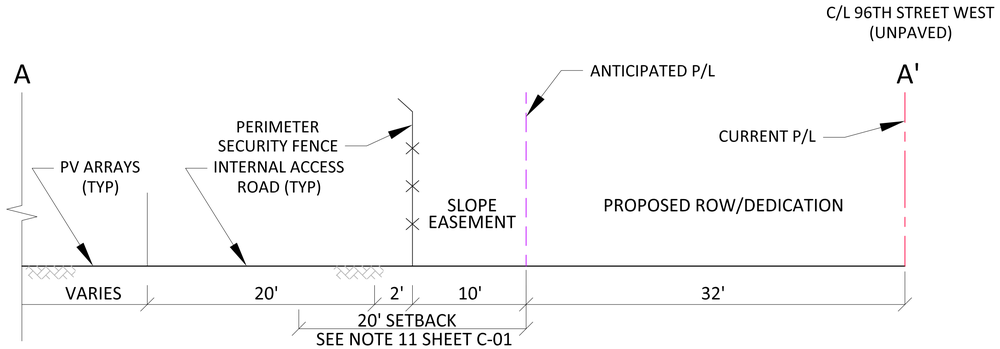
DRAWING: DETAIL SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



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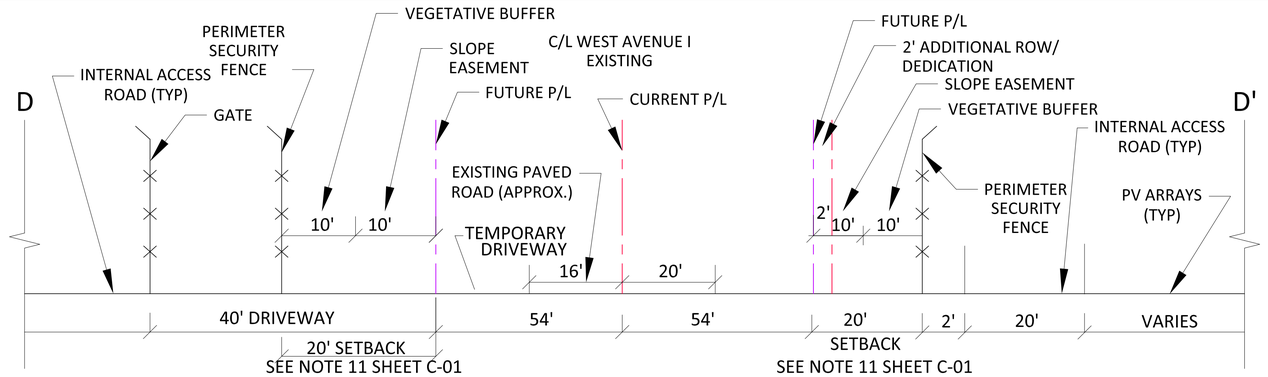

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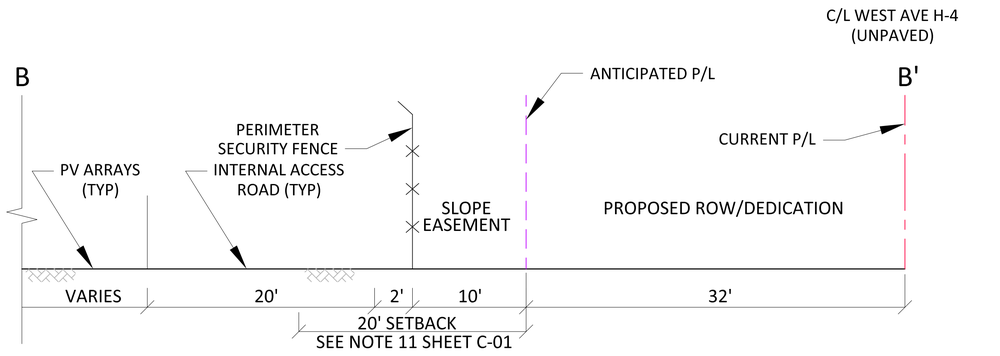

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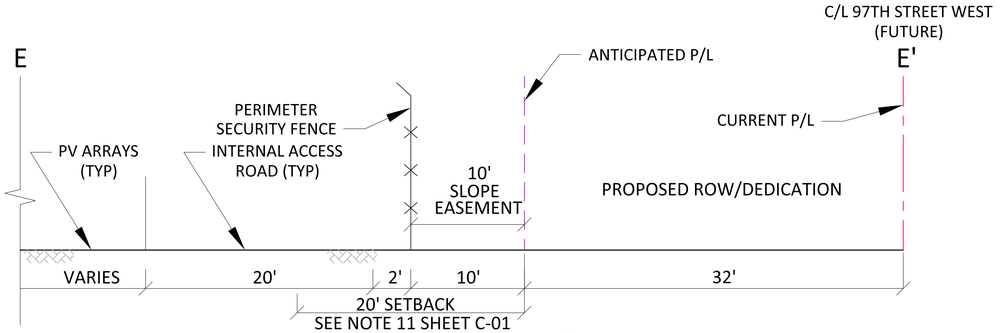

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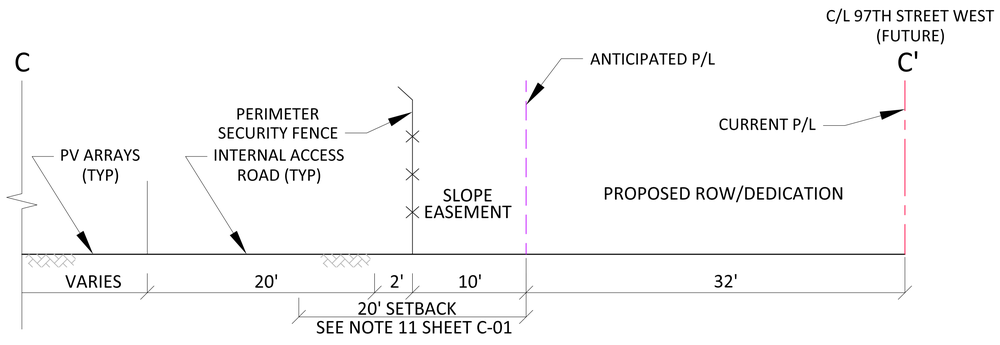

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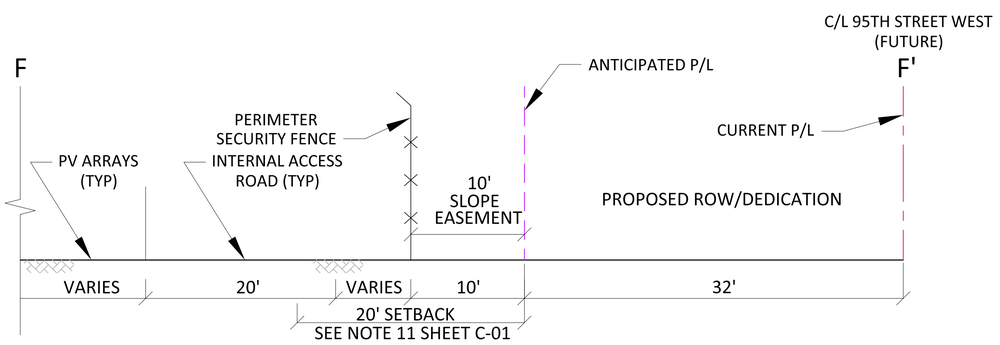

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R2011-00807 (RCUP201100076) C-12

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EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

JULIE ANN DELANEY
REGISTERED PROFESSIONAL ENGINEER
No.C54568
CIVIL
STATE OF CALIFORNIA

NOT ISSUED FOR CONSTRUCTION

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3219-019-011

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Project Address:
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Los Angeles County, CA

SCH # 2012061068

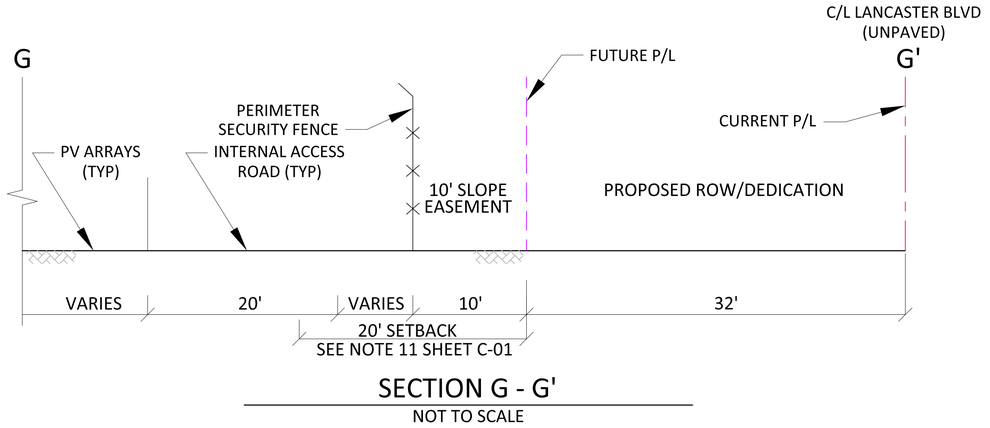
DRAWING: SECTION SHEET

APPLICANT:

Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR
GREENWORKS
LOS ANGELES COUNTY, CA



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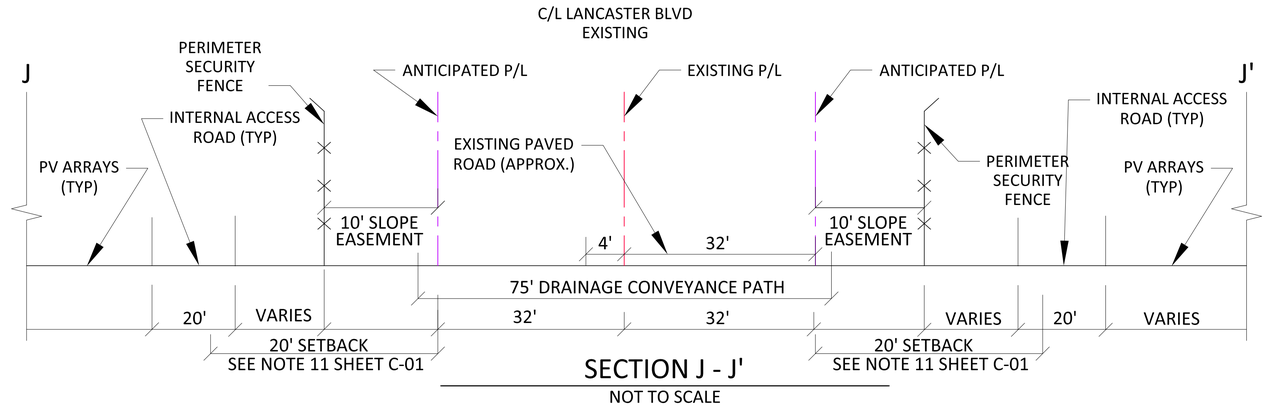

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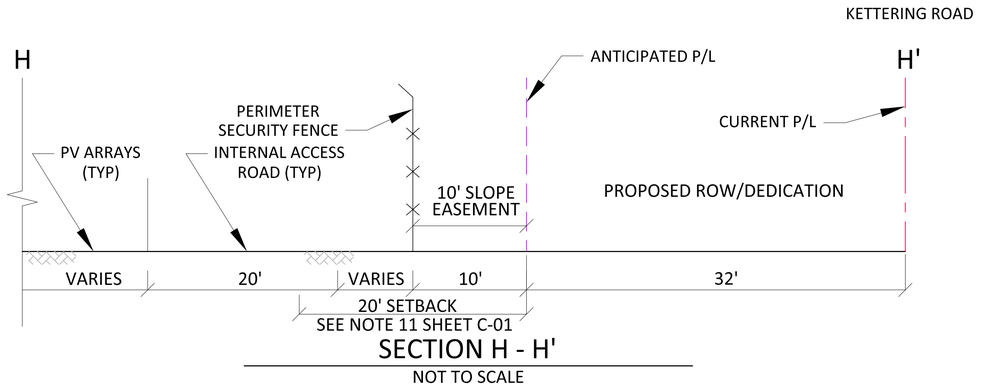

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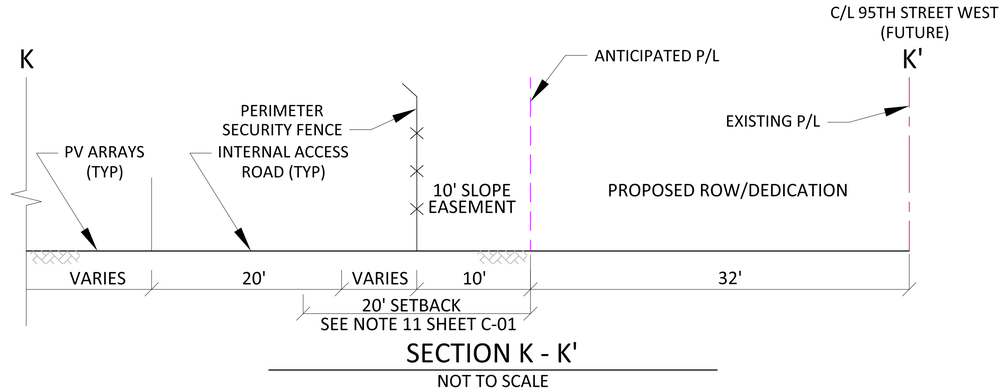

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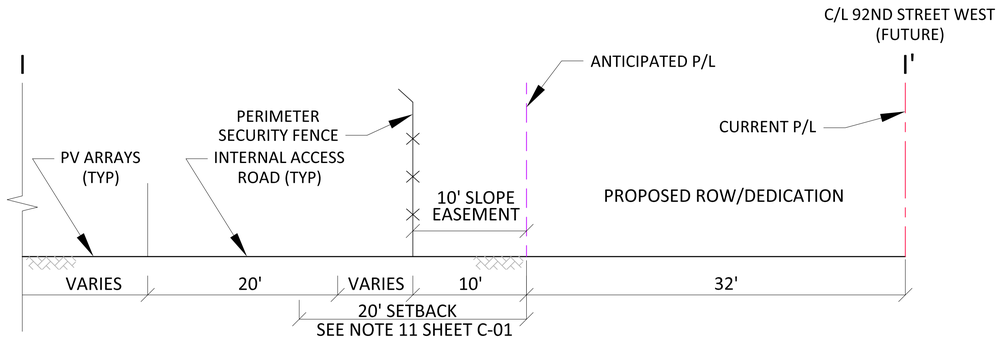

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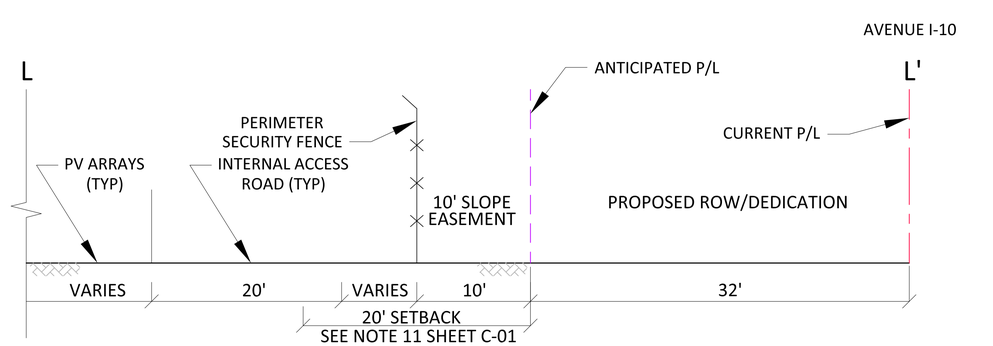

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REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

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SCH # 2012061068

DRAWING: SECTION SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 4
ANTELOPE SOLAR
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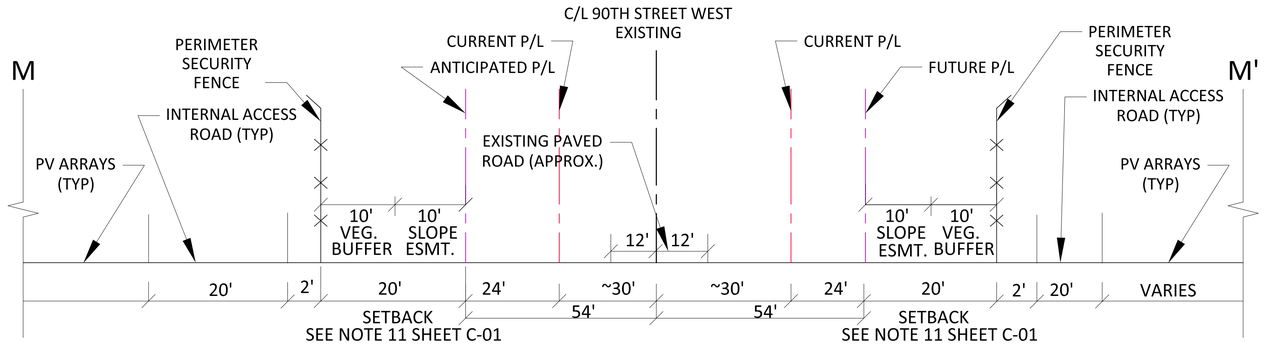
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



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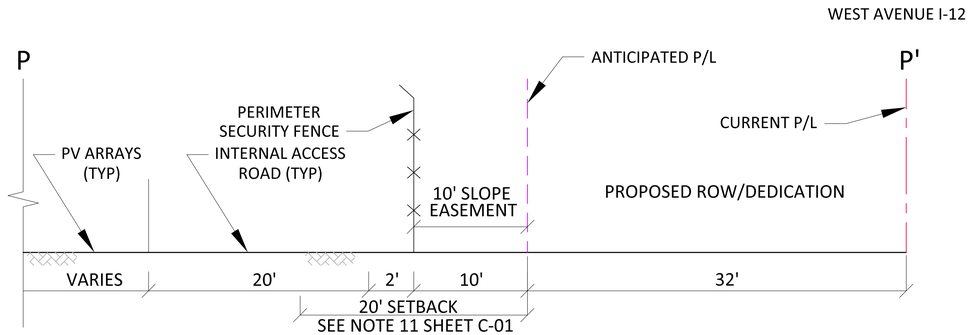

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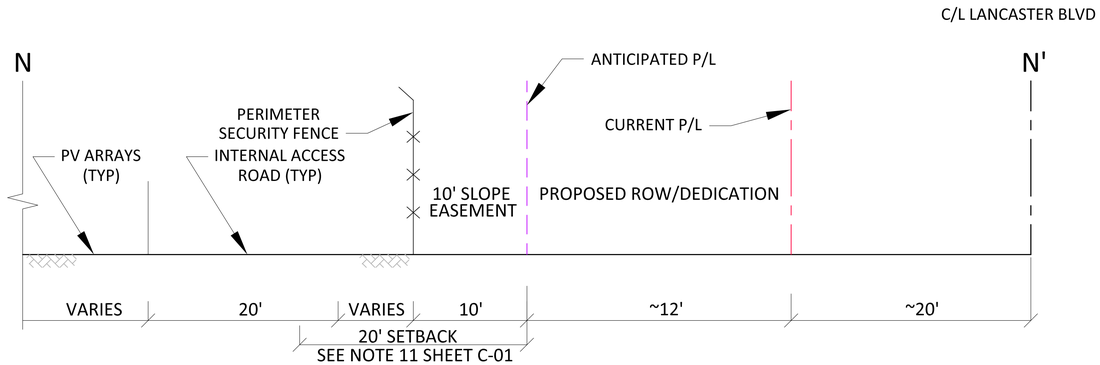

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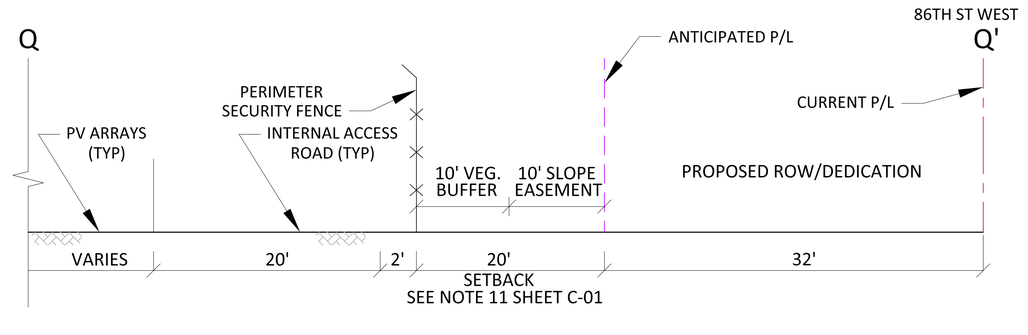

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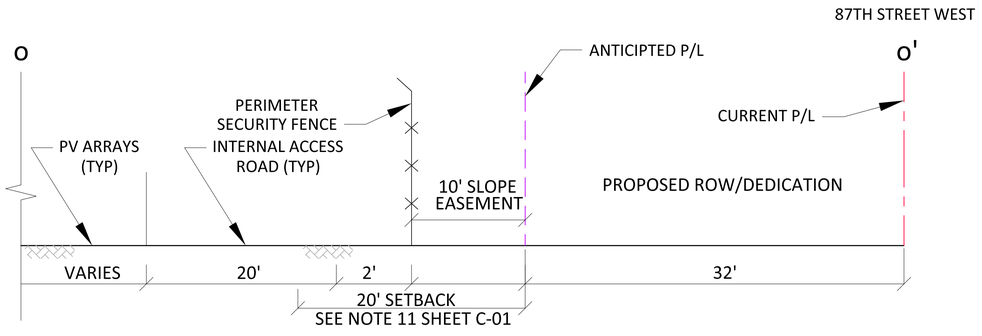

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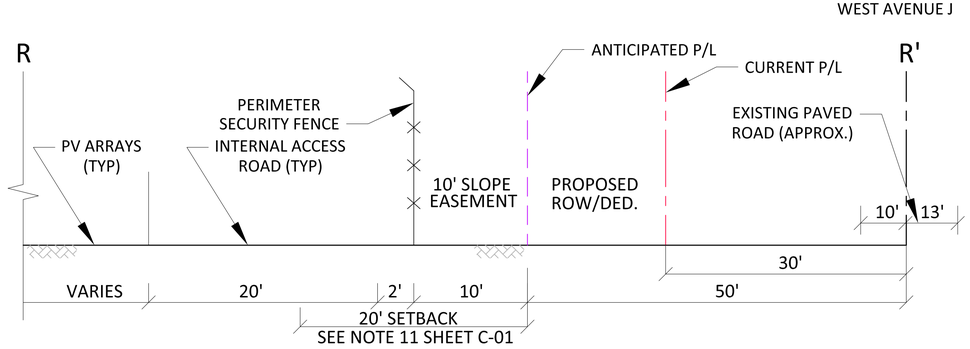

SECTION R - R'

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R2011-00807 (RCUP201100076) C-14

REGISTERED PROFESSIONAL ENGINEER JULIE ANN DECARET No.C54558 CIVIL STATE OF CALIFORNIA

EXHIBIT PREPARER:

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IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

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LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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APPENDIX B-14.5

PROJECT 5 SILVER SUN GREENWORKS SITE PLANS

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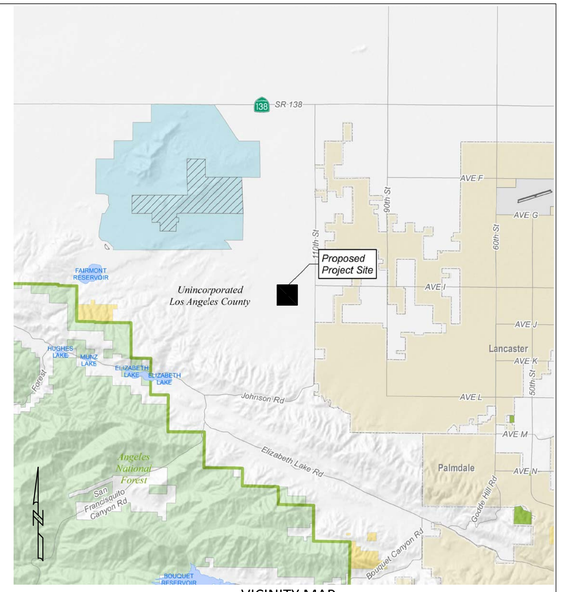
LOCATION MAP
NOT TO SCALE

PROJECT 5
SILVER SUN GREENWORKS
LOS ANGELES COUNTY, CALIFORNIA



VICINITY MAP
NOT TO SCALE

DRAWING INDEX

DRAWING NO.	TITLE	REVISION
T-01	TITLE SHEET	C
G-01	TOPOGRAPHIC MAP	B
G-02	TOPOGRAPHIC MAP	A
C-01	SITE PLAN	D
C-02	GRADING PLAN	C
C-03	ON-SITE DRAINAGE MAP	C
C-04	ON-SITE DRAINAGE MAP	C
C-05	ON-SITE DRAINAGE MAP	C
C-06	DETAIL SHEET	D
C-07	SECTION SHEET	C
C-08	GEN-TIE ROUTE OPTIONS	B

SURVEY INFORMATION:

TOPOGRAPHIC MAP AND 1' CONTOURING PREPARED BY ALL VALLEY SURVEYING.
BENCHMARK AND BASIS OF BEARINGS SHOWN ON TOPOGRAPHIC MAPS, DRAWINGS G-01 & G-02.

SURVEYOR:

LARRY E. JERNIGAN, PLS #5924
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA 93534
(661) 942-3639

R2011-00801 (RCUP201100072) T-01

REGISTERED PROFESSIONAL ENGINEER — JULIE ANN DELANEY — No.C54558 — CIVIL — STATE OF CALIFORNIA

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/22/13	EXPANDED SITE	JD	SP
B	09/05/13	EXPANDED SITE	JD	SP
A	2/15/12	ADDED NEW SHEET	JD	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs: 3267-003-001, 3267-003-002 & 3267-003-003

SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks

Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

DRAWING: TITLE SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN GREENWORKS
LOS ANGELES COUNTY, CA

C:\USERS\JULIE.DELANEY.DESKTOP\SP LAYP~5~1\T-01~TITLE~1.DWG
Dec 22, 2013 - 11:52 AM

120TH STREET WEST

AVENUE I

N:2075980.9529
E:6458849.0595
EL:2568.01
WEST ¼ CORNER SECTION 14, T7N, R14W FOUND A COUNTY SURVEYO'S MONUMNET PER CSFB 1869-235

REMAINS OF A CONCRETE DISSIPATOR

NW CORNER SECTION 14, T7N, R14W FOUND A COUNTY SURVEYORS MONUMNET PER CSFB 1869-233
N:2078604.3449
E:6458873.7575
EL:2547.69

N:2078629.6020
E:6458887.7465
EL:2549.405
LOS ANGELES COUNTY BM L 1301

N 00°32'22" W
2623.51'

N 89°30'44" E
2673.74'

N 00°15'32" E
2643.20'

30.00' ROAD EASEMENT DEDICATED BY THIS MAP
335 O.R.

INST. NO. 88-1107095, INST. NO. 89-1121215, INST. NO. 03-3681942, & INST. NO. 03-3681944
A.P.N. 3267-003-001

15.0ft
30.0ft

N:2076003.7169
E:6461522.6995
EL:2531.67
CENTER OF SECTION 14, T7N, R14W FOUND A COUNTY ENGINEER MONUMNET PER CSFB 1869-234

N:2077207.8949
E:6460224.7005
EL:2542.62
SET REBAR

N:2078646.8909
E:6461534.6475
EL:2522.61
N ¼ CORNER SECTION 14, T7N, R14W FOUND A COUNTY ENGINEER MONUMNET PER CSFB 1869-232

N:2078677.5420
E:6461698.9495
EL:2522.48
LOS ANGELES COUNTY BM L 7024

FL 36" CMP
EL = 2533.83

FL 36" CMP
EL = 2533.69

LEGEND

- = SURVEY CONTROL MONUMENT AS NOTED
- = LOS ANGELES COUNTY BENCHMARK AS NOTED
- = TREE AS NOTED
- = STREET SPEED LIMIT SIGN
- = PADDLE MARKER POST
- = POWER POLE
- = GUY WIRE
- = FENCE
- = MAILBOXES
- FL = FLOW LINE
- EP = EDGE OF PAVEMENT
- = EDGE OF PAVEMENT

DATUM STATEMENT

COORDINATES SHOWN ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, (CCS83) ZONE V, 1983 NORTH AMERICAN DATUM, 1991.35 EPOCH ADJUSTMENT. COORDINATES SHOWN ARE IN U.S. SURVEY FEET. ALL DISTANCES SHOWN ARE GRID DISTANCES. TO OBTAIN A GROUND DISTANCE, DIVIDE THE GRID DISTANCE BY 0.99984491. COMBINATION FACTOR IS PROJECT BASED

SHEET G-01

BASIS OF BEARING	BENCH MARK
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE V, NAD 83, EPOCH 1991.35, AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING STATIONS (CGPS), EW7110 AND EW7125, BEING NORTH 00°10'12" EAST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE NATIONAL GEODETIC SURVEY.	LOS ANGELES COUNTY BENCHMARK L 1301, LANCASTER 2004 ADJUSTMENT, NAVD 1988, ELEVATION = 2549.405 FEET CSBM MON UP 75MM(3IN) 7.6M(25FT) N/O C/L PROD AVE I & 17M(55.8FT) E/O CL PROD 120TH ST W 15M(49.2FT) SE/O PP #3002085E MKD (BM102-27 1957 RE 5869) BUTTON GONE

HORIZ: SCALE 1"= 100'

PROFESSIONAL LAND SURVEYOR — LARRY E JERNIGAN — No. 5924 — EXP 12-31-12 — STATE OF CALIFORNIA

ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA. 93534
(661) 942-3639

NO.	REVISION	BY	APPR.	DATE
1				
2				
3				

TOPOGRAPHIC MAP
AVENUE I & 120TH STREET WEST
ANTELOPE VALLEY
COUNTY OF LOS ANGELES
STATE OF CALIFORNIA

DATE OF SURVEY: 1/20/12

COUNTY PLAN CHECK NUMBER: R2011-00801(RCUP2011-00072)

115TH STREET WEST

120TH STREET WEST

AVENUE I

LANCASTER BOULEVARD

DATUM STATEMENT
COORDINATES SHOWN ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, (CCS83)
ZONE V, 1983 NORTH AMERICAN DATUM, 1991.35 EPOCH ADJUSTMENT. COORDINATES
SHOWN ARE IN U.S. SURVEY FEET. ALL DISTANCES SHOWN ARE GRID DISTANCES. TO
OBTAIN A GROUND DISTANCE, DIVIDE THE GRID DISTANCE BY 0.99984491. COMBINATION
FACTOR IS PROJECT BASED.

ENGINEER MONUMNET
PER CSFB 1869-232
N:2078646.8909
E:6461482.6475
EL:2522.61

NW CORNER SECTION 14,
T7N, R14W
FOUND A COUNTY
SURVEYORS MONUMNET
PER CSFB 1869-233
N:2078804.3449
E:6448873.7575
EL:2547.69

CENTER OF SECTION 14,
T7N, R14W
FOUND A COUNTY
SURVEYORS MONUMNET
PER CSFB 1869-234
N:2076603.7169
E:6461522.6993
EL:2531.67

WEST ¼ CORNER SECTION
14, T7N, R14W
FOUND A COUNTY
SURVEYO'S MONUMNET
PER CSFB 1869-235
N:2075980.9529
E:6458849.0595
EL:2568.01

HIGH POWER TOWER

PROPOSED ROAD EASEMENT PER MSB 163 REC. 4-8-70

DRAINAGE BASIN EASEMENT PER BK 21258 PG 217 O.R.

30' STORM DRAIN EASEMENT PER BK 20935 PG 335 O.R.

FL 36" CMP EL = 2530.69

FL 36" CMP EL = 2531.83

SYMBOL LEGEND

CATV	CABLE TV BOX	EP	EDGE OF PAVEMENT	R/W	RIGHT OF WAY LINE
	POWER POLE	PL	PROPERTY LINE	FS	FINISH SURFACE
	ELECTRIC BOX	CL	CENTER LINE	EL	DIRT SPOT SHOT
	EDGE OF PAVEMENT				CONCRETE

SHEET G-02

BASIS OF BEARING	BENCH MARK
THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, ZONE V, NAD 83, EPOCH 1991.35, AS DETERMINED LOCALLY BY A LINE BETWEEN CONTINUOUS GLOBAL POSITIONING STATIONS (CGPS), EW7110 AND EW7125, BEING NORTH 00°10'12" EAST AS DERIVED FROM GEODETIC VALUES PUBLISHED BY THE NATIONAL GEODETIC SURVEY.	LOS ANGELES COUNTY BENCHMARK L 1301, LANCASTER 2004 ADJUSTMENT, NAVD 1988, ELEVATION = 2549.405 FEET CSBM MON UP 75MM(3IN) 7.6M(25FT) N/O C/L PROD AVE I & 17M(55.8FT) E/O CL PROD 120TH ST W 15M(49.2FT) SE/O PP #3002085E MKD (BM102-27 1957 RE 5869) BUTTON GONE

SCALE
HORIZ: 1"= 100'

PROFESSIONAL LAND SURVEYOR
LARRY E JERNIGAN
No. 5924
EXP 12-31-12
STATE OF CALIFORNIA

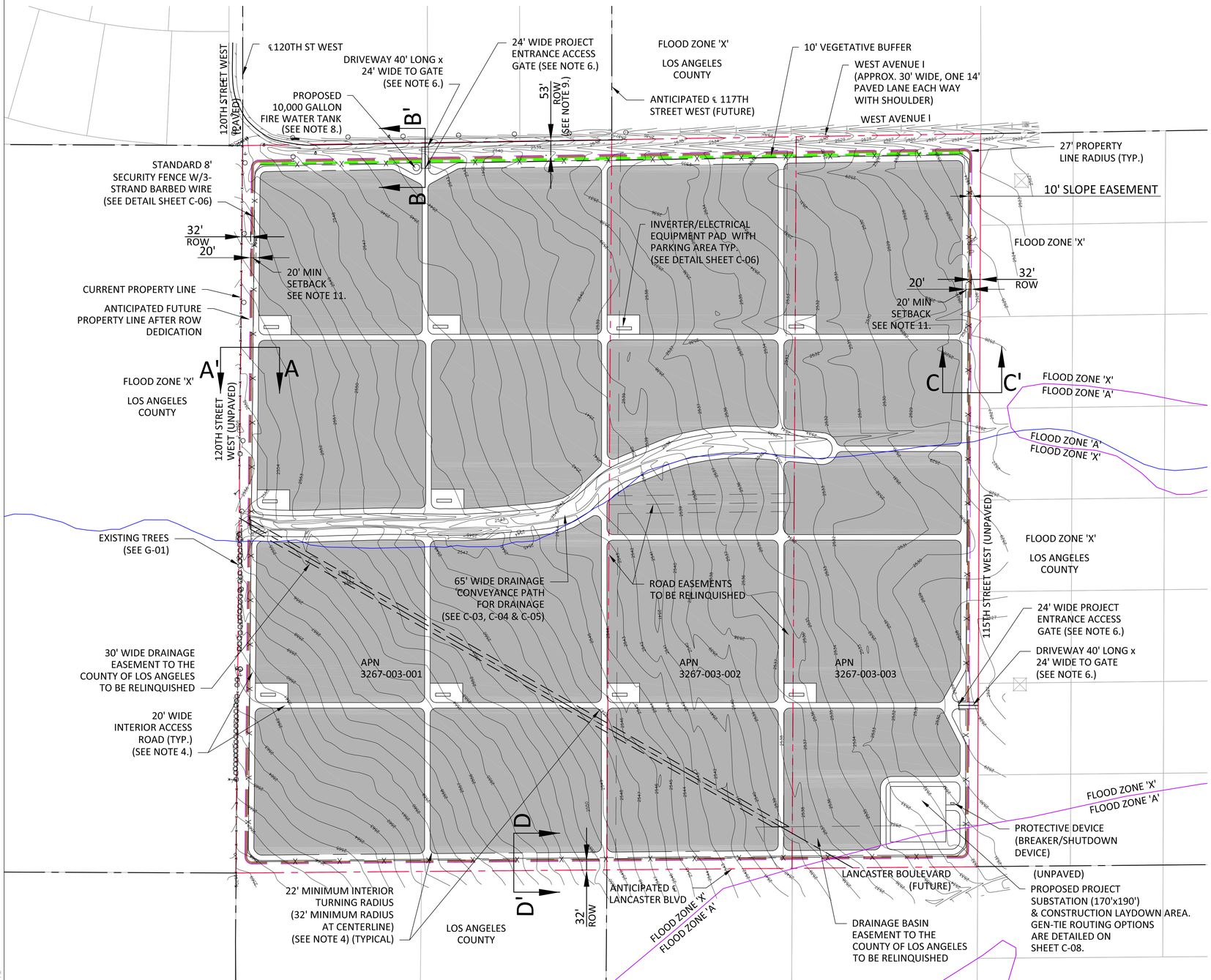
THIS MAP WAS PREPARED BY ME OR UNDER MY SUPERVISION SEPTEMBER, 2012.
LARRY E. JERNIGAN, PLS 5924

ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA. 93534
(661) 942-3639 JN: AV1246

NO.	REVISION	BY	APPR.	DATE
1				
2				
3				

TOPOGRAPHIC MAP
SILVER SUN EXPANSION
ANTELOPE VALLEY
COUNTY OF LOS ANGELES
STATE OF CALIFORNIA

DATE OF SURVEY	COUNTY PLAN CHECK NUMBER
9/2/12	R2011-00801(RCUP2011-00072)



PROJECT SITE:

PROJECT SITE IS 160 ACRES (NET)

NOTES:

1. 'ZONE X' AND 'ZONE A' AS SHOWN ON PANEL 0150F OF FLOOD INSURANCE RATE MAP NO. 06037C0400F. ZONE "X" DESIGNATED AS, "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN". ZONE "A" DESIGNATED AS, "NO BASE FLOOD ELEVATIONS DETERMINED".

2. FIRE DEPARTMENT ACCESS DEVICE AND EMERGENCY CONTACT PLACARD LOCATED AT ENTRANCE GATE.

3. MOBILE SANITATION FACILITY, AS DEFINED BY THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH, CAN BE LOCATED AT ALL PARKING LOCATIONS AND WILL BE LOCATED AT THE NEAREST LOCATION TO CONSTRUCTION AND OPERATIONAL WORKERS ACTIVITY. THE FACILITIES WILL BE KEPT TO LOS ANGELES COUNTY CODE, TITLE 11 - HEALTH & SAFETY, AND CAL-OSHA SANITATION STANDARDS IN SECTION 3360, TITLE 8, CALIFORNIA CODE OF REGULATIONS. MOBILE SANITATION FACILITIES WILL BE MADE AVAILABLE DURING CONSTRUCTION AND AS REQUIRED BY OSHA DURING OPERATIONS AND MAINTENANCE. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-06.

4. INTERIOR ACCESS ROADS WILL BE 20' WIDE, COMPACTED TO 90%, WITH 32 FOOT TURNING RADIUS AT CENTER LINE. THE INNER RADIUS WILL BE 22' AND THE OUTER RADIUS WILL BE 42'. INTERIOR ACCESS ROADS WILL BE PROVIDED TO INVERTER/ELECTRICAL EQUIPMENT PADS AND AROUND THE PERIMETER OF THE PROJECT. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-06.

5. 10 FOOT WIDE SLOPE EASEMENT WILL BE PROVIDED AROUND PERIMETER.

6. DRIVEWAY ACCESS GATES TO BE SET 40 FEET BACK FROM EDGE OF PROPERTY. DRIVEWAY WILL BE 24 FEET WIDE.

7. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION DURING DETAILED DESIGN.

8. TANK CONNECTIONS PER LOS ANGELES COUNTY FIRE DEPARTMENT.

9. ANTICIPATED ROW SETBACK/DEDICATION FOR FUTURE ROAD DEVELOPMENT.

10. CONTOURS SHOWN ON SITE PLAN, C-01, ARE BASED ON SURVEY BY ALL VALLEY SURVEYING.

11. A 20' MINIMUM SETBACK FROM PROPERTY LINE (AFTER DEDICATIONS) TO ARRAYS OR EQUIPMENT TO BE MAINTAINED ON SITE. PROJECT FENCE, FIRE ROADS, EASEMENTS, AND VEGETATION ARE OK WITHIN THE SETBACK.

BENCHMARK:

BM L1462 NAVD 1988, 2004 LANCASTER ADJUSTMENT, ELEV.=2336.348'

RDBM TAG IN CTR CONC HDWL 6.4M(21FT) N/O C/L AVE D & 101M(331FT) E/O C/L PROP 35TH ST W

LEGEND:

	TREE AS NOTED
	POWER POLE
TYP.	TYPICAL
MIN	MINIMUM
ROW	RIGHT OF WAY
℄	CENTERLINE
x x	FENCE LINE
	OVERHEAD LINE
	UNDERGROUND LINE
	PROPERTY LINE (AFTER DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
2470	CONTOUR LINE
	EASEMENT (SEE SHEETS G-01 AND G-02)
	BLUELINE STREAM (FROM USGS)
	FLOOD ZONE BOUNDARY DELINEATION
	SOLAR ARRAY FIELD
	10' WIDE VEGETATIVE BUFFER
	10' WIDE SLOPE EASEMENT

200 0 200 400

SCALE IN FEET

1'=200'

WHEN PRINTED TO SCALE ON 22"x34" SHEET

R2011-00801 (RCUP201100072) **C-01**

C:\SP LAYP~1\1C~01~STE~11.DWG
5/07/2014 12:10:20 PM

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
D	12/22/13	REVISIONS FOR COUNTY	JD	SP
C	09/05/13	EXPANDED SITE	JD	SP
B	02/15/12	REVISIONS FOR COUNTY	JD	SP
A	05/18/11	INITIAL SUBMITTAL	TWC	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs: 3267-003-001, 3267-003-002 & 3267-003-003

SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks

Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

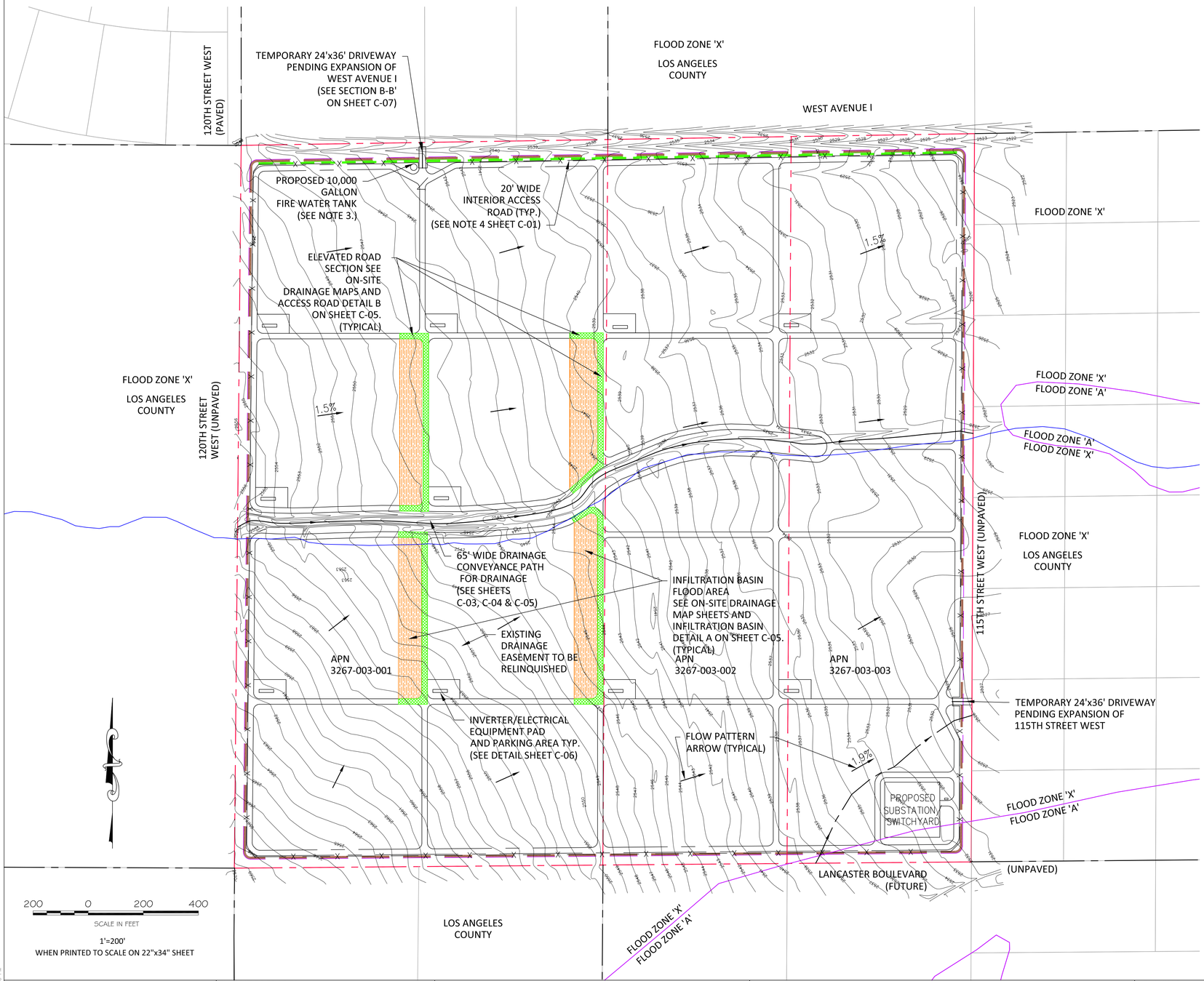
DRAWING: SITE PLAN

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN
GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



NOTES:

1. DRAINAGE ACROSS SITE IS CURRENTLY FROM THE SOUTHWEST TO THE NORTHEAST, AS SHOWN ON THE SURFACE CONTOURS. TOPOGRAPHY/CONTOURS ARE BASED ON SURVEY DATA PROVIDED BY ALL VALLEY SURVEYING.

2. OVERALL EXISTING GRADING AND DRAINAGE PATTERN TO REMAIN UNCHANGED DURING AND AFTER CONSTRUCTION WITH THE EXCEPTION OF AREAS USED FOR DRAINAGE FEATURES. ELEVATED ROAD SECTIONS WILL BE USED TO CREATE INFILTRATION BASINS. FLOOD AREAS AND FLOW PATTERN ARROWS ARE SHOWN ON THIS SHEET AND SHEETS C-03 AND C-04.

3. EQUIPMENT PADS WILL BE GRADED AS REQUIRED PER MANUFACTURER SPECIFICATIONS.

LEGEND:

- = SURVEY CONTROL MONUMENT AS NOTED
- = LOS ANGELES COUNTY BENCHMARK AS NOTED
- = TREE AS NOTED
- = STREET SPEED LIMIT SIGN
- = PADDLE MARKER POST
- = POWER POLE
- = GUY WIRE
- = FENCE
- = MAILBOXES
- FL = FLOW LINE
- EP = EDGE OF PAVEMENT
- = EDGE OF PAVEMENT

- TYP. = TYPICAL
- MIN = MINIMUM
- ROW = RIGHT OF WAY
- ℄ = CENTERLINE
- FENCE LINE
- UNDERGROUND LINE
- PROPERTY LINE (AFTER DEDICATIONS)
- PROPERTY LINE (CURRENT)
- PARCEL LINE
- CONTOUR LINE
- EASEMENT (SEE SHEETS G-01 AND G-02)
- BLUELINE STREAM (FROM USGS)
- FLOOD ZONE BOUNDARY DELINEATION
- INFILTRATION BASIN FLOOD AREA
- ELEVATED ROAD SECTION

EARTHWORK QUANTITIES:

OVEREXCAVATION	=	32,900 CUBIC YARDS
CUT	=	3,100 CUBIC YARDS
FILL	=	3,100 CUBIC YARDS

CUT & FILL QUANTITIES INCLUDE INVERTER PADS, SUBSTATION, BASINS, AND ELEVATED ROAD BED FOR DRAINAGE FEATURES.

OVEREXCAVATION QUANTITY INCLUDES ACCESSIBLE FIRE ROAD.

SURVEY INFORMATION:

TOPOGRAPHIC MAP AND 1' CONTOURING PREPARED BY ALL VALLEY SURVEYING, JANUARY 20, 2012 & SEPTEMBER 2, 2012.

SURVEYOR:

LARRY E. JERNIGAN, PLS #5924
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA 93534
(661) 942-3639

BASIS OF BEARINGS:

SEE TOPOGRAPHIC MAP SHEETS G-01 & G-02.

BENCHMARK:

SEE TOPOGRAPHIC MAP SHEETS G-01 & G-02.

NOTE:

EXISTING SURVEYED ELEVATIONS ARE SHOWN IN FEET. SURVEY ON EAST SIDE IN '( )' ADD 2500'.

R2011-00801 (RCUP201100072) C-02

REGISTERED PROFESSIONAL ENGINEER JULIE ANN DELANEY No.C54558 CIVIL STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/22/13	REVISIONS PER AGENCY	JD	SP
B	09/05/13	EXPANDED SITE	JD	SP
A	05/18/11	INITIAL SUBMITTAL	TWC	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs: 3267-003-001, 3267-003-002 & 3267-003-003

SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks

Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

DRAWING: GRADING PLAN

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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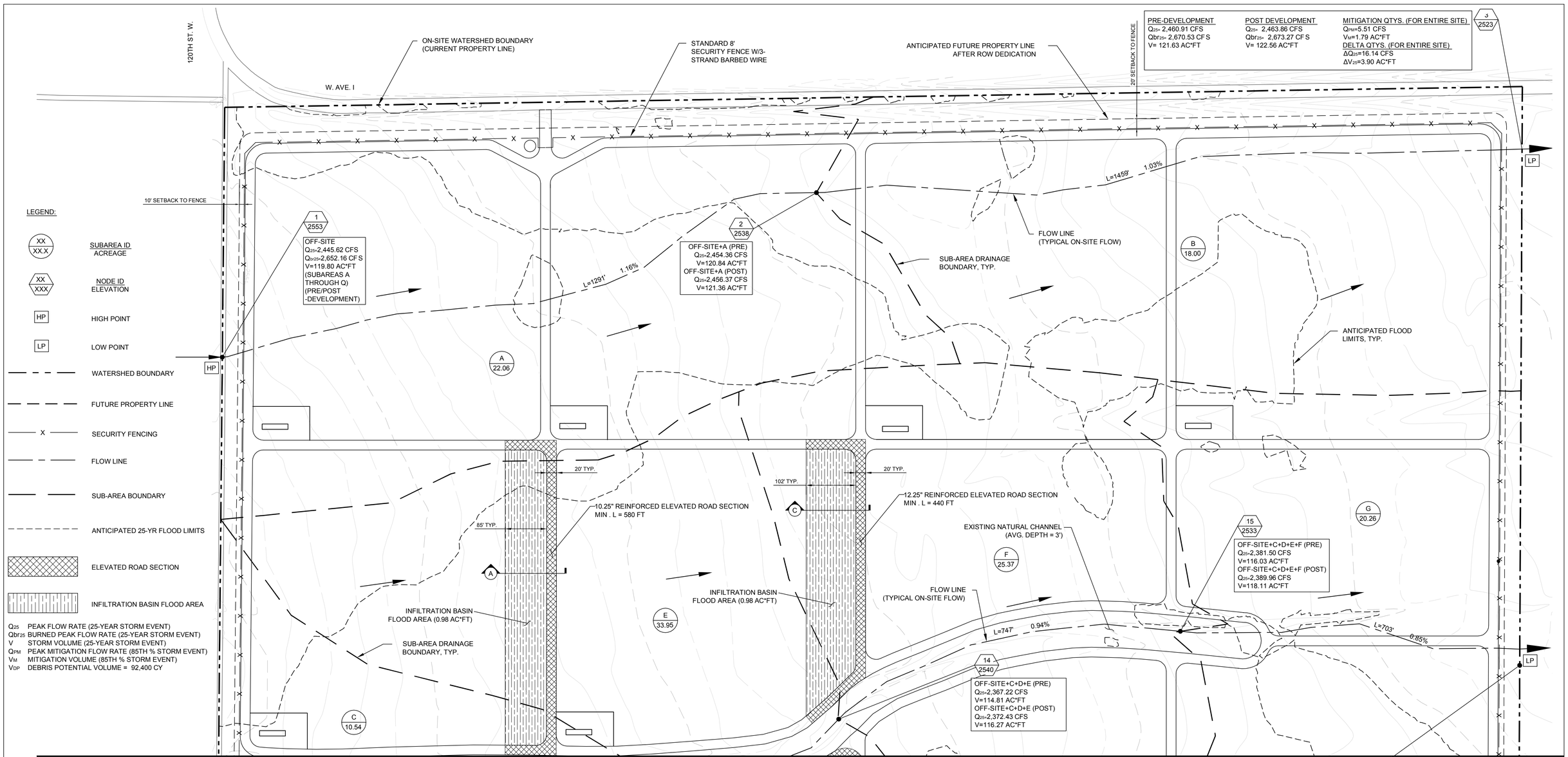
PLOT/UPDATE: Dec 19, 2013 - 12:3:56 PM



MATCHLINE: SEE SHEET C-04

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) WITHIN A FEMA ZONE A AND ZONE X, UNSHADED.
9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 0.4%, AND THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 2.0%. SIMILAR INCREASES ARE ANTICIPATED FOR THE DEPTHS AND VELOCITIES DUE TO THE SMALL INCREASE IN PEAK FLOW RATES (<1%). THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. THE POST-DEVELOPMENT DOES NOT INCLUDE THE MITIGATION EFFECTS OF THE BASINS. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

PRE-DEVELOPMENT
Q25= 2,392.9 CFS
Qbr25= 2,605.25 CFS
V= 117.01 AC*FT

POST DEVELOPMENT
Q25= 2,403.96 CFS
Qbr25= 2,615.46 CFS
V= 119.58 AC*FT

MITIGATION QTYS. (FOR ENTIRE SITE)
QPM=5.51 CFS
VM=1.79 AC*FT
DELTA QTYS. (FOR ENTIRE SITE)
ΔQ25=16.14 CFS
ΔV25=3.90 AC*FT

16 2527

0 50 100 200
SCALE: 100

N

R2011-00801 (RCUP201100072) C-03

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs: 3267-003-001, 3267-003-002 & 3267-003-003

SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks

Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100072 ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

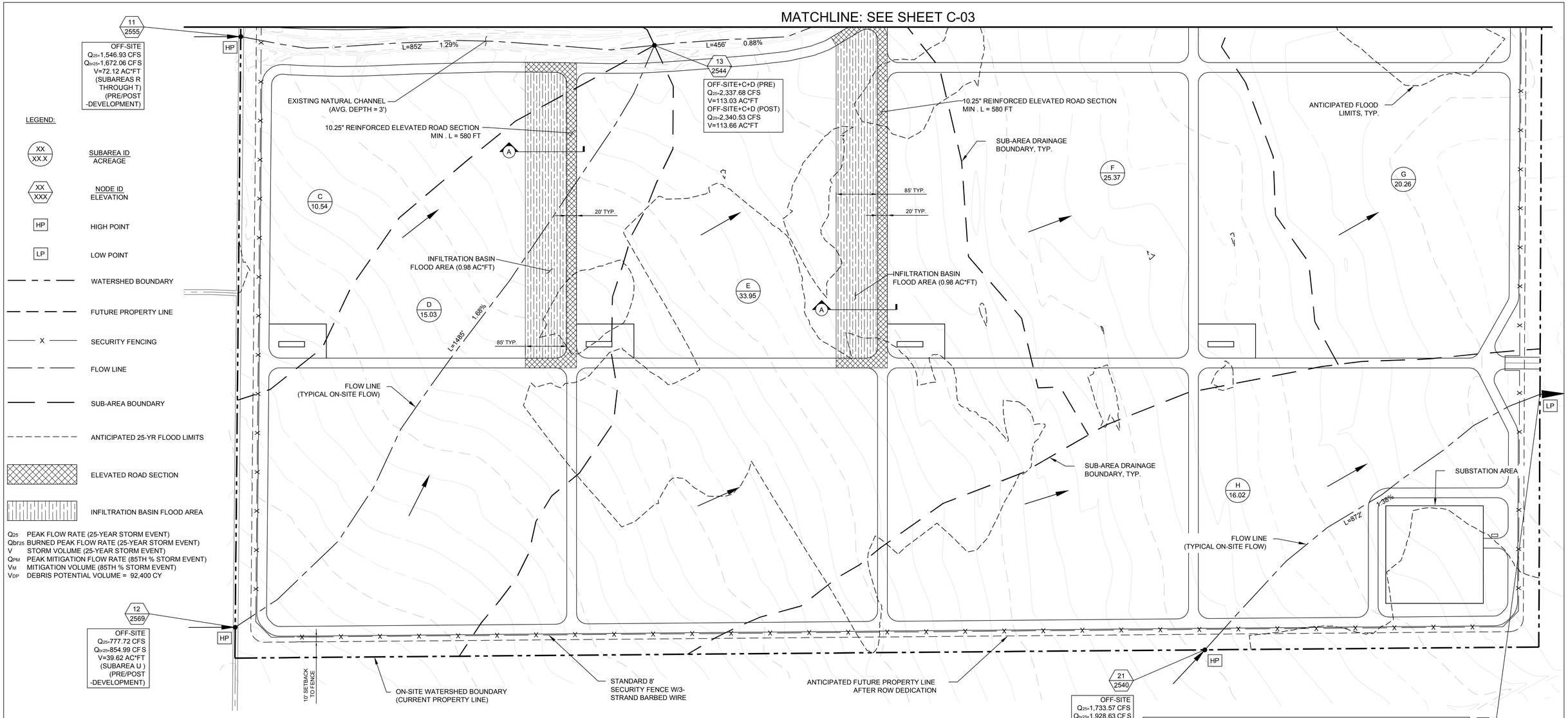
SILVERADO power

PROJECT 5
SILVER SUN GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\04546\135-04546-12001\SUPPORTDOCS\CALCS\HYDROLOGY\11\FINAL DESIGN\ONSITE HYDROLOGY C-03.DWG
PLOT/UPDATE: Dec 12, 2013 11:0:53 AM

MATCHLINE: SEE SHEET C-03



LEGEND:

- XX / XX.X — SUBAREA ID / ACREAGE
- XX / XXX — NODE ID / ELEVATION
- HP — HIGH POINT
- LP — LOW POINT
- WATERSHED BOUNDARY
- FUTURE PROPERTY LINE
- X — SECURITY FENCING
- FLOW LINE
- SUB-AREA BOUNDARY
- ANTICIPATED 25-YR FLOOD LIMITS
- ELEVATED ROAD SECTION
- INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Qbr_{25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = 92,400 CY

PRE-DEVELOPMENT	POST DEVELOPMENT	MITIGATION QTYS. (FOR ENTIRE SITE)
Q_{25}= 1,743.21 CFS	Q_{25}= 1,745.34 CFS	Q_{PM}=5.51 CFS
Qbr_{25}= 1,939.77 CFS	Qbr_{25}= 1,941.77 CFS	V_M=1.79 AC*FT
V= 93.45 AC*FT	V= 93.85 AC*FT	DELTA QTYS. (FOR ENTIRE SITE)
		ΔQ_{25}=16.14 CFS
		ΔV_{25}=3.90 AC*FT

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) WITHIN A FEMA ZONE A AND ZONE X, UNSHADED.
9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATES (Q_{50}) INCREASED BY MAXIMUM OF 0.4%, AND THE VOLUMES (V_{50}) INCREASED BY A MAXIMUM OF 2.0%. SIMILAR INCREASES ARE ANTICIPATED FOR THE DEPTHS AND VELOCITIES DUE TO THE SMALL INCREASE IN PEAK FLOW RATES (<1%). THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. THE POST-DEVELOPMENT DOES NOT INCLUDE THE MITIGATION EFFECTS OF THE BASINS. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

0 50 100 200
SCALE: 100

N

R2011-00801 (RCUP201100072) C-04

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs: 3267-003-001, 3267-003-002 & 3267-003-003
SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks
Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR RUP-201100072
ON-SITE DRAINAGE MAP

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN
GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\04546\135--04546--12001\SUPPORTDOCS\CALCS\HYDROLOGY\11\FINAL DESIGN\ONSITE HYDROLOGY C-04.DWG
PLOT/UPDATE: Dec 6, 2013 1:41:23 PM

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 5	A	22.06	0.01	25	120	1291	0.0116	4.2	29	1.10	0.55	0.36	8.74	0.34	10.47	1.04
Project 5	B	18.00	0.01	25	120	1459	0.0103	4.0	30	1.06	0.54	0.35	6.55	0.34	7.90	0.79
Project 5	C	10.54	0.01	25	120	852	0.0129	4.4	19	1.40	0.43	0.43	6.35	0.34	7.33	0.54
Project 5	D	15.03	0.01	25	120	1485	0.0166	4.4	28	1.17	0.37	0.38	6.68	0.34	7.92	0.75
Project 5	E	33.95	0.01	25	120	456	0.0088	4.4	12	1.74	0.50	0.50	29.54	0.34	33.15	1.78
Project 5	F	25.37	0.01	25	120	747	0.0094	4.2	19	1.34	0.42	0.42	14.28	0.34	16.57	1.22
Project 5	G	20.26	0.01	25	120	706	0.0085	4.2	19	1.34	0.42	0.42	11.40	0.34	13.23	0.98
Project 5	H	16.02	0.01	25	120	872	0.0138	4.4	19	1.40	0.43	0.43	9.64	0.34	11.14	0.82
Project 5	A	22.06	0.01	50	120	1291	0.0116	4.8	24	1.37	0.43	0.43	13.00	0.34	15.01	1.25
Project 5	B	18.00	0.01	50	120	1459	0.0103	4.6	29	1.20	0.38	0.39	8.42	0.34	9.93	0.95
Project 5	C	10.54	0.01	50	120	852	0.0129	5.0	15	1.78	0.51	0.51	9.57	0.34	10.70	0.64
Project 5	D	15.03	0.01	50	120	1485	0.0166	5.0	22	1.49	0.46	0.46	10.30	0.34	11.74	0.91
Project 5	E	33.95	0.01	50	120	456	0.0088	5.0	11	2.06	0.55	0.55	38.47	0.34	42.43	2.08
Project 5	F	25.37	0.01	50	120	747	0.0094	4.8	16	1.66	0.49	0.49	20.64	0.34	23.24	1.46
Project 5	G	20.26	0.01	50	120	706	0.0085	4.8	15	1.71	0.50	0.50	17.32	0.34	19.43	1.17
Project 5	H	16.02	0.01	50	120	872	0.0138	5.0	15	1.78	0.51	0.51	14.54	0.34	16.26	0.98

ON-SITE HYDROLOGY (POST-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frecuency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 5	A	22.06	0.1	25	120	1291	0.0116	4.2	26	1.16	0.37	0.42	10.25	0.34	12.40	1.56
Project 5	B	18.00	0.1	25	120	1459	0.0103	4.0	30	1.06	0.34	0.40	7.49	0.34	8.73	1.20
Project 5	C	10.54	0.1	25	120	852	0.0129	4.4	17	1.47	0.45	0.50	7.75	0.34	8.65	0.80
Project 5	D	15.03	0.1	25	120	1485	0.0166	4.4	25	1.23	0.39	0.44	8.13	0.34	9.30	1.12
Project 5	E	33.95	0.1	25	120	456	0.0088	4.4	12	1.74	0.50	0.54	31.90	0.34	35.15	2.61
Project 5	F	25.37	0.1	25	120	747	0.0094	4.2	17	1.41	0.44	0.49	17.53	0.34	19.63	1.84
Project 5	G	20.26	0.1	25	120	706	0.0085	4.2	17	1.41	0.44	0.49	14.00	0.34	15.68	1.47
Project 5	H	16.02	0.1	25	120	872	0.0138	4.4	17	1.47	0.45	0.50	11.72	0.34	13.14	1.23
Project 5	A	22.06	0.1	50	120	1291	0.0116	4.8	21	1.46	0.45	0.50	16.10	0.34	17.97	1.85
Project 5	B	18.00	0.1	50	120	1459	0.0103	4.6	26	1.26	0.40	0.45	10.21	0.34	11.62	1.41
Project 5	C	10.54	0.1	50	120	852	0.0129	5.0	14	1.84	0.52	0.56	10.86	0.34	11.89	0.94
Project 5	D	15.03	0.1	50	120	1485	0.0166	5.0	21	1.52	0.46	0.50	11.42	0.34	12.76	1.32
Project 5	E	33.95	0.1	50	120	456	0.0088	5.0	10	2.15	0.56	0.59	43.07	0.34	46.78	3.02
Project 5	F	25.37	0.1	50	120	747	0.0094	4.8	15	1.71	0.50	0.54	23.43	0.34	25.81	2.14
Project 5	G	20.26	0.1	50	120	706	0.0085	4.8	14	1.77	0.51	0.55	19.72	0.34	21.66	1.72
Project 5	H	16.02	0.1	50	120	872	0.0138	5.0	15	1.78	0.51	0.55	15.68	0.34	17.23	1.42
Project 5	A	22.06	0.1	MIT.	120	1291	0.0116	0.75	30	0.10	0.10	0.18	0.75	0.34	0.98	0.24
Project 5	B	16.00	0.1	MIT.	120	1459	0.0103	0.75	30	0.10	0.10	0.18	0.62	0.34	0.80	0.20
Project 5	C	10.54	0.1	MIT.	120	852	0.0129	0.75	30	0.10	0.10	0.18	0.36	0.34	0.47	0.12
Project 5	D	15.03	0.1	MIT.	120	1485	0.0166	0.75	30	0.19	0.10	0.18	0.51	0.34	0.67	0.17
Project 5	E	33.95	0.1	MIT.	120	456	0.0088	0.75	30	0.19	0.10	0.18	1.16	0.34	1.51	0.38
Project 5	F	25.37	0.1	MIT.	120	747	0.0094	0.75	30	0.19	0.10	0.18	0.87	0.34	1.13	0.28
Project 5	G	20.26	0.1	MIT.	120	706	0.0085	0.75	30	0.19	0.10	0.18	0.69	0.34	0.90	0.22
Project 5	H	16.02	0.1	MIT.	120	872	0.0138	0.75	30	0.19	0.10	0.18	0.55	0.34	0.71	0.18

NOTE: FOR INFILTRATION BASIN MITIGATION VOLUME, SUM MIT. FREQUENCY VOLUMES UNDER POST-DEVELOPMENT TABLE. V_{PM}=1.79 AC*FT.

DELTA QUANTITIES FOR DRAINAGE AREA A:
ΔQ25 = 10.75 - 8.74 = 2.01 CFS
ΔV25 = 1.56 - 1.04 = 0.52 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA B:
ΔQ25 = 7.49 - 6.55 = 0.94 CFS
ΔV25 = 1.20 - 0.79 = 0.41 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA C
ΔQ25 = 7.75 - 6.35 = 1.40 CFS
ΔV25 = 0.80 - 0.54 = 0.26 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA D
ΔQ25 = 8.13 - 6.68 = 1.45 CFS
ΔV25 = 1.12 - 0.75 = 0.37 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA E
ΔQ25 = 31.90 - 29.54 = 2.36 CFS
ΔV25 = 2.61 - 1.78 = 0.83 AC*FT

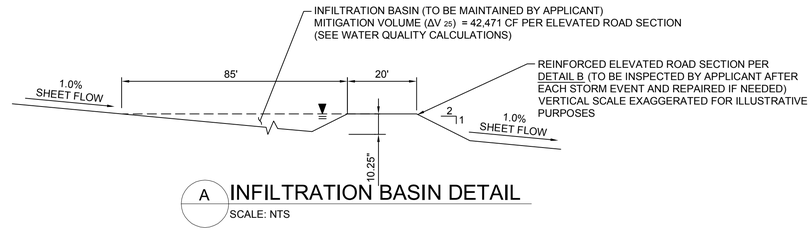
DELTA QUANTITIES FOR DRAINAGE AREA F
ΔQ25 = 17.53 - 14.28 = 3.25 CFS
ΔV25 = 1.84 - 1.22 = 0.62 AC*FT

DELTA QUANTITIES FOR DRAINAGE AREA G
ΔQ25 = 14.00 - 11.40 = 2.60 CFS
ΔV25 = 1.47 - 0.98 = 0.49 AC*FT

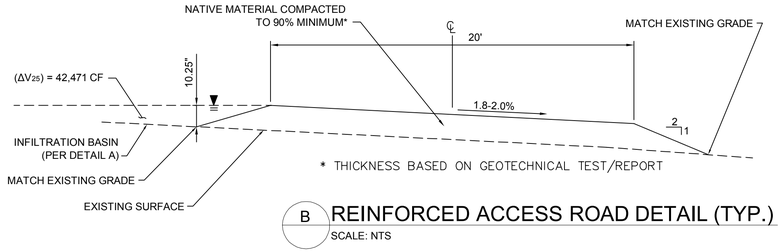
DELTA QUANTITIES FOR DRAINAGE AREA H
ΔQ25 = 11.77 - 9.64 = 2.13 CFS
ΔV25 = 1.22 - 0.82 = 0.40 AC*FT

TOTAL DELTA QUANTITIES
ΔQ25 = 16.14 CFS
ΔV25 = 3.90 AC*FT

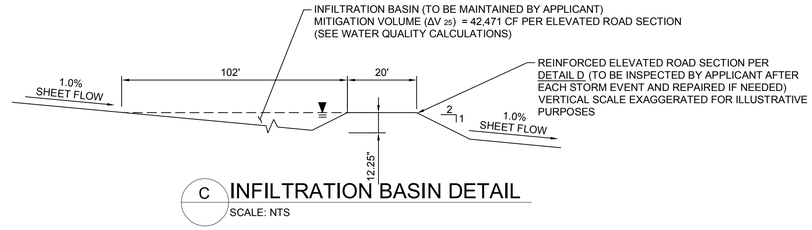
NOTE: DUE TO THE LID Δ QUANTITIES ABOVE BEING GREATER THAN THE MITIGATION QUANTITIES (Q_{PM} AND V_{PM}) THEY REPRESENT THE WORST CASE SCENARIO BETWEEN THE PRE-/POST DEVELOPMENT CONDITIONS AND THEREFORE SHALL BE USED FOR SIZING THE INFILTRATION BASINS.



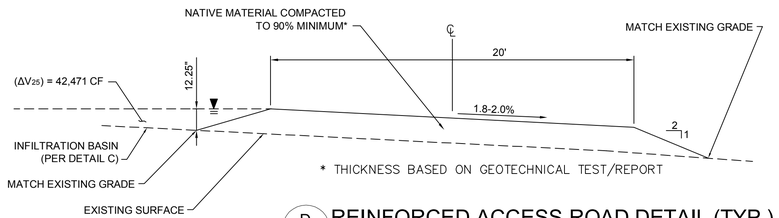
A INFILTRATION BASIN DETAIL
SCALE: NTS



B REINFORCED ACCESS ROAD DETAIL (TYP.)
SCALE: NTS



C INFILTRATION BASIN DETAIL
SCALE: NTS



D REINFORCED ACCESS ROAD DETAIL (TYP.)
SCALE: NTS

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00801 (RCUP201100072) C-05

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System
APNs: 3267-003-001, 3267-003-002 & 3267-003-003
SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks
Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100072
ON-SITE DRAINAGE MAP

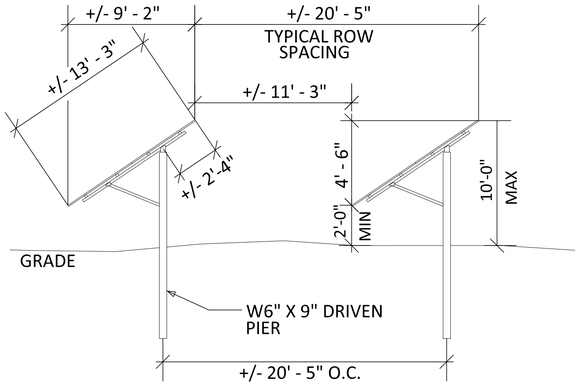
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN
GREENWORKS
LOS ANGELES COUNTY, CA

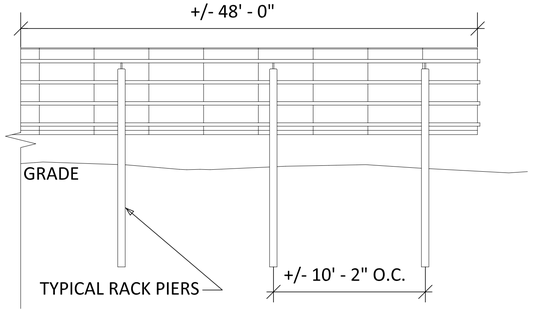
2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

P:\245441\35-44546-12001\SUPPORTDOCS\CALCS\HYDROLOGY\11\FINAL DESIGN\ONSITE HYDROLOGY C-05.DWG
PLOT UPDATE: Dec 3, 2013 4:8:2 PM



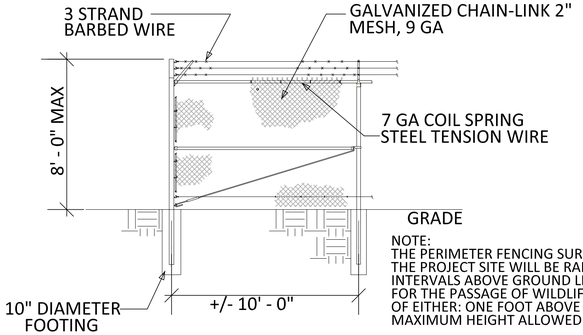
TYPICAL SOLAR ARRAY RACK DETAIL AND END ELEVATION

NOT TO SCALE



SOLAR ARRAY RACK DETAIL ELEVATION

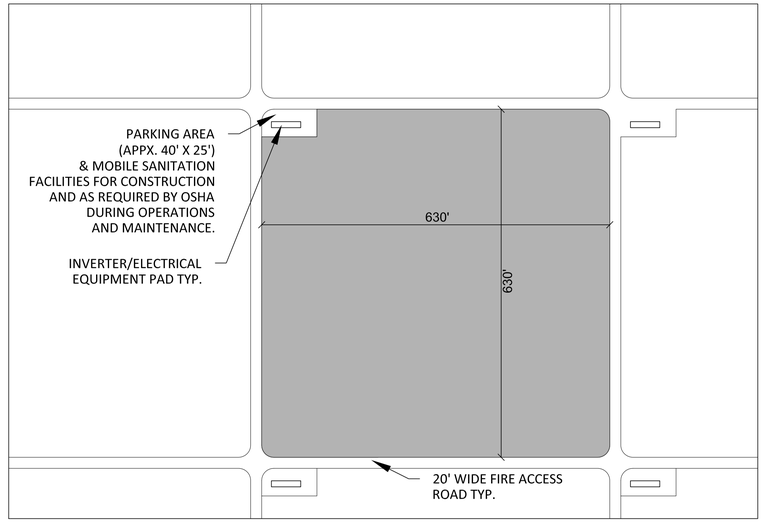
NOT TO SCALE



NOTE:
THE PERIMETER FENCING SURROUNDING THE PROJECT SITE WILL BE RAISED AT REGULAR INTERVALS ABOVE GROUND LEVEL TO ALLOW FOR THE PASSAGE OF WILDLIFE TO THE LESSER OF EITHER: ONE FOOT ABOVE GRADE OR TO THE MAXIMUM HEIGHT ALLOWED BY THE PUC.

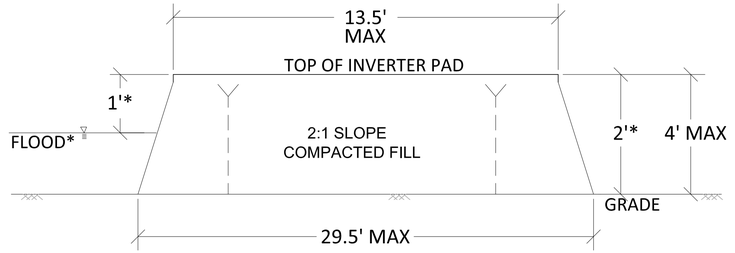
CHAIN LINK SECURITY FENCE ELEVATION

NOT TO SCALE



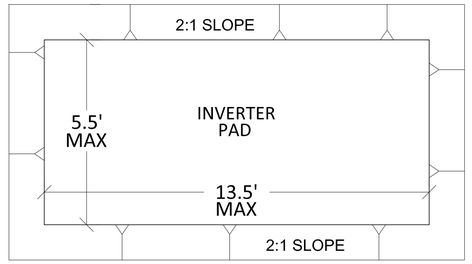
ARRAY BLOCK DETAIL (TYPICAL)

NOT TO SCALE



*TOP OF INVERTER PAD TO BE 1' MINIMUM ABOVE FLOOD WATER ELEVATION AS DETERMINED IN FINAL HYDROLOGY REPORT AND 2' ABOVE GRADE IN FEMA ZONE A.

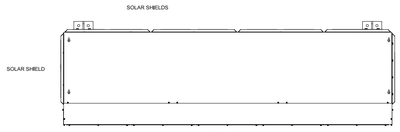
ELEVATION VIEW

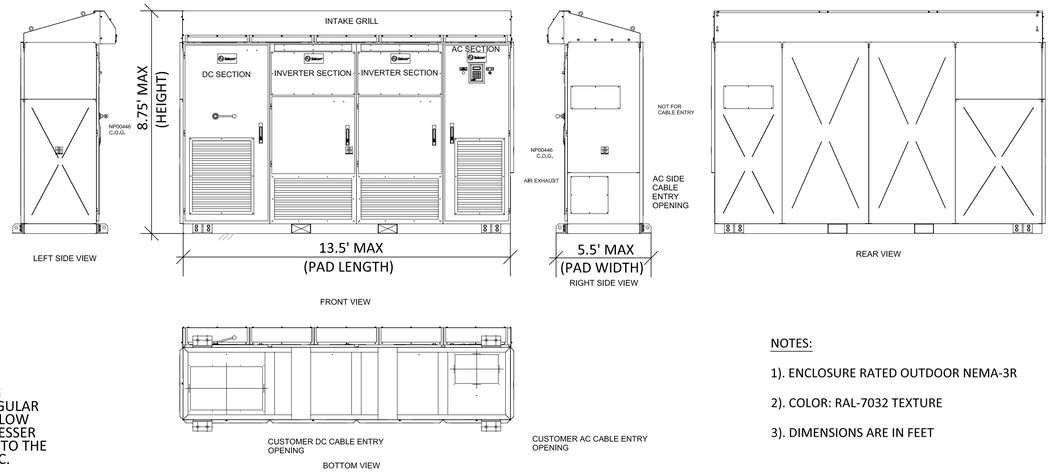


PLAN VIEW

RAISED INVERTER PAD DETAILS FOR FLOOD AREAS AS NEEDED

NOT TO SCALE





NOTES:

1). ENCLOSURE RATED OUTDOOR NEMA-3R

2). COLOR: RAL-7032 TEXTURE

3). DIMENSIONS ARE IN FEET

INVERTER PAD DETAILS (TYPICAL)

NOT TO SCALE

R2011-00801 (RCUP201100072) C-06

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
D	12/22/13	REVISIONS PER AGENCY	JD	SP
C	09/05/13	ARRAY BLOCK REVISION	JD	SP
B	02/15/12	REVISIONS FOR COUNTY	JD	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs: 3267-003-001, 3267-003-002 & 3267-003-003

SCH # 2012061068

Project Name: Project 5 Silver Sun Greenworks

Project Address: 120TH ST W & W AVE I Lancaster, Los Angeles County, CA

DRAWING: DETAIL SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN GREENWORKS
LOS ANGELES COUNTY, CA

C:\USERS\JULIE.DELANEY\DESKTOP\SP_LAYP--5--11\D--06--DETAIL--11.DWG
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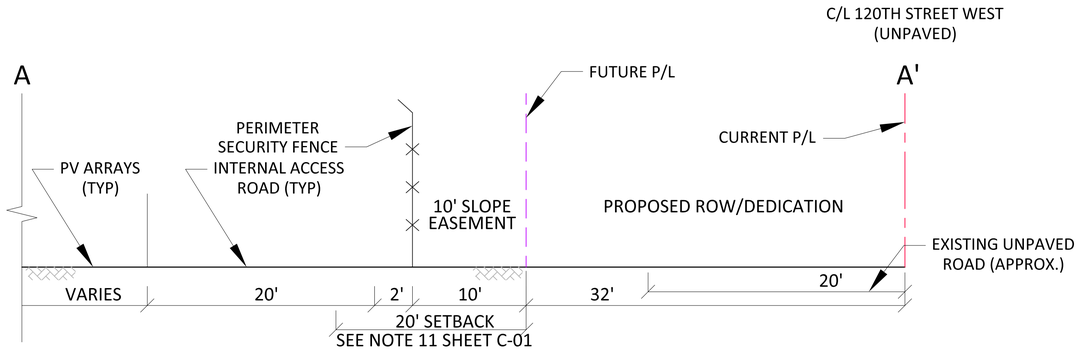
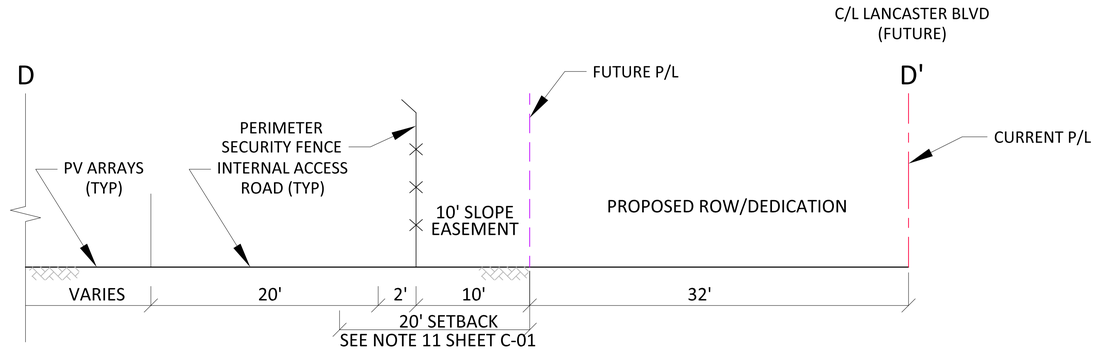


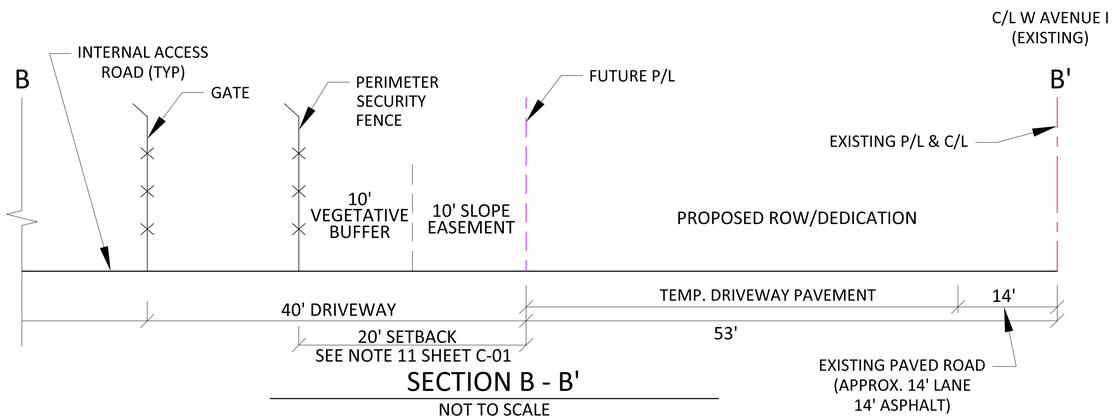
SECTION A - A'

NOT TO SCALE



SECTION D - D'

NOT TO SCALE



SECTION B - B'

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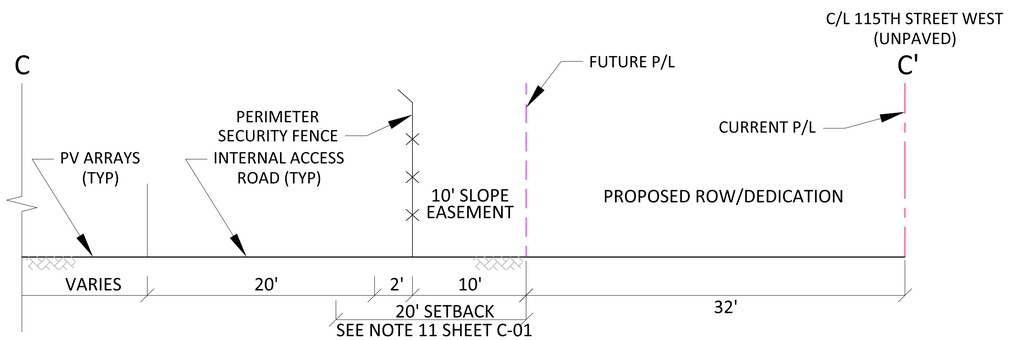

SECTION C - C'

NOT TO SCALE

R2011-00801 (RCUP201100072) C-07

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/22/13	REVISIONS PER AGENCY	JD	SP
B	09/05/13	ADDED LAND	JD	SP
A	02/15/12	ADDED SHEET	JD	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs: 3267-003-001, 3267-003-002 & 3267-003-003

SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks

Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

DRAWING: SECTION SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN
GREENWORKS
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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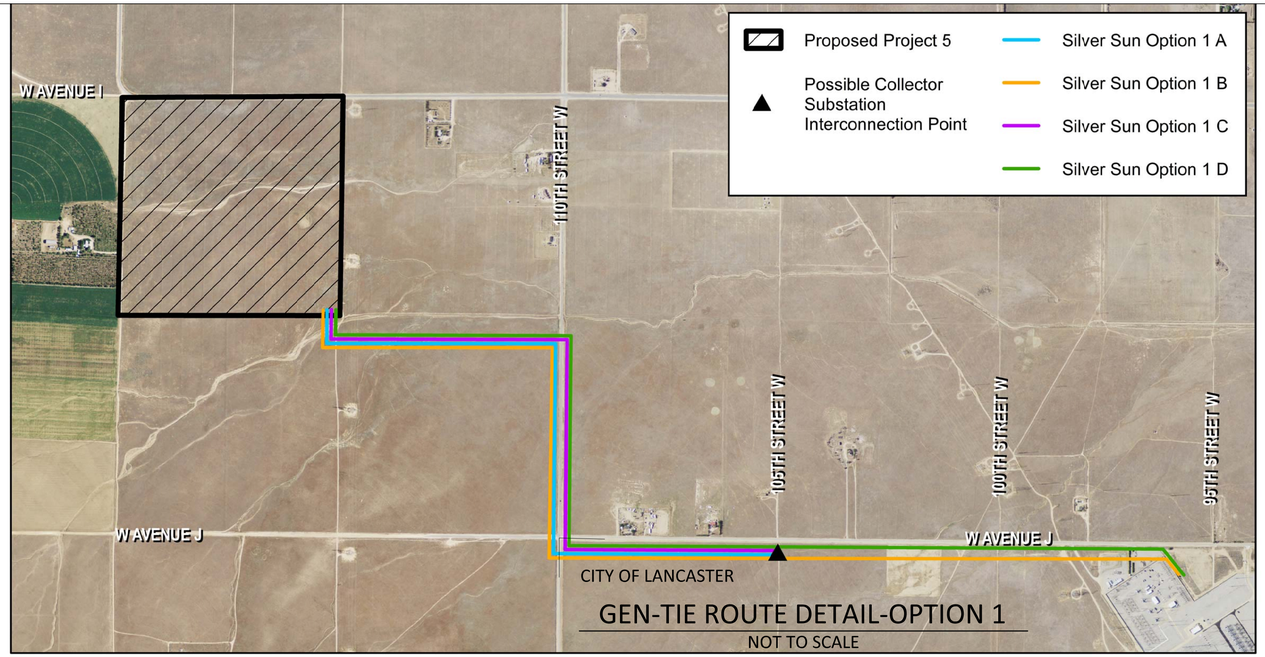
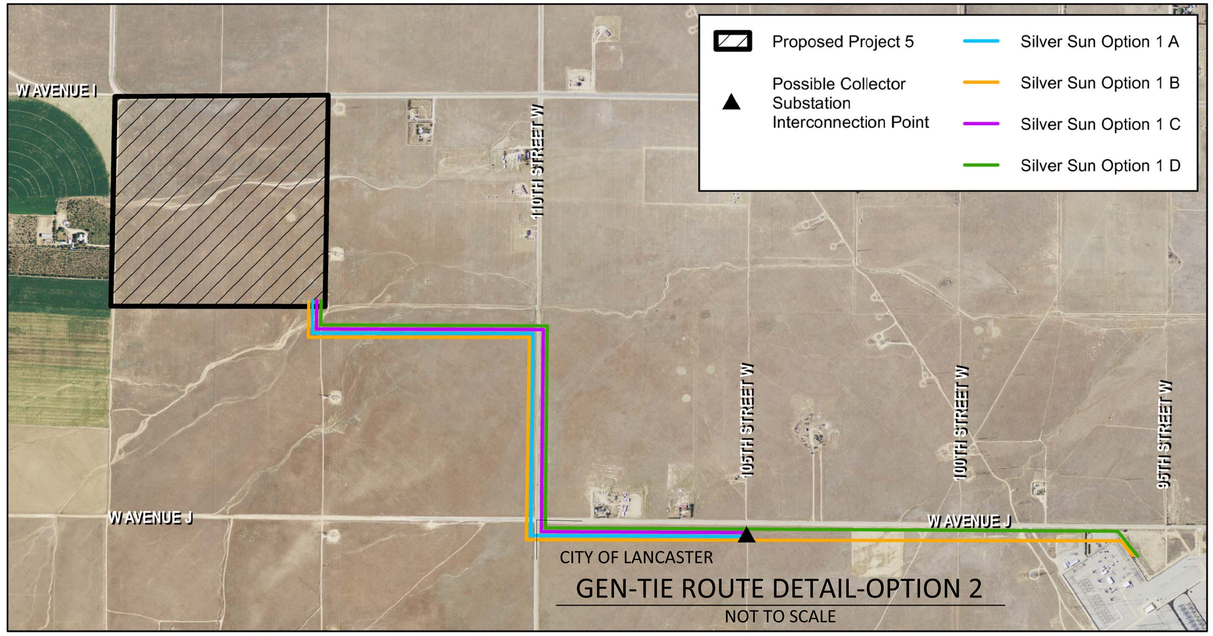


GEN-TIE ROUTE DETAIL-OPTION 1

NOT TO SCALE



GEN-TIE ROUTE DETAIL-OPTION 2

NOT TO SCALE

NOTES:

1. ALL GEN-TIE OPTIONS SHOWN ARE NEW, WITH NO TIE-INS TO EXISTING GEN-TIES.
2. GEN-TIE OPTIONS WITHIN LOS ANGELES COUNTY LIMITS/JURISDICTION WILL BE UNDERGROUND.
3. GEN-TIE OPTIONS WITHIN CITY OF LANCASTER LIMITS/JURISDICTION WILL BE UNDERGROUND OR ABOVE GROUND.

R2011-00801 (RCUP201100072) C-08

REGISTERED PROFESSIONAL ENGINEER — JULIE ANN DELANEY — No.C54558 — CIVIL — STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
B	12/22/13	REVISIONS PER AGENCY	JD	SP
A	09/05/13	ADDED SHEET	JD	SP

Solar PV System Summary

20MW AC Solar Photovoltaic Generation System

APNs: 3267-003-001, 3267-003-002 & 3267-003-003

SCH # 2012061068

Project Name:
Project 5 Silver Sun Greenworks

Project Address:
120TH ST W & W AVE I
Lancaster,
Los Angeles County, CA

DRAWING: GEN-TIE ROUTE OPTIONS

APPLICANT:

Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 5
SILVER SUN
GREENWORKS
LOS ANGELES COUNTY, CA

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APPENDIX B-14.6

PROJECT 6 LANCASTER WAD
NOISE SITE PLANS

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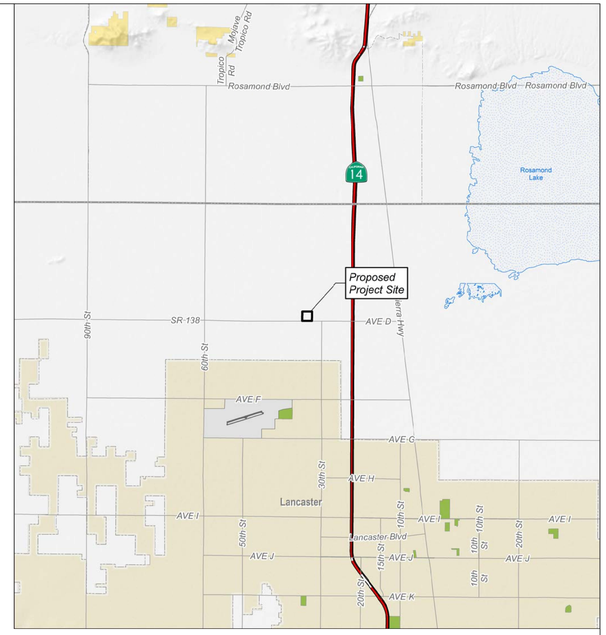
LOCATION MAP
NOT TO SCALE

PROJECT 6
LANCASTER WAD
LOS ANGELES COUNTY, CALIFORNIA



VICINITY MAP
NOT TO SCALE

DRAWING INDEX

DRAWING NO.	TITLE	REVISION
T-01	TITLE SHEET	C
G-01	TOPOGRAPHIC MAP	A
C-01	SITE PLAN	C
C-02	GRADING PLAN	B
C-03	ON-SITE DRAINAGE MAP	C
C-04	ON-SITE DRAINAGE MAP	C
C-05	DETAIL SHEET	D
C-06	SECTION SHEET	C

SURVEY INFORMATION:

TOPOGRAPHIC MAP AND 1' CONTOURING PREPARED BY ALL VALLEY SURVEYING.
BENCHMARK AND BASIS OF BEARINGS SHOWN ON TOPOGRAPHIC MAP, DRAWING G-01.

SURVEYOR:

LARRY E. JERNIGAN, PLS #5924
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA 93534
(661) 942-3639

R2011-00805 (RCUP2011-00074) T-01

REGISTERED PROFESSIONAL ENGINEER — JULIE ANN DELANEY — No.C54558 — CIVIL — STATE OF CALIFORNIA

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/22/13	REVISIONS PER AGENCY	JD	SP
B	09/05/13	REVISED ARRAY BLOCK	JD	SP
A	2/09/12	ADDED NEW SHEET	JD	SP

Solar PV System Summary

5MW AC Solar Photovoltaic Generation System

APN:
3115-010-004

SCH # 2012061068

Project Name:
Project 6 Lancaster WAD

Project Address:
W Ave. D & 35th St. W
Lancaster,
Los Angeles County, CA

DRAWING: TITLE SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power
PROJECT 6
LANCASTER WAD
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

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PLOT/UPDATE: Dec 22, 2013 12:2.34 PM

WEST AVE C8

N:2107720.8880
E:6500951.7040
EL:2344.88

WEST ¼ CORNER SECTION 18, T8N, R12W/CL INTERSECTION
FOUND A COUNTY SURVEYOR MONUMENT IN WELL PER PWFB 3922 PAGE 102

N 89°13'18" E
2616.13'

N:2110400.7230
E:6503558.4900
EL:2338.04

NORTH ¼ CORNER SECTION 18, T8N, R12W/CL INTERSECTION
FOUND A COUNTY ENGINEER MONUMENT IN WELL PER PWFB 4022 PAGE 127

2644.32'

CENTER SECTION 18, T8N, R12W
NOTHING FOUND, ESTABLISHED BY INTERSECTION

N:2107756.4230
E:6503567.5945

5288.34'

1322.01'

1333.61'

5283.35'
1333.61'

N:2107792.6520
E:6506234.5710
EL:2327.26

EAST ¼ CORNER SECTION 18, T8N, R12W/CL INTERSECTION
FOUND A COUNTY SURVEYOR MONUMENT IN WELL PER PWFB 3923 PAGE 15A

1322.91'

1323.805'

2647.61'

N 89°15'37" E
1333.295'

2666.59'
1333.295'

2645.82'

35TH WEST

30TH WEST

1323.805'
N 00°10'15" W

1272.01'

1272.91'

N 00°11'50" W

N 00°11'03" W

INSTRUMENT NO. 20110255011
APN 3115-010004

ABANDONED STANDPIPE
D=2.5, H=3.5

ABANDONED STANDPIPE
D=2.5, H=3.5

TOP CONCRETE HEADWALL
EL=2336.32
FL 12" CMP
EL=2334.02

TOP CONCRETE HEADWALL
EL=2337.16
FL 12" CMP
EL=2334.87

TOP CONCRETE HEADWALL
EL=2336.33
FL 12" CMP
EL=2334.06

N:2105112.4160
E:6503576.6980
EL:2337.30

S 1/4 SECTION 18, T8N, R12W/CL INTERSECTION
FOUND A COUNTY ENGINEER MONUMENT IN WELL PER CSFB 4143 PAGE 25

WEST AVE D

N:2105145.0520
E:6506242.4650
EL:2327.92

SE COR SEC 18, T8N, R12W
SECTION CORNER/CL INTERSECTION
FOUND A COUNTY ENGINEER MONUMENT IN WELL PER PWFB 3923 PAGE 36

1332.99'

1332.98'

2665.97'

N 89°17'55" E
1332.98'

FL 12" CMP
EL=2333.43

FL 12" CMP
EL=2335.22

FL 12" CMP
EL=2333.43

SYMBOL LEGEND

- ◎ = STAND PIPE
- ⌧ = POWER POLE
- ⏚ = GUY WIRE
- ⍿ = PADDLE MARKER
- ⊙ = WELL PIPE

SHEET G-01

BASIS OF BEARING	BENCH MARK
DESIGNATION- OBAN PID-EW0819 STATE/COUNTY-CA/LOS ANGELES USGS QUAD-ROSAMOND 1973 SPC CA5- N=2096834.88 E=6517733.23 SPC CA5- COMBINED FACTOR 0.99981691	BM L1462 NAVD 1988, 2004 LANCASTER ADJUSTMENT, ELEV.=2336.348' RDBM TAG IN CTR CONC HDWL 6.4M(21FT) N/O C/L AVE D & 101M(331FT) E/O C/L PROP 35TH ST W

SCALE
HORIZ: 1"= 100'

PROFESSIONAL LAND SURVEYOR
LARRY E JERNIGAN
No. 5924
EXP 12-31-12
STATE OF CALIFORNIA

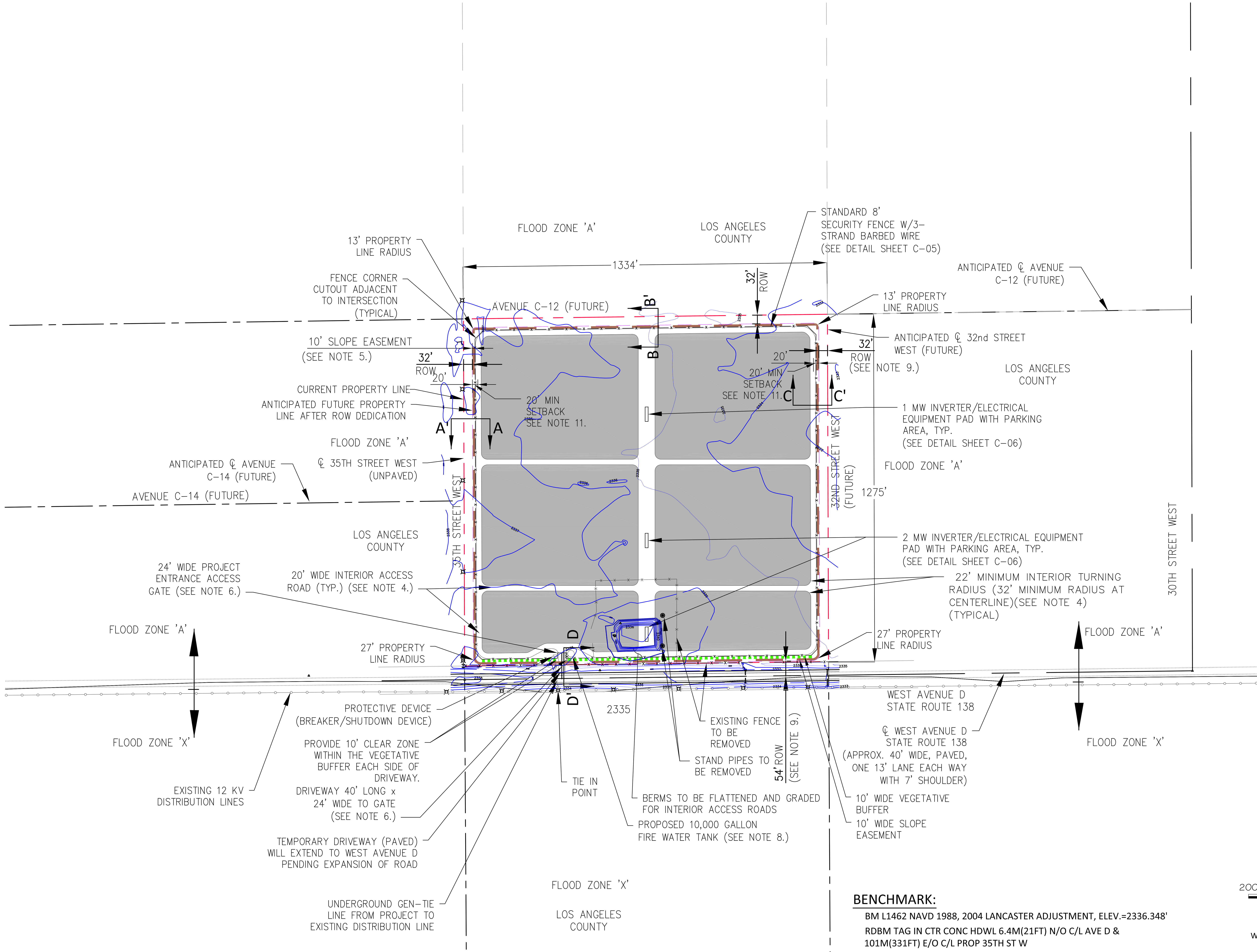
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA. 93534
(661) 942-3639

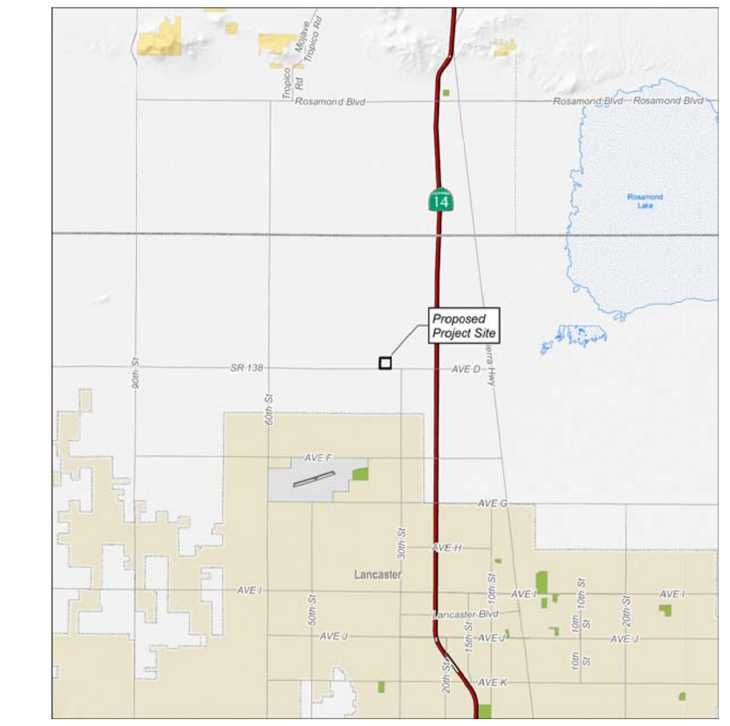
NO.	REVISION	BY	APPR.	DATE
1				
2				
3				

TOPOGRAPHIC MAP
AVENUE D & 35TH STREET WEST
ANTELOPE VALLEY
COUNTY OF LOS ANGELES
STATE OF CALIFORNIA

DATE OF SURVEY
1/18/12

COUNTY PLAN CHECK NUMBER
R2011-00805(RCUP2011-00074)





VICINITY MAP

NO SCALE

PROJECT SITE:

PROJECT SITE IS 39 ACRES (NET)

NOTES:

1. 'ZONE X' AS SHOWN ON PANEL 0150F OF FLOOD INSURANCE RATE MAP NO. 06037C0175F. ZONE "X" DESIGNATED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN. ZONE "A" DESIGNATED AS, "NO BASE FLOOD ELEVATIONS DETERMINED".

2. FIRE DEPARTMENT ACCESS DEVICE AND EMERGENCY CONTACT PLACARD LOCATED AT ALL ENTRANCE GATES.

3. MOBILE SANITATION FACILITY, AS DEFINED BY THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH, CAN BE LOCATED AT ALL PARKING LOCATIONS AND WILL BE LOCATED AT THE NEAREST LOCATION TO CONSTRUCTION AND OPERATIONAL WORKERS ACTIVITY. THE FACILITIES WILL BE KEPT TO LOS ANGELES COUNTY CODE, TITLE 11 – HEALTH & SAFETY, AND CAL-OSHA SANITATION STANDARDS IN SECTION 3360, TITLE 8, CALIFORNIA CODE OF REGULATIONS. MOBILE SANITATION FACILITIES WILL BE MADE AVAILABLE DURING CONSTRUCTION AND AS REQUIRED BY OSHA DURING OPERATIONS AND MAINTENANCE. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-05.

4. INTERIOR ACCESS ROADS WILL BE 20' WIDE, COMPACTED TO 90%, WITH 32 FOOT TURNING RADIUS AT CENTER LINE. THE INNER RADIUS WILL BE 22' AND THE OUTER RADIUS WILL BE 42'. INTERIOR ACCESS ROADS WILL BE PROVIDED TO INVERTER/ELECTRICAL EQUIPMENT PADS AND AROUND THE PERIMETER OF THE PROJECT. SEE ARRAY BLOCK DETAIL (TYPICAL) ON C-05.

5. 10 FOOT WIDE SLOPE EASEMENT WILL BE PROVIDED AROUND PERIMETER.

6. DRIVEWAY ACCESS GATES TO BE SET 40 FEET BACK FROM EDGE OF PROPERTY. DRIVEWAY WILL BE 24 FEET WIDE.

7. ALL DIMENSIONS SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION DURING DETAILED DESIGN.

8. TANK CONNECTIONS PER LOS ANGELES COUNTY FIRE DEPARTMENT.

9. ANTICIPATED ROW SETBACK/DEDICATION FOR FUTURE ROAD DEVELOPMENT. REFER TO SHEET C-06 FOR SECTIONS AND ROW DETAILS.

10. CONTOURS SHOWN ON SITE PLAN, C-01, ARE BASED ON USGS MAP CONTOURS.

11. A 20' MINIMUM SETBACK FROM PROPERTY LINE (AFTER DEDICATIONS) TO ARRAYS OR EQUIPMENT TO BE MAINTAINED ON SITE. PROJECT FENCE, FIRE ROADS, EASEMENTS, AND VEGETATION ARE OK WITHIN THE SETBACK.

LEGEND:

Symbol	Description
MIN	MINIMUM
ROW	RIGHT OF WAY
℄	CENTERLINE
	POWER POLE
—x—x—	FENCE LINE
	OVERHEAD LINE
	UNDERGROUND LINE
	PROPERTY LINE (AFTER DEDICATIONS)
	PROPERTY LINE (CURRENT)
	PARCEL LINE
2336	CONTOUR LINE (1' INTERVAL FROM ALL VALLEY SURVEYING)
	SOLAR ARRAY FIELD
	10' WIDE VEGETATIVE BUFFER
	10' WIDE SLOPE EASEMENT

BENCHMARK:

BM L1462 NAVD 1988, 2004 LANCASTER ADJUSTMENT, ELEV.=2336.348'

RDBM TAG IN CTR CONC HDWL 6.4M(21FT) N/O C/L AVE D & 101M(331FT) E/O C/L PROP 35TH ST W

SEE G-01 AND C-02 FOR ADDITIONAL INFORMATION REGARDING SURVEY.

R2011-00805 (RCUP2011-00074) C-01

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
D	12/22/13	REVISIONS PER AGENCY	JD	SP
C	09/05/13	ARRAY BLOCK REVISIONS	JD	NO
B	02/09/12	REVISIONS FOR COUNTY	JD	SP
A	05/18/11	INITIAL SUBMITTAL	TWC	SP

Solar PV System Summary

5MW AC Solar Photovoltaic Generation System

APN:
3115-010-004
SCH # 2012061068

Project Name:
Project 6 Lancaster WAD

Project Address:
W Ave. D & 35th St. W
Lancaster,
Los Angeles County, CA

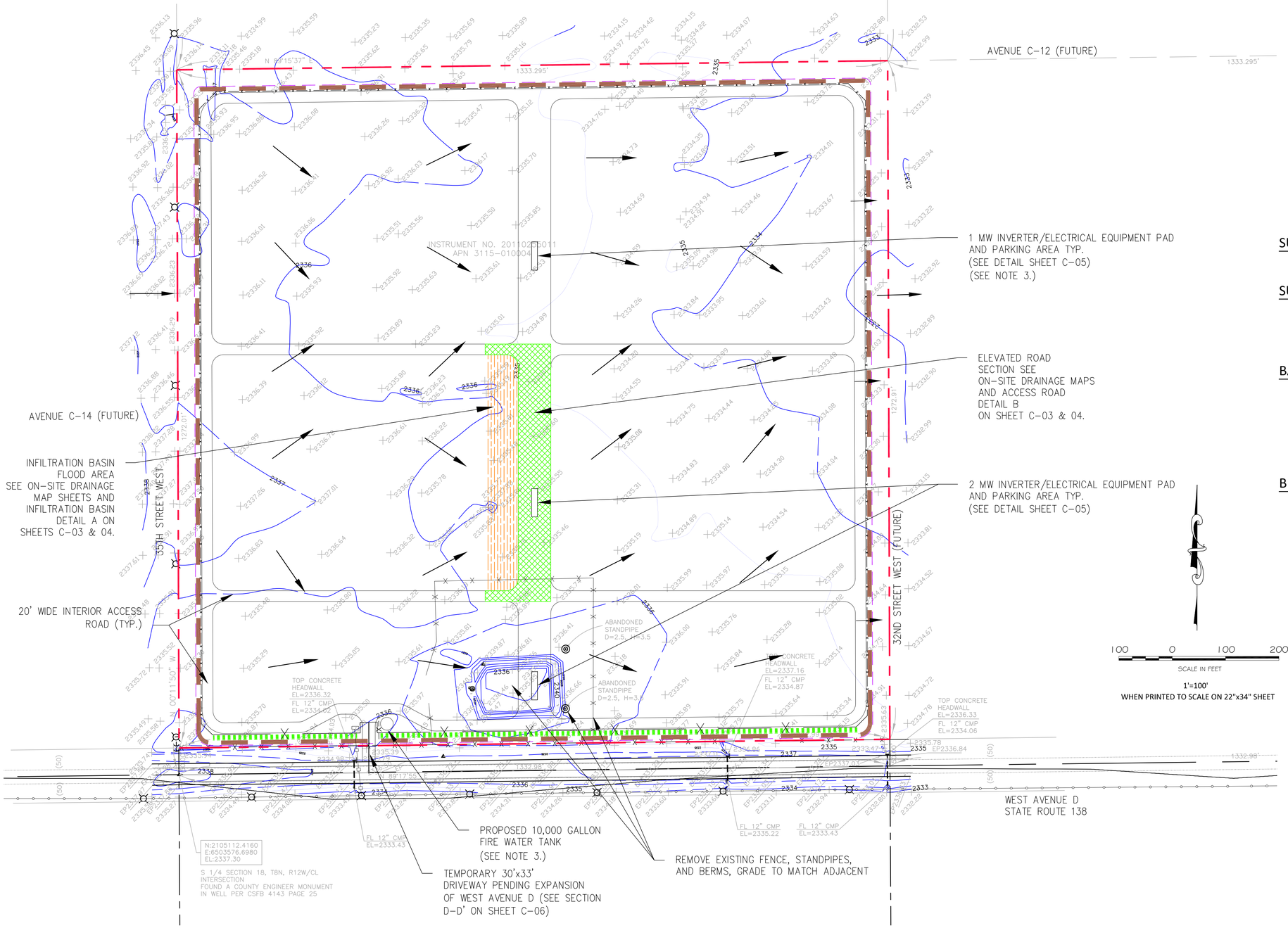
DRAWING: SITE PLAN

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 6
LANCASTER WAD
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



EARTHWORK QUANTITIES:

OVEREXCAVATION	=	31,460 CUBIC YARDS
CUT	=	1,600 CUBIC YARDS
FILL	=	1,600 CUBIC YARDS

CUT & FILL QUANTITIES INCLUDE INVERTER PADS, BASIN, AND ELEVATED ROAD BED FOR DRAINAGE FEATURES.

OVEREXCAVATION QUANTITY INCLUDES ACCESSIBLE FIRE ROAD.

SURVEY INFORMATION:

TOPOGRAPHIC MAP AND 1' CONTOURING PREPARED BY ALL VALLEY SURVEYING, JANUARY 18, 2012

SURVEYOR:

LARRY E. JERNIGAN, PLS #5924
ALL VALLEY SURVEYING
44965 10TH STREET WEST
LANCASTER, CA 93534
(661) 942-3639

BASIS OF BEARINGS:

PID-EW0819
DESIGNATION- OBAN
STATE/COUNTY-CA/LOS ANGELES
USGS QUAD-ROSAMOND 1973

SPC CA5- N=2096834.88 E=6517733.23

SPC CA5- COMBINED FACTOR 0.99981691

BENCHMARK:

BM L1462 NAVD 1988, 2004 LANCASTER ADJUSTMENT, ELEV.=2336.348'

RDBM TAG IN CTR CONC HDWL 6.4M(21FT) N/O C/L AVE D & 101M(331FT) E/O C/L PROP 35TH ST W

NOTES:

1. DRAINAGE ACROSS SITE IS CURRENTLY FROM THE WEST TO THE EAST, AS SHOWN ON THE SURFACE CONTOURS. TOPOGRAPHY/CONTOURS ARE BASED ON SURVEY DATA PROVIDED BY ALL VALLEY SURVEYING.

2. OVERALL EXISTING GRADING AND DRAINAGE PATTERN TO REMAIN UNCHANGED DURING AND AFTER CONSTRUCTION WITH THE EXCEPTION OF AREAS USED FOR DRAINAGE FEATURES. ELEVATED ROAD SECTIONS WILL BE USED TO CREATE INFILTRATION BASINS. FLOOD AREAS AND FLOW PATTERN ARROWS ARE SHOWN ON THIS SHEET AND SHEETS C-03 AND C-04. LIMIT OF GRADING ACTIVITIES WILL BE AT PROPERTY LINE (AFTER DEDICATIONS).

3. EQUIPMENT PADS WILL BE GRADED AS REQUIRED PER MANUFACTURER SPECIFICATIONS.

LEGEND:

TYP.	TYPICAL		
		MIN	MINIMUM
◎	= STAND PIPE	ROW	RIGHT OF WAY
		℄	CENTERLINE
⌘	= POWER POLE	x x	FENCE LINE
⏚	= GUY WIRE		OVERHEAD LINE
			UNDERGROUND LINE
⫞	= PADDLE MARKER		PROPERTY LINE (AFTER DEDICATIONS)
			PROPERTY LINE (CURRENT)
⊗	= WELL PIPE		PARCEL LINE
℄	CENTERLINE	2337	CONTOUR LINE (1' INTERVAL FROM ALL VALLEY SURVEYING)
CMP	CORRUGATED METAL PIPE		INFILTRATION BASIN FLOOD AREA
L.F.	LINEAR FEET		ELEVATED ROAD SECTION

R2011-00805 (RCUP2011-00074) C-02

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PLOT/UPDATE: Dec 23, 2013 11:6:53 AM

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/22/13	REVISED PER AGENCY	JD	SP
B	09/05/13	REVISED ARRAY BLOCK	JD	SP
A	02/09/12	ADDED SHEET	JD	SP

Solar PV System Summary

5MW AC Solar Photovoltaic Generation System

APN:
3115-010-004

SCH # 2012061068

Project Name:
Project 6 Lancaster WAD

Project Address:
W Ave. D & 35th St. W
Lancaster,
Los Angeles County, CA

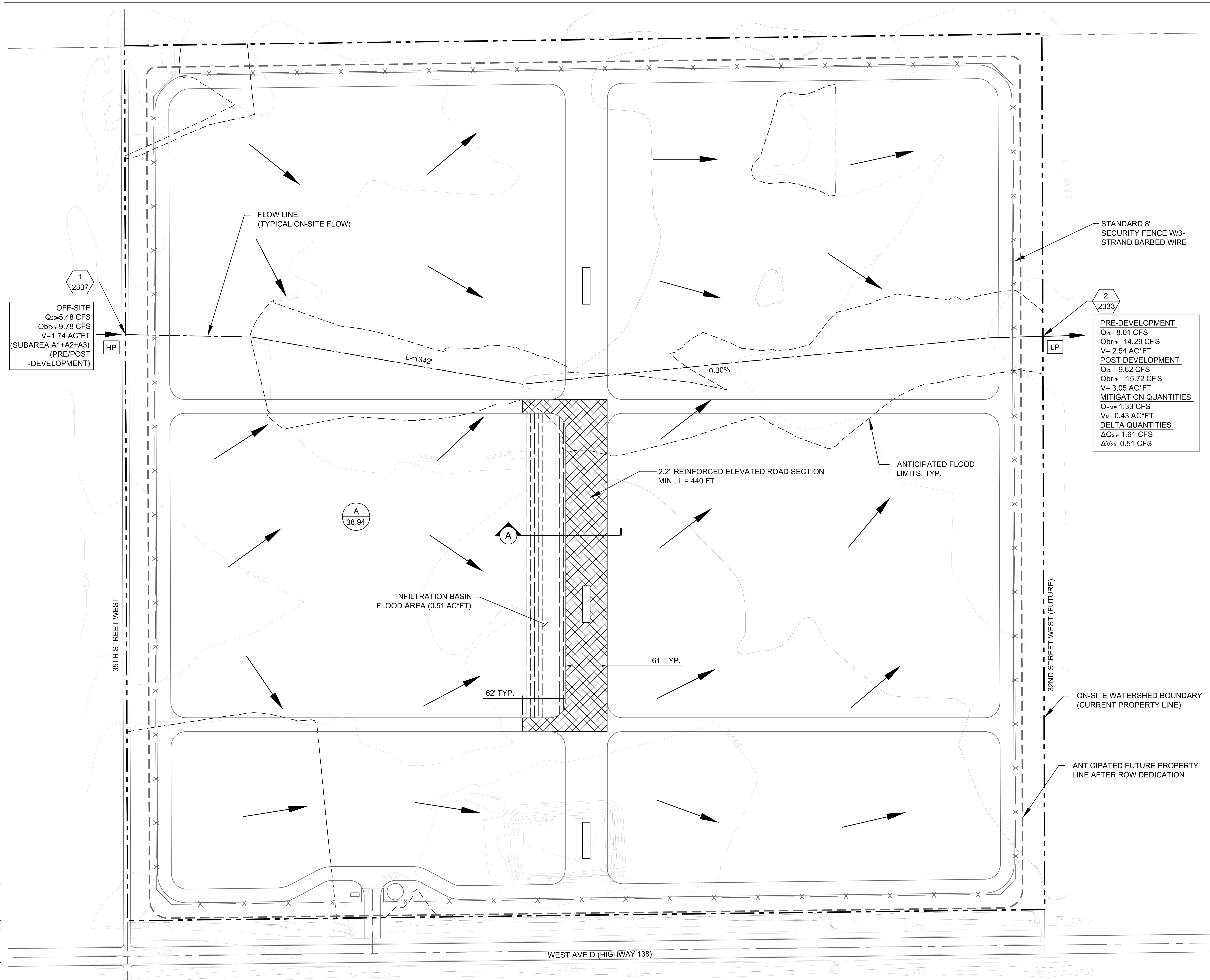
DRAWING: GRADING PLAN

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 6
LANCASTER WAD
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



LEGEND:

XX / XX.X	SUBAREA ID / ACREAGE
XX / XXX	NODE ID / ELEVATION
HP	HIGH POINT
LP	LOW POINT
	WATERSHED BOUNDARY
	FUTURE PROPERTY LINE
	SECURITY FENCING
	FLOW LINE
	ANTICIPATED 25-YR STORM EVENT FLOOD LIMITS
	ELEVATED ROAD SECTION
	INFILTRATION BASIN FLOOD AREA

Q_{25} PEAK FLOW RATE (25-YEAR STORM EVENT)
Qbr_{25} BURNED PEAK FLOW RATE (25-YEAR STORM EVENT)
V STORM VOLUME (25-YEAR STORM EVENT)
Q_{PM} PEAK MITIGATION FLOW RATE (85TH % STORM EVENT)
V_M MITIGATION VOLUME (85TH % STORM EVENT)
V_{DP} DEBRIS POTENTIAL VOLUME = (1,300 CY / SQ. MI.) * (TOTAL WATERSHED AREA 0.193 SQ. MI.) = 251 CY

DRAINAGE CONCEPT NOTES:
1) LOCATIONS OF DRAINAGE DEVICES SHOWN ARE NOT NECESSARILY APPROVED.
2) COMPLIANCE OF ALL STREET DRAINAGE REQUIREMENTS WILL BE MET TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS.
3) APPROVAL OF THE DRAINAGE CONCEPT DOES NOT CONSTITUTE DETERMINATION THAT THE OFFSITE IMPROVEMENTS ARE REQUIRED WITHIN THE MEANING OF GOVERNMENT CODE SECTION 66462.5, (EXCEPT AS NOTES).
4) AN OFFSITE DRAINAGE COVENANT FOR ACCEPTANCE OR DRAINAGE (AND DRAINAGE FACILITIES) MAY BE REQUIRED WHERE INDICATED.
5) A NOTE OF FLOOD HAZARD WILL BE REQUIRED WHERE INDICATED ON THIS PLAN.
6) A SOIL REPORT WILL BE REQUIRED TO VERIFY THAT A 7-DAY PERCOLATION RATE CAN BE OBTAINED.
7) BASIN SIZES ARE DEPENDENT ON THE VERIFICATION OF PERCOLATION RATES AND ARE SUBJECT TO CHANGE.
8) WITHIN A FEMA ZONE A.
9) WITHIN A COUNTY ADOPTED FLOODWAY.
10) ALL BASINS ARE PRIVATELY MAINTAINED.
11) FOR THE POST-DEVELOPMENT 50-YEAR STORM EVENT EXITING THE PROJECT, THE PEAK FLOW RATE (Q_{50}) INCREASED BY 8.5%, THE VOLUME (V_{50}) INCREASED BY 2.4%, THE DEPTH INCREASED BY 0.0%, AND THE VELOCITY INCREASED BY 2.7%. THESE REPRESENT NEGLIGIBLE INCREASES FROM THE PRE-DEVELOPMENT CONDITION. SEE IMPACT ANALYSIS CALCULATIONS.

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:____________RCE NO:__________DATE__________
CHECKED BY:________________________DATE__________
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

N
0 40' 80' 160'
SCALE: 1"=80'

R2011-00805 (RCUP2011-00074) C-03

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary
5MW AC Solar Photovoltaic Generation System
APN: 3115-010-004
SCH # 2012061068
Project Name: Project 6 Lancaster WAD
Project Address: W Ave. D & 35th St. W Lancaster, Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID FOR CUP 201100074 ON-SITE DRAINAGE MAP
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 6
LANCASTER WAD
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

HYDROLOGY RESULTS: (BASED ON LA FLOOD CONTROL TC CALCULATOR)

ON-SITE HYDROLOGY (PRE-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 6	A	38.94	0.01	2	120	1342	0.003	1.0	30	0.26	0.10	0.11	1.11	0.34	1.80	0.36
Project 6	A	38.94	0.01	5	120	1342	0.003	1.5	30	0.39	0.10	0.11	1.67	0.34	2.84	0.54
Project 6	A	38.94	0.01	10	120	1342	0.003	1.9	30	0.48	0.10	0.11	2.06	0.34	3.58	0.66
Project 6	A	38.94	0.01	25	120	1342	0.003	2.3	30	0.59	0.10	0.11	2.53	0.34	4.51	0.80
Project 6	A	38.94	0.01	50	120	1342	0.003	2.6	30	0.67	0.11	0.12	3.13	0.34	5.43	0.92
Project 6	A	38.94	0.01	MIT.	120	1342	0.003	0.75	30	0.19	0.10	0.11	0.81	0.34	1.26	0.26

ON-SITE HYDROLOGY (POST-DEVELOPMENT)

Project	Subarea	Area (acres)	%imp	Frequency	Soil Type	Length (ft)	Slope (ft/ft)	Isohyet (in.)	Tc-calculated (min.)	Intensity (in./hr)	Cu	Cd	Flow rate (cfs)	Fire Factor	Burned flow rate (cfs)	Volume (acre-ft)
Project 6	A	38.94	0.1	2	120	1342	0.003	1.0	30	0.26	0.10	0.18	1.82	0.34	2.44	0.58
Project 6	A	38.94	0.1	5	120	1342	0.003	1.5	30	0.39	0.10	0.18	2.73	0.34	3.80	0.88
Project 6	A	38.94	0.1	10	120	1342	0.003	1.9	30	0.48	0.10	0.18	3.36	0.34	4.76	1.07
Project 6	A	38.94	0.1	25	120	1342	0.003	2.3	30	0.59	0.10	0.18	4.14	0.34	5.94	1.31
Project 6	A	38.94	0.1	50	120	1342	0.003	2.6	30	0.67	0.11	0.19	4.96	0.34	7.05	1.50
Project 6	A	38.94	0.1	MIT.	120	1342	0.003	0.75	30	0.19	0.10	0.18	1.33	0.34	1.74	0.43

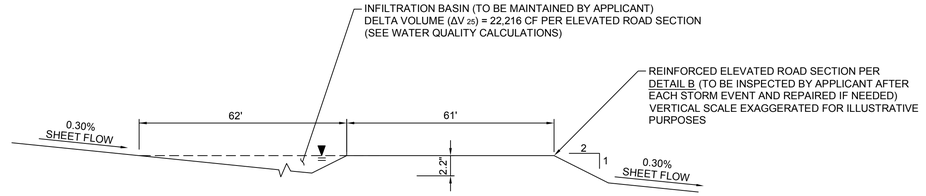
Incremental Flow and Volume Increase for Various Storm Events

Storm Event	Pre-Q (cfs)	Post-Q (cfs)	Delta-Q (cfs)	Pre-V (acre-ft)	Post-V (acre-ft	Delta-V (acre-ft)
2.00	1.11	1.82	0.71	0.36	0.58	0.22
5.00	1.67	2.73	1.06	0.54	0.88	0.34
10.00	2.06	3.36	1.30	0.66	1.07	0.41
25.00	2.53	4.14	1.61	0.80	1.31	0.51
50.00	3.13	4.96	1.83	0.92	1.50	0.58

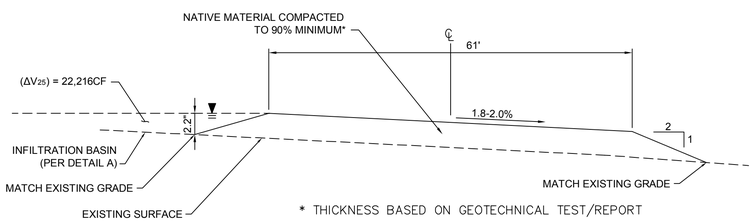
NOTE: FOR INFILTRATION BASIN MITIGATION VOLUME, SEE MIT. FREQUENCY FLOW VOLUME UNDER POST-DEVELOPMENT TABLE.

TOTAL DELTA QUANTITIES
ΔQ25 = 4.14 CFS - 2.53 CFS = 1.61 CFS
ΔV25 = 1.31 AC*FT - 0.80 AC*FT = 0.51 AC*FT

NOTE: DUE TO THE LID Δ QUANTITIES ABOVE BEING GREATER THAN THE MITIGATION QUANTITIES (Q_{FM} AND V_{FM}) THEY REPRESENT THE WORST CASE SCENARIO BETWEEN THE PRE-/POST DEVELOPMENT CONDITIONS AND THEREFORE SHALL BE USED FOR SIZING THE INFILTRATION BASINS.



A INFILTRATION BASIN DETAIL
SCALE: NTS



B REINFORCED ACCESS ROAD DETAIL (TYP.)
SCALE: NTS

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID PLAN
APPROVED FOR AREA AND Q ONLY
APPROVED BY:_____RCE NO:_____DATE_____
CHECKED BY:_____DATE_____
COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

R2011-00805 (RCUP2011-00074) C-04

PREPARED UNDER THE SUPERVISION OF:
REGISTERED PROFESSIONAL ENGINEER JOSEPH E. DIETZ No. 67032 EXP: 9-30-14 CIVIL STATE OF CALIFORNIA
JOSEPH E. DIETZ, P.E.

EXHIBIT PREPARER:
TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY

Solar PV System Summary

5MW AC Solar Photovoltaic Generation System
APN:
3115-010-004
SCH # 2012061068

Project Name:
Project 6 Lancaster WAD
Project Address:
W Ave. D & 35th St. W
Lancaster,
Los Angeles County, CA

HYDROLOGY STUDY/DRAINAGE CONCEPT/LID
FOR CUP 201100074
ON-SITE DRAINAGE MAP

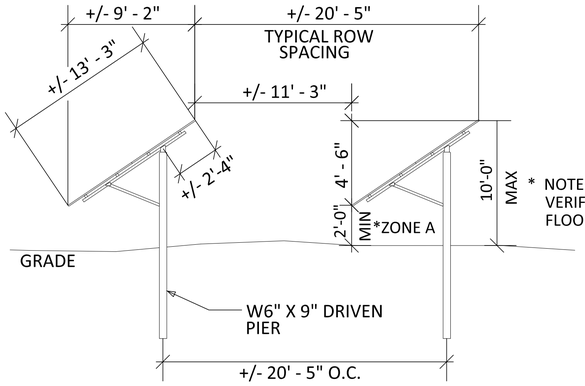
APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 6
LANCASTER WAD
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main

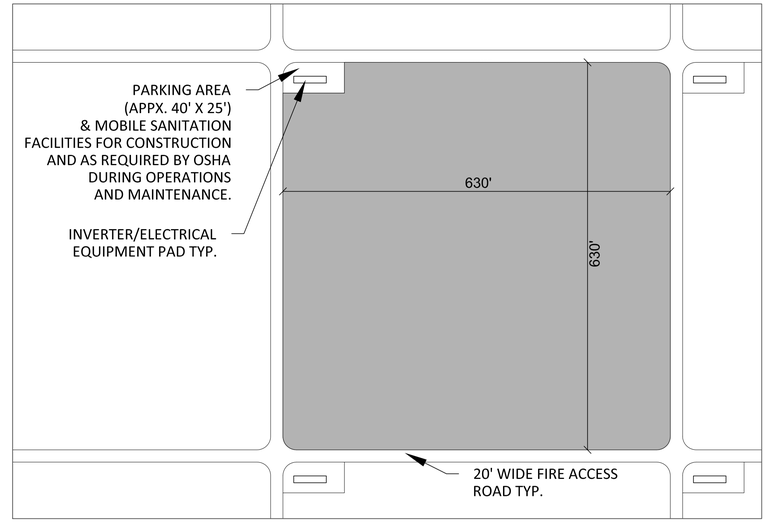
P:\24546\135--24546--12001\SUPPORTDOCS\CALCS\HYDROLOGY\15\FINAL DESIGN\ONSITE HYDROLOGY C-04.DWG
PLOT/UPDATE: Dec 2, 2013 9:0:43 AM



* NOTE: 2' MINIMUM TO BE VERIFIED WITH ANTICIPATED FLOODWATER DEPTH.

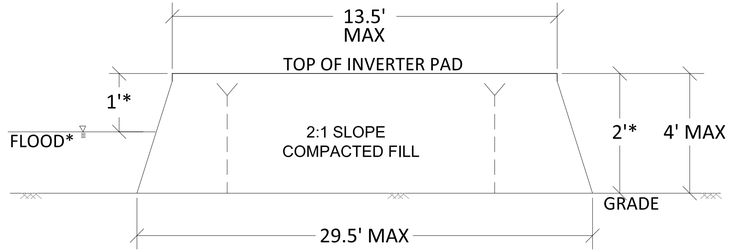
TYPICAL SOLAR ARRAY RACK DETAIL AND END ELEVATION

NOT TO SCALE



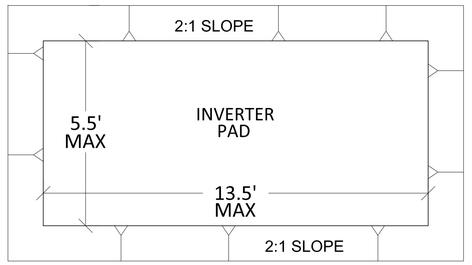
ARRAY BLOCK DETAIL (TYPICAL)

NOT TO SCALE



*TOP OF INVERTER PAD TO BE 1' MINIMUM ABOVE FLOOD WATER ELEVATION AS DETERMINED IN FINAL HYDROLOGY REPORT AND 2' ABOVE GRADE IN FEMA ZONE A.

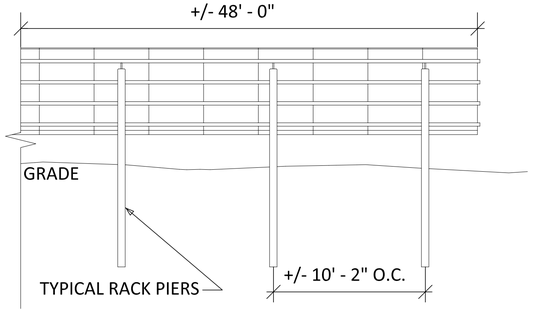
ELEVATION VIEW



PLAN VIEW

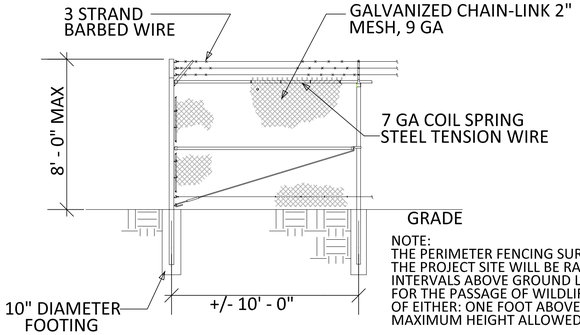
RAISED INVERTER PAD DETAILS FOR FLOOD AREAS AS NEEDED

NOT TO SCALE



SOLAR ARRAY RACK DETAIL ELEVATION

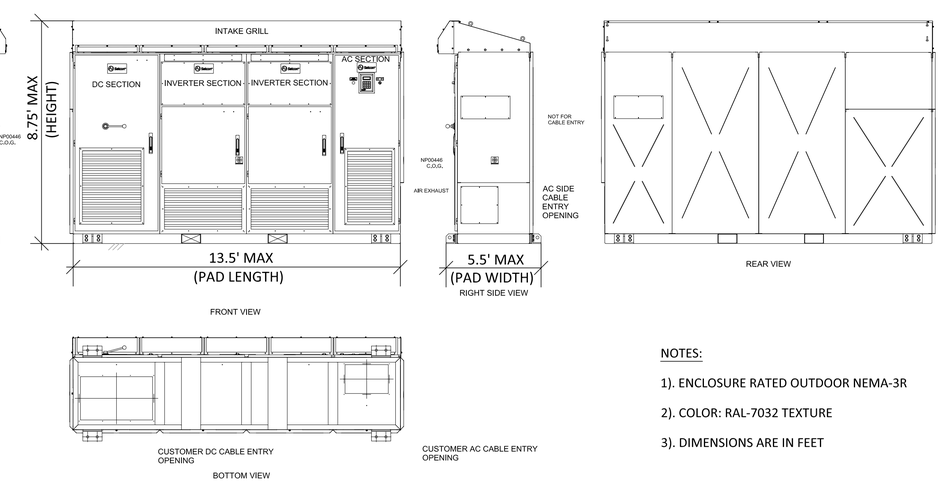
NOT TO SCALE



NOTE:
THE PERIMETER FENCING SURROUNDING THE PROJECT SITE WILL BE RAISED AT REGULAR INTERVALS ABOVE GROUND LEVEL TO ALLOW FOR THE PASSAGE OF WILDLIFE TO THE LESSER OF EITHER: ONE FOOT ABOVE GRADE OR TO THE MAXIMUM HEIGHT ALLOWED BY THE PUC.

CHAIN LINK SECURITY FENCE ELEVATION

NOT TO SCALE



NOTES:

1). ENCLOSURE RATED OUTDOOR NEMA-3R

2). COLOR: RAL-7032 TEXTURE

3). DIMENSIONS ARE IN FEET

INVERTER PAD DETAILS (TYPICAL)

NOT TO SCALE

R2011-00805 (RCUP2011-00074) **C-05**

C:\USERS\JULIE.DELANEY\DESKTOP\SP_LAYR6-15\C-05-DETAIL-15.DWG
PLOT/UPDATE: Dec 22, 2013 9:59:04 AM

REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.

17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
D	12/22/13	REVISIONS PER AGENCY	JD	SP
C	09/05/13	ARRAY BLOCK REVISION	JD	SP
B	02/09/12	REVISIONS FOR COUNTY	JD	SP

Solar PV System Summary

5MW AC Solar Photovoltaic Generation System

APN:
3115-010-004

SCH # 2012061068

Project Name:
Project 6 Lancaster WAD

Project Address:
W Ave. D & 35th St. W
Lancaster,
Los Angeles County, CA

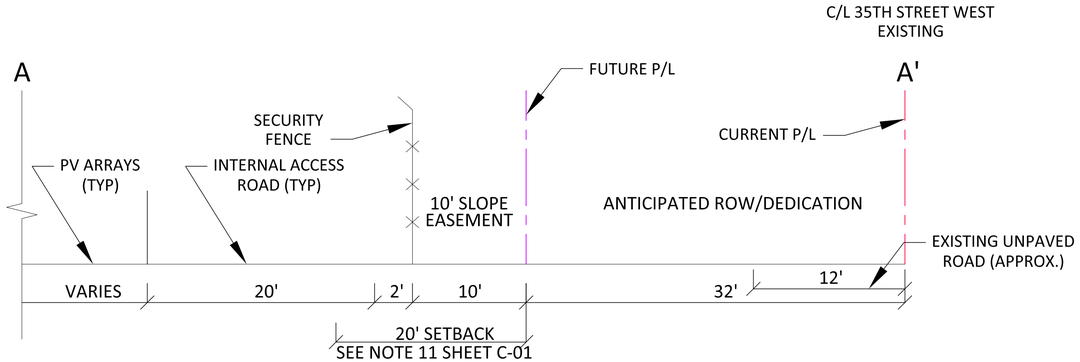
DRAWING: DETAIL SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 6
LANCASTER WAD
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main



SECTION A - A'

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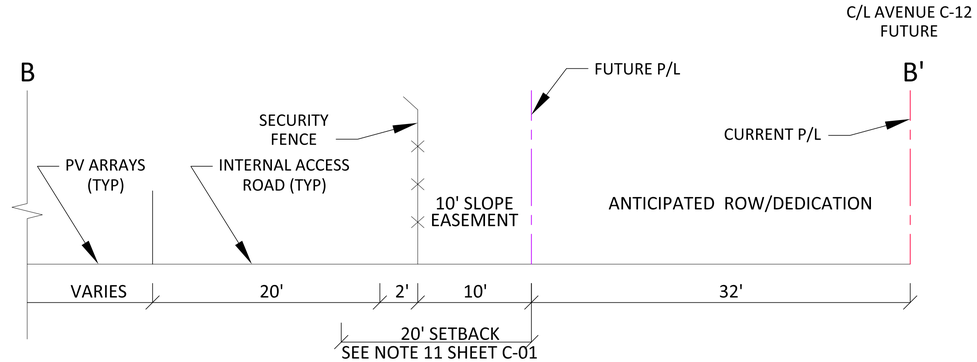
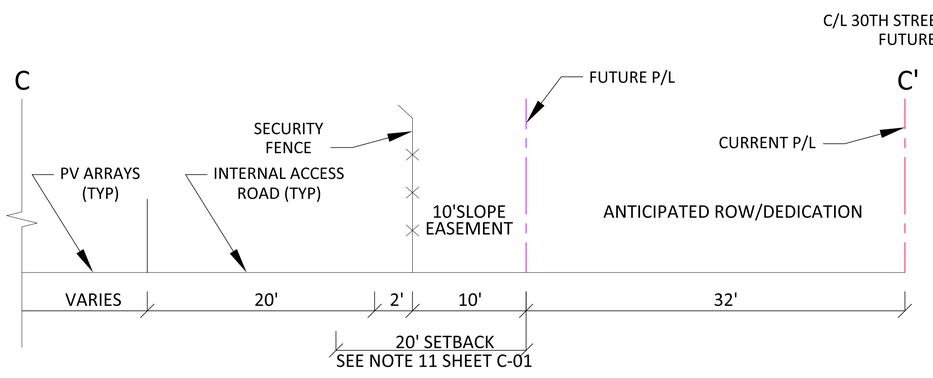


SECTION B - B'

NOT TO SCALE



SECTION C - C'

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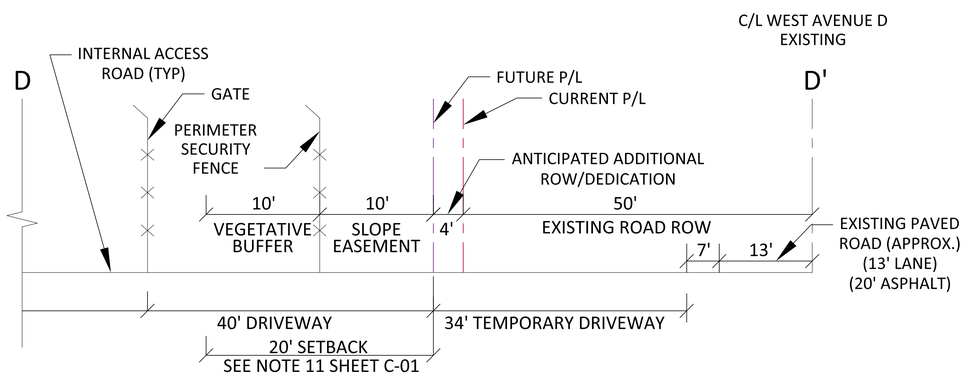

SECTION D - D'

NOT TO SCALE

R2011-00805 (RCUP2011-00074) C-06

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REGISTERED PROFESSIONAL ENGINEER
JULIE ANN DELANEY
No.C54558
CIVIL
STATE OF CALIFORNIA

EXHIBIT PREPARER:

TETRA TECH, INC.
17885 VON KARMAN AVENUE, SUITE 500
IRVINE, CALIFORNIA 92614-6213
TEL: 949.809.5000

NOT ISSUED FOR CONSTRUCTION

NO.	DATE	REVISION	SUBM'T BY	APPV'D BY
C	12/22/13	REVISIONS PER AGENCY	JD	SP
B	09/05/13	ARRAY BLOCK REVISIONS	JD	SP
A	02/09/12	ADDED NEW SHEET	AB	SP

Solar PV System Summary

5MW AC Solar Photovoltaic Generation System

APN:
3115-010-004
SCH # 2012061068

Project Name:
Project 6 Lancaster WAD

Project Address:
W Ave. D & 35th St. W
Lancaster,
Los Angeles County, CA

DRAWING: SECTION SHEET

APPLICANT:
Silverado Power
2 Embarcadero Center, Ste. 410
San Francisco, CA 94111
(415) 692-7740

SILVERADO power

PROJECT 6
LANCASTER WAD
LOS ANGELES COUNTY, CA

2 Embarcadero Center, Ste. 410 | San Francisco, CA 94111 | 415.692.7740 main